

A Study to Assess the Effectiveness of Buteyko Breathing Exercise on Respiration Outcome among Patients with COPD at NMCH, Nellore

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Abstract

An experimental and control group was implicated to assess the effectiveness of Buteyko Breathing exercises among patients with COPD admitted to the pulmonology ward in Narayana Medical College and Hospital, Nellore. There were 60 patients selected via the Convenience sampling technique having these diseases. Patients were chosen for respiratory outcomes that were assessed by an observational checklist consisting of several parameters. The data was then analyzed by inferential statistics and organized according to the objectives of the study.

Keywords: Buteyko Breathing Technique, Pretest, Post Test, COPD, Demographic Values, Mean.

1. Introduction

The respiratory system consists of a web of tissues and organs that help in breathing that includes lungs, airways, and blood vessels. Some muscles of the lungs are also the parts of respiratory system. This entire system works together to inhale oxygen that moves to the blood and exhale waste gases such as carbon dioxide called gas exchange. Chronic Obstructive Pulmonary Disease is a respiratory disease that progresses slowly and obstructs the path of airflow. This study will deal with the effectiveness of the Buteyko Breathing exercise among patients with COPD.

2. Literature Review

Effectiveness of Buteyko Breathing exercise on COPD patients

Chronic Obstructive Pulmonary Disease is a curable and preventable disease that involves pulmonary parenchyma, lung tissues, bronchioles, bronchi, blood vessels, and alveoli.

It is also referred to as a condition such as emphysema or chronic bronchitis with similar symptoms (Celliet *al.* 2019). It is the leading cause of death that occurs in the states. Over 16.4 million people have been diagnosed with this disease, but millions more are there having the disease without even being diagnosed. The disease causes potent long-term disability and causes death at an early stage. The number of people dying from the disease is rapidly

increasing day by day (Ritchie *et al.* 2020). It is estimated that there are 30 million patients in India is responsible for growing percentage of COPD death rate, the highest in the world. More than 64.7 million is the estimated on the basis of age causes death rate per 100,000 among both genders.

Impacts of Buteyko Breathing exercise

The Buteyko Breathing technique or BBT is a kind of exercise that is used for several purposes. It enhances breath control that prevents breathlessness and promotes a prominent pattern of breathing and reduces over breathing (Vagedeset *al.* 2021). It is mainly used to improve certain conditions such as anxiety, asthma, and sleep concerns and also to clear blocked nasal passages. It can reduce symptoms of illnesses such as asthma, and stress and regulates overall health.

3. Methodology

The methodology part of the research work deals with the research design and research approach. The study design narrates the setting of the study, sample size, population, and sampling technique (Coxet *al.* 2019). It also describes criteria for development, sample selection, description of the tool and, content validity of the device, method of data collection, pilot study and data analysis methods based on the objectives.

Research approach

The research approach based on quantitative analysis was assumed to measure the effectiveness of the Buteyko Breathing exercise on Respiration outcomes among patients with COPD.

Research design

The experiment was designed as a post-test and pre-test with an intervention (Buteyko breathing exercise) and a control group.

Tools Used

Socio-demographic variables such as age, gender, treatment, and so on, inferential and descriptive statistical methods were used to evaluate the values.

4. Data Collection

The data were collected with written permission from the Medical Superintendent, HOD of the Pulmonology Department at NMCH Nellore. It took 4 weeks and obtained informed consent from patients. A total of 60 participants were selected and 30 were selected for the control groups with simple routine care (Rocha, 2019). The pre-test was done by using a modified Becker's score and was done for both groups. The intervention was given (Buteyko breathing exercise) for 6 days followed by 1 week; the post-test was done on the 7th day with the same tool for the both groups. The data was then evaluated using inferential and descriptive statistical methods respectively.

5. Data Analysis

Data were analyzed using descriptive and inferential statistical methods based on the study objectives. In descriptive statistics, several methods such as Frequency, percentage, and Distribution Mean SD were observed to find out the respiratory parameters among these patients. In Inferential statistics, separate methods were used such as paired t-tests and so on to determine the effectiveness of the Buteyko Breathing Exercise among COPD patients in the Experimental group. Independent test was used to determine the difference between the scores of both groups. The chi-square test was used to find out the association between pre-test and post-test levels of respiratory outcomes.

Table 1; Distribution of Frequency and percentage based on age, (N=60)

S.NO	AGE IN YEARS	EXPERIMENTAL GROUP(N=30)		CONTROL GROUP (N=30)	
		F	%	F	%
1	20-30	2	6.7	1	3.3
2	31-40	5	16.7	7	23.3
3	41-50	9	30	10	33.4
4	Above50	14	46.6	12	40
	Total	30	100	30	100

This table shows the ages in the experimental group were 14(46.6%) between and above 50 years of age, 9 (30%) between 40-50 years of age, 5(16.7%) between 30-40 years of age, and 2(6.7%) between 20-30 years of age. In control group, 12(40%) were above 50 years of age, 10(33.4%) between 40-50 years of age, 7(23.3%) between 30-40 years of age and 1(3.3%) between 20-30 years of age.

