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RESEARCH ARTICLE OPEN ACCESS

EFFECTIVENESS OF INTERVENTIONAL PACKAGE ON PULMONARY FUNCTIONAL PARAMETERS AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN SELECTED HOSPITAL AT GANDHINAGAR

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ABSTRACT

Background: Chronic Obstructive Pulmonary Disease is very common in general population. It is a slowly progressing disease involving the airways or pulmonary parenchyma resulting in airflow obstruction. The main objective of the study was to determine the effectiveness of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease in experimental group. ***Materials and Methods:*** The research design adopted was quasi experimental with two group pre test post test design. Purposive sampling technique was followed to obtain a sample of 30 COPD patients (15 COPD patients in experimental groups and 15 COPD patients in control groups) Pre test and post test assessment was done by using pulmonary functional parameters. ***Results:*** The post -test results depicted that 26.66% of the samples from the experimental group was having mild dyspnea, 53.33% moderate and 20% severe whereas 13.33% of the samples from the control group were having mild dyspnea, 40% moderate and 46.66% severe dyspnea. ***Conclusion:*** The findings of the present study concluded that the there was significant improvement in the lung functions and breath holding time and also reduction the severity of dyspnea in the experimental group.

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INTRODUCTION

Chronic Obstructive pulmonary Disease is a major cause of ill health globally. COPD is found to be one of the most distressful conditions badly affecting human life. The disease is characterized by an abnormal inflammatory response in the lungs and restricted airflow. Every six seconds people with serious respiratory disease are reminded that their breathing is impaired and they cannot enjoy life as they used to as their activities are restricted and that their lives may not be as long.[1] Helen Shaji, John Cecely et al (2008) conducted a study to assess the effectiveness of breathing exercises on pulmonary function parameters and quality of life of patients with COPD. After undergoing breathing exercises in the experimental group the level of dyspnoea was significantly reduced ($P < 0.001$) and there was significant improvement in the quality of life and pulmonary functional parameters. So deep breathing exercises is an effective and economical method for improving the physical capacity and general well being of patients with COPD.[2] Promotion of exercises is found to be the good conservative management for patients with COPD, because educational phases and breathing exercises can improve lung functions as well as can strengthen the respiratory muscles, even when the lungs are diseased. The proposed rationale for using interventional package for COPD patients are to prolong exhalation and thereby improve pulmonary functions.[3]

Objectives

1. To assess the pulmonary functional parameters among patients with Chronic Obstructive Pulmonary Disease before implementing the

interventional package.
2. To assess the pulmonary functional parameters among patients with Chronic Obstructive Pulmonary Disease after implementing the interventional package.

MATERIALS AND METHODS

- **Research approach:** Quantitative Research Approach
- **Research design:** Quasi experimental two group pre test post test design
- **The variables used:**

Dependent - Pulmonary functional parameters among patients with Chronic Obstructive Pulmonary Disease
Independent – Interventional Package consist of Educational phase and deep breathing exercises which will be administered for the patients with COPD.

- **Settings of the study-** Apollo hospital, Gandhinagar
- **Duration of the study-** 3 Months Oct – Dec
- **Data collection method –** Modified dyspnea brog scale
- **Target population:** COPD patients
- **Sample Size -** 30
- **Sampling Method-** Purposive Sampling

Inclusion criteria

1. COPD patients who are having breathing difficulty and expectoration

Exclusion criteria

1. COPD patients who are suffering from any other chronic illness.
2. Patients those are on respiratory supportive device other than oxygen.

Tool used for data collection: (Description of the tool and sample of the tool with evaluation criteria)

The tool consists of 4 sections:

- **Section A** Demographic variables
- **Section B** This section consists of Modified Dyspnoea Borg scale which is used to assess the level of dyspnoea among COPD patients.
- **Section C** This section deals with inspiratory and expiratory capacity using spirometer which is measured the functional capacity of the lungs among COPD patients.
- **Section D** This section deals with Breath holding time by stop clock which helps to identify the person has the ability to hold their breath for a particular period of time.

Statistical Methodology: Data analysis was done with the help of descriptive and inferential statistics.

