



“A Study to Assess Effect of Pursed Lip Breathing Exercise on Dyspnea Among Chronic Obstructive Pulmonary Disease Patients Attending Respiratory Medicine OPD of HSK Hospital Research Center Bagalkot.”

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KEYWORDS

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ABSTRACT:

Introduction: Lip breathing is a breathing exercise that helps slow breathing and inhale and exhale more air. Slowly inhale through nose and gently exhale through pursed lips. Pursed lip breathing makes it easier to perform physical activities and reduce stress. PLB helps to improves ventilation, releases trapped air in lungs, keeps airways open longer and decreases effort to breathe, prolongs breathing out to slow breathing rate, improves breathing patterns by moving old air out of lungs and allowing new air to enter, relieves shortness of breath, causes general relaxation. [1] Exercise intolerance in chronic obstructive pulmonary disease (COPD) is related to airflow, gas exchange, and systemic limitations [2], with exertional dyspnea being the most common reported symptom [1], [2]. Pursed-lips breathing (PLB) is a ventilatory strategy frequently adopted spontaneously by patients with COPD to relieve dyspnoea. [3] COPD, or chronic obstructive pulmonary disease, is a condition caused by damage to the airways or other parts of the lung. This damage leads to [inflammation](#) and other problems that block airflow and make it hard to breathe. [4]

Introduction:

Lip breathing is a breathing exercise that helps slow breathing and inhale and exhale more air. Slowly inhale through nose and gently exhale through pursed lips. Pursed lip breathing makes it easier to perform physical activities and reduce stress. PLB helps to improves ventilation, releases trapped air in lungs, keeps airways open longer and decreases effort to breathe, prolongs breathing out to slow breathing rate, improves breathing patterns by moving old air out of lungs and allowing new air to enter, relieves shortness of breath, causes general relaxation. [1] Exercise intolerance in chronic obstructive pulmonary disease (COPD) is related to airflow, gas exchange, and systemic limitations [2], with exertional dyspnea being the most common

reported symptom [1], [2]. Pursed-lips breathing (PLB) is a ventilatory strategy frequently adopted spontaneously by patients with COPD to relieve dyspnoea. [3] COPD, or chronic obstructive pulmonary disease, is a condition caused by damage to the airways or other parts of the lung. This damage leads to [inflammation](#) and other problems that block airflow and make it hard to breathe. [4]

Objectives:

1. To assess the breathing pattern among patients with COPD.
1. To evaluate the effectiveness of Pursed Lip Breathing exercise among patients with COPD.



2.To associate the breathing pattern with selected socio demographic variable among patients with COPD.

Methodology:

Pre-experimental design (One group pre-testpost-test) design was adopted for the present study. Convenient sampling technique was used for this study . Data were collected for 30 days from 12\06\2024 to 12\07\2024 at Respiratory OPD medicine of HSK hospital and research centre Bagalkot. The study was conducted among 90 COPD patients selected from Respiratory medicine OPD of HSK hospital and research center, & obtained administrative permissions and enrolled all the patients approaching OPD service. The study was explained to prospective participants; their consent was obtained and enrolled. The same procedure of enrolment of subjects was carried out until the required number of subjects was enrolled.

Inclusion criteria: - This study includes COPD patients who are presented in age group between 15 – 70 yrs and those who are admitted in HSK hospital .

Exclusion criteria :- The patients who are not willing to participate in the study, Patient who are included in

Results: Frequency and percentage distribution of sample according to socio demographic variables in interventional group.

pilot study . patients who are unconscious and who are having serious illnesses.

Sample size estimation: - The sample size for the presence study was estimated using the following formula based on result obtained from previous research study he estimation was done using the result (Mean and stanTdard deviation). The confidence level was 95 %(Alpha =5%), The Z alpha value at 5% level

Statistical analysis: - The data is analysed in terms of objectives of study using descriptive and inferential statistics. In descriptive statistics frequency and distribution was used to analyzed demographic variables, Mean and standard deviation used to assess the effect of PLB on breathing pattern among patients with COPD. In inferential statistics paired t test will be used to assess the effectiveness of PLB in improving breathing pattern among COPD patients. Chi-square test will be used to find out the association of post test score with their selected socio demographic variables.

