



## Assess the effectiveness of pranayama to increase oxygen saturation among patients with chronic obstructive pulmonary disease

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### Abstract

**Background and Objectives:** In India, COPD ranks fifth in terms of causes of disability. COPD is the umbrella term for a variety of conditions that impact airflow into and out of the lungs, the majority of which occur in those over 45. It is more common among clients who live in urban areas and those who are less affluent. Pollution is causing an increase in the rates of mortality and morbidity. In order to complete their everyday tasks, patients with COPD frequently rely on others. Pharmacological therapy, which temporarily alleviates symptoms but often leads to recurrence, is given additional importance during hospitalization.

**Methods:** A pre-experimental research approach and a pre-test post-test group design were used in the study. Fifty samples were chosen using the purposive sampling technique. The scene was the medical wards of a few Kerala hospitals. The Pranayama Structured Teaching Program was created. Five customers with COPD participated in the pilot study. Data was gathered using the observation and interview schedules.

**Results:** The vast majority Participants in the study were between the ages of 45 and 65 in 50% of cases. Approximately 28% of the study participants were female, while the majority (72%) were male. The majority of the study participants (38%) are literate. Results on the first day of the study showed that the mean pre-test SP02 was 87.72% and the post-test mean SP02 was 87.84% with a 1% mean difference, while the results on the fifteenth day showed that the pre-test mean SPO2 was 89.16% and the pre-test mean SPO2 was 90.08 with a 0.92 mean difference. The SPO2 levels before and after the tests are compared using the paired "t" test, and the results showed a significant difference between the two on every day ( $p < 0.05$ ). Post-test oxygen saturation level has been found to be significantly correlated with age, length of COPD, and personal behaviors, among other demographic characteristics examined in this study. Smoking, exercise, dietary habits, allergies, occupation, income, and sex did not, however, significantly correlate with any of these factors.

**Interpretation and Conclusion:** Findings of the study indicate pranayama was significantly effective in increasing the level of oxygen saturation in COPD patients.

**Keywords:** COPD (Chronic obstructive pulmonary disease), India, disability, airflow limitation, pollution

### Introduction

The only way to provide oxygen to our bodies and their numerous organs-a necessity for good health-is by breathing. Therefore, the best ways to increase blood oxygen saturation have been developed through non-pharmacological means, such as breathing exercises. When life is autonomous and apart from the mother, breathing begins, and it stops when life ends. During pregnancy, the child's lungs are not needed to operate since oxygen is provided by the mother's blood. A command from the brain initiates the first breath of life at birth. From humans to single-celled amoebas, all animals depend on respiration to survive. The respiratory system is the gateway to purifying the body, mind and intellect. The key to this is pranayama. The most common cause of COPD is smoking, but long-term inhalation of irritants like dust, chemicals, or air pollution can also cause the disease. Avoiding prolonged exposure to second hand smoking is also advised. The chance of developing COPD increases with the amount of time the lungs are exposed to smoke or other irritants.

Chronic obstructive pulmonary disease (COPD) is becoming more and more common in female smokers.

The main bodily function that keeps a person alive is breathing. The fact that we are alive as long as we are breathing and dead as soon as we stop breathing emphasizes the significance of breathing. In addition to being mechanism of eliminating waste and toxins from the body, breathing is the only way to provide oxygen to our bodies and all of its organs, which is essential for our life. It is something that comes to us naturally, instinctively, and spontaneously. Oxygen recharges the solar plexus and breaks down waste materials in the body. Actually, the majority of our energy needs are met by the air we breathe rather than by the food we eat. The first breath we take marks the beginning of life, and the final breath we take marks its conclusion. We must constantly be aware of our breathing while standing, walking, conversing, working, etc. We must breathe in arhythmic manner that comes naturally to that person. Our bodies will find breathing easy, normal, and natural if we simply concentrate on it. Pranayama is

simply concentrating on our breathing.

**Statement of the Problem**

“A study to evaluate the effectiveness of pranayama to increase oxygen saturation among patients with chronic obstructive pulmonary disease admitted in selected hospital of Kerala.”

**Objectives of the Study**

- To assess the oxygen saturation level among patients with chronic obstructive pulmonary disease.
- To evaluate the effectiveness of Pranayama on oxygen saturation among patients with chronic obstructive pulmonary disease.
- To find out the association between the level of oxygen saturation among patients of chronic obstructive pulmonary disease and their selected demographic variables.