RESULTS

Percentage Distribution of study subjects According to Demographic variables

N= 30

Demographic variable	Experimental group		Control group	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Age				
30-40 Years	2	13.33	0	0
41-50 Years	4	26.66	3	20
51-60 Years	9	60	12	80
Gender				
Male	7	46.66	9	60
Female	8	53.33	6	40
Occupation				
Sedentary	11	73.33	12	80
Non-sedentary	4	26.66	3	20
Type of family				
Nuclear	9	60	13	86.66
Joint	6	40	2	13.33
History of smoking				
Yes	5	33.33	8	53.33
No	10	66.66	7	46.66
Family history				
Allergy	7	46.66	9	60
Lung disease	4	26.66	2	13.33
Heart disease	4	26.66	4	26.66

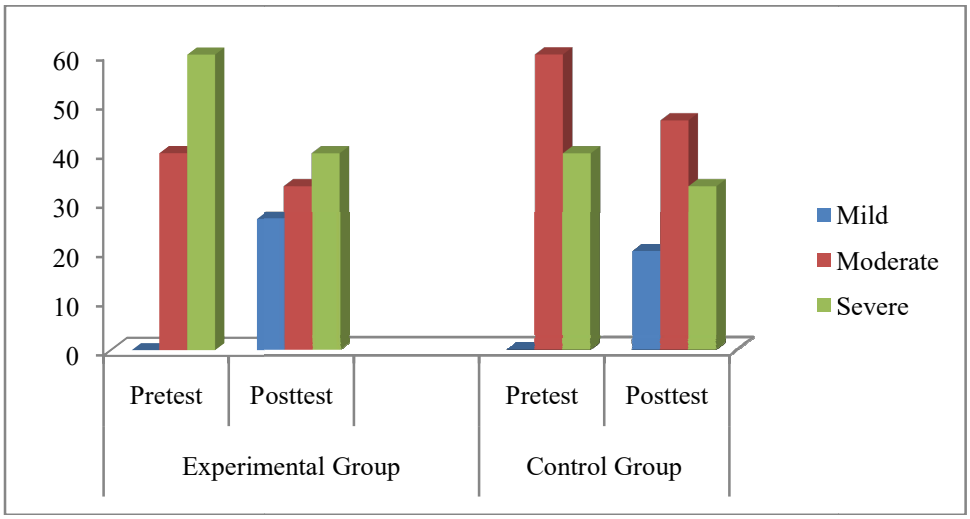
The above table depicts the distribution in number and percentage of study subjects according to their demographic variables. In the experimental group out of 15 samples 13.33% were in the age group of 30 – 40 years, 26.66% were in the age group of 41-50 years, 60% were in the age group of 51-60 years. In relation to gender, 46.66% were males, 53.33% were females in the experimental group. Regarding to occupation, 73.33% were sedentary worker, 4% in were from non-sedentary category. In relation to type of family, 60% were from nuclear family, 40% were from joint families. In relation to history of smoking, 33.33% were smokers and 66.66% were non-smokers from the experimental group. In the experimental group there were having family history of allergy for 46.6% samples, lung disease for 26.66% and heart disease for 26.66% samples.

Pretest and post test level of dyspnoea by using modified dyspnoea borg scale in both experimental and control group

N= 30

DESCRIPTION MDBS	Experimental Group				Control group			
	Pretest		Post test		Pretest		Post test	
	f	%	f	%	f	%	f	%
Mild	0	0	4	26.66	0	0	3	13.33
Moderate	8	53.33	8	53.33	7	46.66	7	40
Severe	7	46.66	3	20	8	53.33	5	46.66

The above table depicts the pretest and post test level of dyspnoea in the experimental and control group. The post test result shows that 26.66% were having mild, 53.33% were having moderate and 20% were having severe dyspnoea in experimental group whereas 13.33% were having mild, 40% were having moderate and 46.66% were having severe dyspnoea in control group.