Ethical clearance :- The present study was accepted from institutional ethical committee of B.V.V.S Sajjalashree Institute of Nursing Sciences Navanagar Bagalkot.

SLN O	DEMOGRAPHIC VARIABLES	PERCENTAGE (INTERVENTIONAL GROUP)
1	Age (in years)	
	1. 15-25 years	8.88%
	2. 26-35 years	11.11%
	3. 36-45 years	21.12%
	4. 46-55 years	24.45%
	5. 56-65 years	24.45%
6.	Others.....	10%
2	Gender	
	1. male	70%
	2. Female	30%
3	Religion	
	1) Hindu	54.4%
	2) Muslim	35.5%
	3) Christian	10%
4)	Others.....	0



4	Educational status 1. Non formal education 27.77% 2. Primary 18.8% 3. Secondary 41.11% 4. Graduation 5.55% 5. Postgraduation 3.33% 6. Others 4.44%	
5	Occupational status 1) Unemployed 11.11% 2) Agriculture 25.5% 3) Private 21.1% 4) Industrial worker 28.8% 5) Government worker 8.8% 6) Others 4.44%	
6	Family income 1. Rs. <5000 12.2% 2. Rs. 5001-6000 13.2% 3. Rs.6001-7000 22.2% 4. Rs.7001-above 52.2%	
7	Marital status 1) Unmarried 11.11% 2) Married 77.7% 3) Separated 5.55% 4) Divorce 1.11% 5) Widow 4.22%	
8	Duration of illness 1. 0-6 months 38.8% 2. 7-12 months 35.5% 3. 13-18 months 14.4% 4. 19-60 months and above 11.1%	
9	History of smoking 1. Do not smoke 47.7% 2. 1 packet per day 25.5% 3. 2-3 packet per day 22.2% 4. 4 packets and above per day 4.4%	
10	Exposure to dust 1. Mines 25.5% 2. Industrial fumes 68.8% 3. Others	



11	Exposure of airborne irritants	
	1. Hair sprays	
	2. Insecticides	2.22%
	3. Automobile fumes	24.42%
	4. Medicine sprays	22.22%
12	5. Others...	5.55%
	45.55%	
	Family history of respiratory problem	
1) Yes	26.6%	
2) No	73.3%	

The majority (24.4%) 46-55 and 56-65 yrs of age majority are males (70%), majority of religion is hindu (54.4%) majority of educational status (41.11%) were completed secondary education , majority of (28.8%) were industrial workers , majority of (52.2%) are having 70001 and above family income , Majority of (77.7%)

were married , majority of (38.8%) were having duration of illness from 0-6months , majority of (47.7%) were no smoking , majority of (68.8%) were others in exposure to dust , majority of (45.55%) were other airborne irritants, majority of (73.3%) were having no family history of respiratory problems.

POST TEST LEVEL SCORES OF BREATHING PATTERN AMONG COPD PATIENTS IN INTERVENTIONAL GROUP

SI NO	GRADES	FREQUENCY	PERCENTAGE
1)	G-I(0-2)	37	41.11%
2)	G-II(3-5)	44	48.88%
3)	G-III(6-10)	9	10%

The majority of subjects 44(48.8%) had G-II sign (indicating moderate breathing difficulty), 37(41.11%) had G-I sign (indicating that mild breathing difficulty), 9(10%) had G-III sign (indicating that sever breathing difficulty).