**Methodology**

Approach to research: Pre-experimental research includes single group pre-test and post-test studies. Sample: The study's target group consists of COPD patients from Kannur Medical College's Anjarakandy and Fatima Hospital's outpatient and inpatient departments. There are fifty people with chronic obstructive pulmonary disease in the sample. Non-probability purposive sampling is the method used for sampling. Instrument for gathering data: The researcher's methods or devices for observing or measuring the important variables in the research problem are known as data collection tools. The instruments used in this investigation included a timetable for monitoring the rise in oxygen saturation prior to and following pranayama exercises.

**Description of the Tool**

A structured interview schedule was included in Section 1 of the tool to gather information about the demographics of COPD patients, and an observation schedule was included in Section 2 to track oxygen saturation in the pre-test and post-test groups.

Section I comprises eleven items that deal to the respondents' demographic factors, including age, sex, occupation, height, family income, educational attainment,

eating preferences, allergies, smoking and alcoholism, and participation in health-promoting activities. The purpose of Section II's observation schedule is to track COPD patients' oxygen saturation levels both before and after tests.

**Results**

**Section A: Distribution of demographic profile**

The majority the age range of 45 to 65 years was occupied by 50% (25) of the study participants. Males made up the majority of study participants (72%) while females made up roughly 28%. The majority of survey participants-38 percent-are literate. The majority of research participants-34 percent-were employed. The majority of respondents' families make between 8000 and 14999 rupees a month (42%). Of the respondents, the majority (40%) had COPD for one to five years. Of those surveyed, 74.0% eat a mixed diet. Fifty percent of the respondents had no other negative habits, ten percent had both drinking and smoking behaviors, and forty percent smoked. The majority of participants (88.0%) did not engage in any form of physical activity.

**Section B: Pre-test and Post-test oxygen saturation level of the respondents**

**Table 1:** Pre-test oxygen saturation level

	Normal		Average		Vulnerable	
	n	%	n	%	n	%
Day 1	17	34.0%	28	56.0%	5	10.0%
Day 3	24	48.0%	22	44.0%	4	8.0%
Day 6	26	52.0%	22	44.0%	2	4.0%
Day 9	28	56.0%	21	42.0%	1	2.0%
Day 12	31	62.0%	18	36.0%	1	2.0%
Day 15	33	66.0%	16	32.0%	1	2.0%

**Table 2:** Post-test oxygen saturation level

	Normal		Average		Vulnerable	
	n	%	n	%	n	%
Day 1	28	56.0%	19	38.0%	3	6.0%
Day 3	30	60.0%	17	34.0%	3	6.0%
Day 6	32	64.0%	17	34.0%	1	2.0%
Day 9	36	72.0%	13	26.0%	1	2.0%
Day 12	37	74.0%	12	24.0%	1	2.0%
Day 15	39	78.0%	10	20.0%	1	2.0%

**Table 3:** Comparison of Pre-test and Post-test Oxygen Saturation Level

Days	Pre-test		Post-test		Paired “t” test value
	Mean	Standard deviation (SD)	Mean	Standard deviation (SD)	
Day 1	87.72	5.33	88.78	5.257	8.212
Day 3	87.840	5.191	88.840	5.277	9.037
Day 6	88.140	5.134	89.280	5.398	6.388
Day 9	88.340	5.133	89.420	5.22	7.909
Day 12	88.720	5.087	89.50	5.22	6.216
Day 15	89.160	5.015	90.08	4.989	8.986

Significant at 5% level t 0.05, df (49) =2.008

However, the pre-test and post-test oxygen saturation scores are subjected to paired “t” test and it reveals the significant difference between pre-test and post-test oxygen saturation

levels.