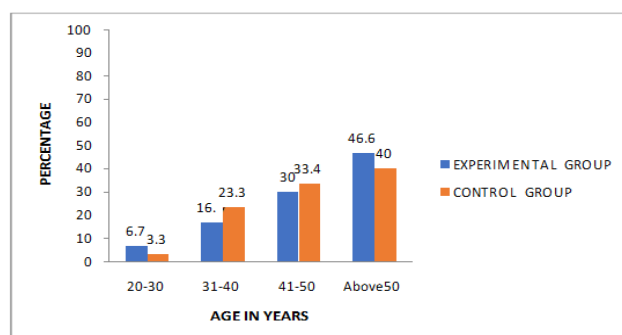


Figure 1; Distribution of percentage based on age

Table 2; shows the value between treated and non-treated patients in the control group as well as the experimental group

S.NO	Patient on treatment	EXPERIMENTAL GROUP(N=30)		CONTROL GROUP (N=30)	
		f	%	F	%
1	Yes	26	86.7	24	80
	No	4	13.3	6	20
2	Total	30	100	30	100

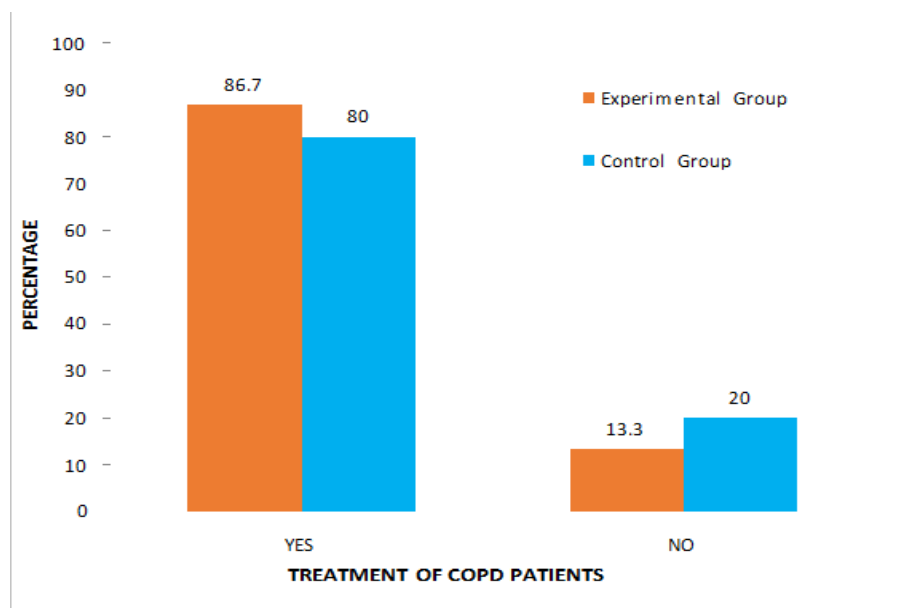


Figure 2; Distribution of percentage based on treatment

Table 3: a comparative study between the post-test and pre-test

Group		Mean	Standard deviation	Paired t-test
Experimental group	Pre test	13.8	3.71	C=0.930 T=0.86 Df=29 S*
	Post test	21.80	2.88	
Control group	Pre test	13.7	3.4	C=0.22 T=0.90 Df=29 NS
	Post test	13.9	3.6	

The above table shows the effectiveness of experimental group during the pre-test scores among patients. In experimental group calculated value is greater than table value and there is statistical significance. In Control group, the calculated value lesser than table values there is statistically no significant.

6. Results and Discussion

The above results state that the Buteyko breathing exercise was found to be helpful in improving the respiratory outcome among the patients. The scores of pretest were found to be effective in the experimental group among patients. The average pre-test was 13.8 with an SD of 3.71 and the post-test mean was 21.8 with an SD of 2.88. The calculated value was 0.930 and the table value was 0.86, the calculated value was greater than the table value so it is significant (Rosalba,2014). The experimental group's calculated value was higher than the table value, so there was a statistically significant difference in Buteyko Breathing Exercise on Respiration outcome among patients. The pretest mean of the control group was 13.7 with SD 3.4 and mean of post-test was 13.9 with SD 3.6. So, the value after calculation was less

than the table so there was no statistical significance. Thus, null hypothesis (no significance) was canceled and the research hypothesis was granted.

7. Conclusion

The conclusion of the study states that Buteyko Breathing Exercise shows a statistically significant in improving the effectiveness of the exercise on Respiration outcomes among COPD patients. The study showed that 70% were normal Respiration outcomes and 30% were moderate Respiration outcomes. The pre-test mean was 13.8 with SD 3.7 and the post-test mean 21.8 with SD 2.8. The calculated value is 0.930 and the table value is 0.86. Buteyko Breathing Exercise is highly effective in the improvement of the Respiratory outcome among these patients as $P < 0.05$ that is at a significant level. This evidenced based practice can be incorporated into nursing practice to improve Respiratory outcomes among patients with COPD.

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