

# SHORT TERM EFFECT OF PURSED LIP BREATHING TECHNIQUE IN STABLE PATIENTS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASES (COPD)

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**Abstract- Introduction-** Pursed lip breathing (PBL) is spontaneously adopted by COPD patients to relieve dyspnea. A systematic review done by S. E. Roberts et al concluded that studies should be done to find the short-term benefits of PBL that helps in clinical improvement in patient's status. So with this background the study was undertaken to find the effect of PLB in stable COPD patients for shorter time on saturation levels, dyspnea and PEFV Readings.

**Methodology-** IEC approval from institute and written informed consent was signed by the subjects. This is an Experimental study and included 56 stable COPD patients were included in the study with inclusive criteria of Diagnosed case of Stable COPD Patients on regular medication and visiting respiratory OPD and IPD of tertiary care center. Exclusive

*criteria was Patients of acute exacerbation, Smokers, Patients on O2 therapy, Patients not willing to participate. Baseline parameters were recorded and then PLB was taught and performed for 6 days then on 6<sup>th</sup> day post intervention reading were taken and parameters were compared to baseline.*

*Results- Short term effect of pursed lip breathing in COPD was analyzed. Mean age of the patients was  $60.83 \pm 7.43$  years. The study population comprised of 37 (66.07%) male patients and 19(33.93%) female patients. Short term effect pursed lip breathing statistically significantly improves saturation, dyspnea and PEFr in stable COPD patients.*

*Conclusion- Short term effect pursed lip breathing improves saturation, dyspnea and PEFr in stable COPD patients.*

*Keywords- stable COPD, PLB, and dyspnea*

## **INTRODUCTION**

Chronic obstructive pulmonary disease (COPD) is one of the commonest chronic respiratory illness that is the major causes of deaths and decreased Quality of life of patients worldwide(1) COPD is mainly divided into chronic bronchitis and emphysema (2)The most disabling symptoms of people with COPD is exertional dyspnea and exercise intolerance (2). Main complaints of COPD patients is breathlessness and it is progressive symptom it also affect the patients quality of life.

Major cause of dyspnea and exercise intolerance in COPD is due to dynamic hyperinflation resulting in limitation of functional activities.(3)Pursed lip breathing (PBL)is spontaneously adopted by COPD patients to relieve dyspnea .(4)

PBL is nasal inspiration and followed by prolong expiration with mouth partly closed. (4)Pursed-lips breathing (PLB) is mainly used as treatment plane in pulmonary rehabilitation programs. PLB creates a positive expiratory pressure that prevents early bronchial collapse and maintain the patency of the airway(3)Improvement in patient conditions in respiratory patients is evaluated periodically monitoring saturation levels, dyspnea grading and Peak flow meter readings.

“The use of pursed lips breathing in stable chronic obstructive pulmonary disease: a systematic review of the evidence” was done by [S. E. Roberts](#) et al and concluded that studies should be done to find the short-term benefits of PBL that helps in clinical improvement in patients status. (5) So the study was undertaken to find the effect of PLB in stable COPD patients for shorter duration on saturation levels, dyspnea and PEFr Readings.

## **Methodology –**

This is an experimental study conducted in tertiary care center from June 2017-May 2018. Ethical committee of the institute gave the Ethical clearance and written informed consent was duly signed by all the patient . 56 participants were included in the study with inclusive criteria of Diagnosed case of Stable COPD Patients on regular medication and visiting respiratory OPD and IPD of tertiary care center . Exclusive criteria was Patients of acute exacerbation, Smokers, Patients on O2 therapy , Patients not willing to participate

Baseline parameters were recorded (Spo2, Dyspnea and PEFr )

**SPO2** was recorded using pulse oximetry

**Dyspnea** was measured with mMRC scale for dyspnea.

**PEFR** was recorded with handheld peak flow meter .

The participants were told to inspire deeply and the to blow in mouthpiece as fastly as possible and this procedure was repeated for three times and the best reading was taken into consideration.

After baseline measurements the participants were taught pursed lip breathing technique.

Procedure for Pursed lip breathing(PLB) - A comfortable position was given . patients were instructed to breathe through nose and inspiration should be slowly and expiration is done through mouth by pursing the lips slowly such that if flame is held in front then the flame should be bended but not blow off. (6)This breathing exercise will be performed 5 times after a rest of 5 min the same breathing exercise is done twice total of 3 sets will be given .after performing PLB for 3 sets .The same procedure of PLB was done for 6 days and then on 6<sup>th</sup> day all the parameters were recorded using the same procedure and same instrument .