POST TEST LEVEL SCORES OF BREATHING PATTERN AMONG COPD PATIENTS IN INTERVENTIONAL GROUP WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

GROUP	MEAN	S.D	T CAL	T TABLE
INTERVENTIONAL GROUP	3.34	1.5077	0.093	1.984

Represents the mean and standard deviation of the post-test level of breathing pattern among COPD patients in interventional group. In interventional group the mean score was 3.34 with standard deviation of

1.5077 . The calculated paired t-test value was 0.093 and calculated table value is 1.984 which is greater than the paired t-test value indicating that there is no significant difference in the breathing pattern of COPD



patients before and after intervention. There for H1 is rejected

ASSOCIATION OF POST TEST LEVEL SCORES OF BREATHING PATTERN AMONG COPD

Slno	Demographic variable	DF	CHI SQUARE	TABLE VALUE	P VALUE	ASSOCIATION
1	Age	2	5.13	5.991	0.076	Not significant
2	Gender	1	3.81	3.84	0.05	Not significant
3	Religion	1	1.92	3.84	0.16	Not significant
4	Educational status	1	2.74	3.84	0.09	Not significant
5	Occupational history	1	0.35	3.84	0.55	Not significant
6	Family income	1	2.458	3.84	0.116	Not significant
7	Marital status	1	0.69	3.84	0.841	Not significant
8	Duration of illness	1	8.38	3.84	0.003	significant
9	History of smoking	1	1.64	3.84	0.2003	Not significant
10	Exposure to dust	1	0.287	3.84	0.592	Not significant
11	Exposure to airborne irritants	2	5.13	5.991	0.023	Not significant
12	Family history of respiratory illness	1	1.1	3.84	0.294	Not significant

This table signifies the association of post test level of breathing pattern among patients in intervention group with their selected demographic variables.

Calculated Chi-square value is lesser than table value for some socio demographic variables in interventional group, Gender (X²=2.58, P= 0.05), Age (X²=5.13 , P=0.07) , Religion(X²= 1.92, P=0.165) , Educational status(X²=2.74 , P=0.097) , Occupational history (X²=0.35, P=0.554) , Family income (X²=0.48 , P=0.488) , Marital status(X²=0.04, P=0.841) , History of smoking (X²=1.64, P=0.200) , Exposure to

dust(X²=0.287, P=0.592) and Calculated Chi-square value is more than table value for some socio demographic variables, Duration of illness(X²=8.38, P=0.003), Exposure to airborne irritants(X²=5.13, P=0.023).

The findings propose that there was no significant association found between post test level of breathing pattern and gender, age , religion , educational status , occupational history , family income , marital status , history of smoking ,exposure to dust and there was significant association found between post test level of



breathing pattern and duration of illness and exposure to airborne irritants at $P < 0.05$ level.

Therefore H2 is rejected for some socio demographic variables like gender, age, religion, educational status, occupational history, family income, marital status, history of smoking, exposure to dust, exposure to airborne irritants as there was no significant association found between post test level in improving breathing pattern among COPD patients.

Whereas, H2 is accepted for some socio demographic variables like duration of illness as there was significant association found between post test level in improving breathing pattern among COPD patients.

Discussion:

The similar studies were conducted and revealed that :

A detailed randomized crossover study assessed PLB impact on COPD patients breathing during exercise. Forty stable COPD patients were tested with PLB and controlled breathing. While PLB improved inspiratory capacity and oxygen saturation some, a subgroup labelled as “non-improvers” showed no significant changes in breathing pattern or dynamic hyperinflation. Factors like thoracoabdominal asynchrony and higher expiratory peak flow rates were associated with these outcomes. The study concluded that PLB effectiveness depends on individual respiratory dynamics. [5]

A detailed study analyzed the moderate impact of pursed lip breathing on COPD patients, focusing on dyspnea and functional capacity. In a Cochrane review, PLB improved six-minute walk test result by 50 meters and the dyspnea domain of health-related quality of life. However, improvements in other aspects like exercise capacity or overall quality of life were inconsistent. The study highlights that while PLB helps some patients, its benefits are not universal and depend on individual respiratory dynamics. [6]

Conclusion:

In the present study the PLB was not effective in improving the breathing pattern of COPD patients, but the same intervention can be carried out with larger sample size and two groups.

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