**Section C:** Association between post-test level of oxygen saturation of respondent’s demographic variable

**Table 4:** Post-test (Day 15) analysis of various demographic and health factors (age, sex, education, occupation, income, COPD duration, food habits, allergies, personal habits, smoking, and health promotion activities) with chi-square tests showing associations for different groups (Normal, Average, Vulnerable) based on percentages and significance values (P-values)

		Post-test(Day15)						n	Pearson chi-square test
		Normal		Average		Vulnerable			
		n	%	N	%	n	%		
Age	35 -45 years	2	50.0%	2	50.0%			4	$\chi^2=5.66$ P=0.22
	45 -65 years	11	44.0%	13	52.0%	1	4.0%	25	
	65 85 years	4	19.0%	13	61.9%	4	19.0%	21	
Sex	Male	14	38.9%	17	47.2%	5	13.9%	36	$\chi^2=4.62^*$ P=0.09
	Female	3	21.4%	11	78.6%			14	
Education	Illiterate	2	13.3%	11	73.3%	2	13.3%	15	$\chi^2=9.70^*$ P=0.13
	Literate	10	52.6%	7	36.8%	2	10.5%	19	
	Degree	4	30.8%	9	69.2%			13	
Occupation	PG & above	1	33.3%	1	33.3%	1	33.3%	3	$\chi^2=8.92^*$ P=0.34
	Employed	8	47.1%	7	41.2%	2	11.8%	17	
	Home maker	3	23.1%	10	76.9%			13	
	Self-employee	5	38.5%	7	53.8%	1	7.7%	13	
Income	Employed	1	33.3%	1	33.3%	1	33.3%	3	$\chi^2=2.78$ P=0.59
	Retired			3	75.0%	1	25.0%	4	
	Rs.3000 -7999	4	26.7%	9	60.0%	2	13.3%	15	
	Rs.8000 -14999	8	38.1%	10	47.6%	3	14.3%	21	
Duration of COPD	Rs.15000 -21999	5	35.7%	9	64.3%			14	$\chi^2=3.48^{**}$ P=0.17
	< 6 months	7	63.6%	4	36.4%			11	
	1 year - 5y ears	8	40.0%	11	55.0%	1	5.0%	20	
	5 years - 10 years	1	9.1%	9	81.8%	1	9.1%	11	
Food habits	>10years	1	12.5%	4	50.0%	3	37.5%	8	$\chi^2=3.25$ P=0.19
	Vegetarian	2	15.4%	10	76.9%	1	7.7%	13	
Any allergies	Mixed	15	40.5%	18	48.6%	4	10.8%	37	$\chi^2=2.12$ P=0.34
	Yes	2	18.2%	7	63.6%	2	18.2%	11	
Personal habits	No	15	38.5%	21	53.8%	3	7.7%	39	$\chi^2=5.63$ P=0.06
	No	9	36.0%	16	64.0%	0	0	25	
Smoking	Yes	8	32.0%	12	48.0%	5	20.0%	25	$\chi^2=8.41$ P=0.07
	Nil	9	36.0%	16	64.0%			25	
	Smoking	6	30.0%	9	45.0%	5	25.0%	20	
Health promotion activities	Smoking+ Alcohol	2	40.0%	3	60.0%			5	$\chi^2=1.24$ P=0.54
	No	14	31.8%	25	56.8%	5	11.4%	44	
	Yes	3	50.0%	3	50.0%			6	

\* Significant at  $p < 0.05$  \*\* Highly significant at  $p < 0.01$

However, oxygen saturation and the respondents is subjected Pearson's chi-square test. Chi square test shows significant association between sex ( $\chi^2=4.62^*$  P=0.09), education ( $\chi^2=9.70^*$  P=0.13), occupation ( $\chi^2=8.92^*$  P=0.34), and highly significant to duration of COPD ( $\chi^2=3.48^{**}$  P=0.17) and oxygen saturation level.

## Discussion

According to the current study, the mean saturation level on day one was 87.72 in the pre-test and 88.78 in the post-test. The average pre-test and post-test scores on day three were 87.840 and 88.840, respectively. The average pre-test score on day six was 88.14, and the average post-test score was 89.280. On the ninth day, the average pre-test score was 88.340, and the average post-test score was 89.420. The average pre-test score was 88.720 on day 12 and the average post-test score was 89.50. On day 15, the average pre-test score was 89.160 and the average post-test score was 90.08.

## Conclusion

In this study pre-experimental, pre- test and post-test single group approach was used. 50 samples were drawn from population using non probability purposive sampling technique. The data was collected by structured interview

schedule and observation schedule. Data was analyzed and interpreted by applying statistical methods.

## Conflict of Interest

Not available

## Financial Support

Not available

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