## **RESULT –**

56 diagnosed case of COPD patients were studied in the study. Short term effect of pursed lip breathing in COPD was analysed. The age wise distribution of the study subjects is depicted in table no. Mean age of the patients was 60.83± 7.43 yrs. The study population comprised of 37 (66.07%) male patients and 19(33.93%) female patients.

**Table 1- Age wise distribution of the COPD patients**

Age (years)	Number of patients (%)
45-50	7(12.5 %)
51-55	9 (16.07 %)
56-60	12 (21.42 %)
61-65	13(23.21 %)
66-70	11(19.64%)
71-75	3(5.35 %)
76-80	1 (1.78 %)

**Table 2- Gender wise distribution of the COPD patients**

Sr. no	Number	Percentage
<b>Male</b>	37	66.07%
<b>Female</b>	19	33.93%
<b>Total</b>	56	100%

**Table 3 - Comparison of SpO2,Dyspnea and PEFR pre intervention(baseline) and post intervention in COPD patients**

PARAMETRES	Baseline MEAN± SD	Post intervention MEAN± SD	p value
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<b>Spo2</b>	92.32±3.11	96.14±2.88	<0.001 <sup>**</sup>
<b>Dyspnea</b>	3.44±0.67	2.21±0.88	<0.001 <sup>**</sup>
<b>PEFR</b>	118.21±23.23	156.07±25.82	<0.001 <sup>**</sup>

\*Interpretation: pursed lip breathing statically significantly improves saturation, dyspnea and PEFR in stable COPD patients.

\*\*Statistically significant

### DISCUSSION-

The finding of the present study are that in stable patients of Chronic Obstructive Pulmonary Diseases (COPD) Short term effect of Pursed lip breathing resulted in significant improvement in dyspnea, saturation and PEFR.

Gandevia(7) stated that , in patients having Obstructive lung disease relaxed expiration there is increase in the volume of air expired .volume increases around by 20% as compared to a forceful expiration technique. The finding concluded that relaxed type of expiration method increases the volume of air expired and thus decreases the trapping of air that will ultimately help in decrease in air trapping , thus decrease in hyperinflation and thus decreases dyspnea. Researches stated that when PBL technique was compared and analysed with other spontaneous breathing technique .PBL decreases breathlessness, respiratory rate,carbon dioxide levels in arterial blood and increases saturation of oxygen and tidal volume of lung at resting conditions.(8-12)

A study done by Snehal Potdar in 2018 stated that in COPD patients Pursed lip-breathing exercise and breathing control technique were compared and stated that PBL technique resulted in more expiratory flow rate than other breathing control technique(13)

In an another study done by Gosselink. Kolaczowski et al.in 2003 “The effect of a combination of relaxation exercise and manual compression of thorax in different body position” and concluded that the chest expansion and oxygen saturation improved statically that resulted in significant rise in expiratory flow rate in experimental group.[14]

A study conducted by Robert et al in 2017 stated that PBL helps in decreasing RR and Dyspnea, increases saturation levels ,patients confidence ,self- esteem to manage dyspnea and thus overall improvement in respiratory parameters.[15]

A study Nurul Kartika Sari and Suhartono in 2016 concluded that in COPD patients oxygen saturation is increased after the Self efficacy pursed lip breathing technique.[16]

A study done by Jincy Ealias, Binu Babu in 2015 concluded that in COPD patients pursed lip breathing technique is effective in normalizing the physiological parameters such as heart rate, respiratory rate and peak expiratory flow rate [17].

A study done by Shahriar Sakhaei et in 2018 on “The Impact of Pursed-lips Breathing Maneuver on Cardiac, Respiratory, and Oxygenation Parameters in COPD Patients.”

Concluded that PBL is very easy to practice and doesn't require any instrument and is without any side effect and is one of the important technique that improves oxygenation and various physiological parameters and so is very important part of pulmonary rehabilitation programs in chronic respiratory patients and especially COPD.[18]

Few studies have reported positive effects of Yoga on ageing pulmonary functions[19-21].

Thus the above study supported the present study finding. Short term effect of PLB in stable patients of COPD resulted in improvement in saturation level ,dyspnea, PEFr.

## **CONCLUSION-**

The present study concluded that in stable patients of Chronic Obstructive Pulmonary Diseases (COPD) short term effect of PLB resulted in significant improvement in saturation, dyspnea, and peak expiratory flow rate.

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