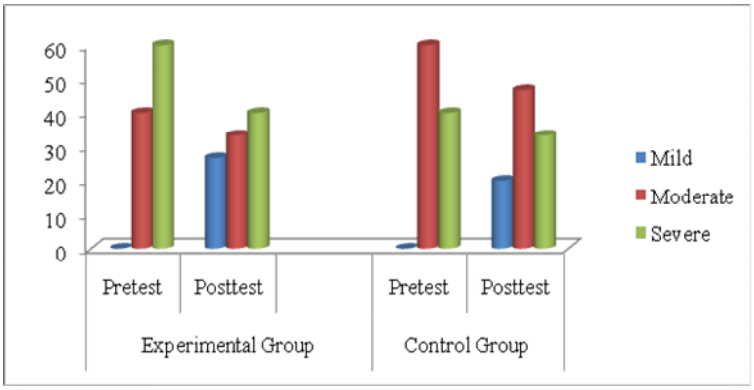


Pretest and posttest functional capacity of the lungs in both experimental and control group

N= 30

DESCRIPTION SPIROMETER	Experimental Group				Control group			
	Pretest		Post test		Pretest		Post test	
	f	%	f	%	f	%	f	%
Mild	0	0	4	26.66	0	0	3	20
Moderate	6	40	5	33.33	9	60	7	46.66
Severe	9	60	6	40	6	40	5	33.33

The above table depicts the pretest and post test level of functional capacity in the experimental and control group. The post test result shows that 26.66% were having mild, 33.33% were having moderate and 40% were having severe alteration in functional capacity of lung in experimental group whereas 20% were having mild, 46.66% were having moderate and 33.33% were having severe alteration in functional capacity of lung in control group.



Pretest and posttest level of measurement of breath holding time in both experimental and control group

N= 30

Breath holding time	Experimental Group				Control group			
	Pretest		Post test		Pretest		Post test	
	f	%	f	%	f	%	f	%
Mild	0	0	6	40	0	0	2	13.33
Moderate	7	46.66	5	33.33	8	53.33	8	53.33
Severe	8	53.33	4	26.66	7	46.66	5	33.33

The above table depicts the pretest and post test level of measurement of breath holding time in the experimental and control group. The post test result shows that 40% were having mild, 33.33% were having moderate and 26.66% were having severe alteration in breath holding time in experimental group whereas 13.33% were having mild, 53.33% were having moderate and 33.33% were having severe alteration in functional capacity of lung in control group.

Comparison of mean, standard deviation of post test level of dyspnea on experimental and control group

N=30

Group	Mean	SD	SDM	Calculated 't' value	Table 't' value	df	Level of significance
Experimental	3.46	1.43	0.37				
Control	5.06	2.24	0.58	-2.38	2.76	28	0.05

The table shows the comparison of mean, standard deviation in experimental and control group. In the experimental group the mean post test level of dyspnea was 3.46 with standard deviation 1.43 and in the control group was 5.06 with SD 2.24. The calculated 't' value was -2.38 is less than the table value which is 2.76 in 0.05 level.

Comparison of mean, standard deviation of post test level lung functioning by spirometer on experimental and control group

N=30

Group	Mean	SD	SDM	Calculated 't' value	Table 't' value	df	Level of significance
Experimental	3.73	2.40	0.62	4.5	2.76	28	0.05
Control	3.06	2.29	0.59				

The table shows the comparison of mean, standard deviation in experimental and control group. In the experimental group the mean post test level lung functioning was 3.73 with standard deviation 2.40 and in the control group was 3.06 with SD 2.29. The calculated 't' value was 4.5 is more than the table value which is 2.76 in 0.05 level.

Comparison of mean, standard deviation of post test level of breath holding time on experimental and control group

N=30

Group	Mean	SD	SDM	Calculated 't' value	Table 't' value	df	Level of significance
Experimental	1.09	0.26	0.06	3.743	2.76	28	0.05
Control	1.02	0.20	0.05				

The table shows the comparison of mean, standard deviation in experimental and control group. In the experimental group the mean post test level of breath holding time was 1.09 with standard deviation 0.26 and in the control group was 1.02 with SD 0.20. The calculated 't' value was 3.74 is more than the table value which is 2.76 in 0.05 level.

CONCLUSION

The study identified that there is a reduction in the level of dyspnoea in both experimental group and control group. It was found that there was a significant high reduction in the level of dyspnoea in experimental group after intervention than in the control group. The't' value of difference of mean reduction of dyspneoa on pulmonary functional parameters tabulated was found to be t= -2.38, 4.5, 3.743, df=28, P<0.05.

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