

Efficacy of Bhramari Pranayama on Dyspnoea among the Patients with Chronic Obstructive Pulmonary Disease

Heera Jayasheela

Professor and Vice Principal, Pravara Institute of Medical Sciences (Deemed to be University),
College of Nursing, Loni (Bk), Maharashtra

Abstract

Background: Pranayama is composed of two Sanskrit terms, “Prana” is breath or vital energy in the body and “yama” means control. Pranayama is the practice of breath control in yoga. WHO has estimated by 2020 COPD is predicted to rank as the third leading cause of death worldwide. Dyspnoea is the common symptoms which has an impact on quality of life in COPD patients. Complementary therapy of pranayama is the non pharmacological management of dyspnoea among the COPD patients. The aim of the study was to explore the impact of Bhramari pranayama on dyspnoea among COPD patients admitted in Pravara Rural Hospital, Loni (Bk).

Method: A quasi experimental study, pre test post test with control group and evaluative approach was accomplished for the present study. The present study was conducted in Pravara Rural Hospital, Loni (Bk). Total 60 (study group: 30 and control group: 30) COPD patients were enrolled patients using convenient sampling technique. The self prepared validated questionnaire and Modified Borg’s Dyspnoea score was used for data collection. Baseline assessment was performed for both groups. During the first week of admission the researcher assessed dyspnoea by Modified Borg’s Dyspnoea scale and implemented intervention of Bhramari Pranayama sessions every four hourly twice in day till discharge. Follow up home visit was conducted by researcher for every 15 days till 12 weeks. After intervention post test assessment was performed after 12 weeks. The control group patients continued their routine care. Inferential statistics ‘t’-test was used to evaluate the effectiveness of Bhramari pranayama on dyspnoea score among the COPD patients. Chi-square test was used to associate the level of dyspnoea score with the demographic variables of COPD patients.

Results: The study findings revealed that in study group, there is statistically significant difference of Modified dyspnoea scores after implementation of Bhramari pranayama training as compared to control group. Chi-square test shows there is statistical association between demographic profile namely; gender and duration of illness ($p < 0.05$) level in study group.

Conclusion: The present study demonstrated that Bhramari pranayama minimized dyspnoea among the COPD patients. Bhramari Pranayama was effective to improve the pulmonary function of COPD patients.

Keywords: Efficacy, Bhramari Pranayama, dyspnoea, chronic obstructive pulmonary disease.

Introduction

Chronic obstructive pulmonary disease is a disease condition characterised by airflow limitation which not reversible, it is preventable and treatable disease.¹ COPD is an incurable illness and associated with a significant symptom burden and poor quality of life. The common symptoms includes breathlessness, fatigue, sleep disturbance, sputum production, cough, wheezing,

Corresponding Author:

Heera Jayasheela

Professor and Vice Principal, Pravara Institute of
Medical Sciences (Deemed to be University),
College of Nursing, Loni (Bk), Maharashtra-413736
e-mail: heera.jayasheela00@gmail.com
Mobile No.: +919423364472

a high psychological burden and impairment in activities of daily living and poor social, economic and physical function.²

According to WHO there were 251 million cases of COPD in the world and it is estimated that COPD causes 3.15 million death per year.³ The prevalence of COPD in Maharashtra including urban and rural area was (8%), (33%) of deaths was attributed to COPD, where COPD is the second leading cause of death.⁴ Studies related to effect of Bhramari Pranayama demonstrated that pranayama increases respiratory stamina, expands lungs, raises energy and calm the body. Yoga is a science that teaches method of joining individual soul and supreme soul. The breath being of pranayama, the system is based on three stages: inhalation (pooraka), retention (kumbhaka) and exhalation (rechaka). Bhramari pranayama (humming bee breath) is yogic practice in which includes unique breathing technique with constant humming sound of female bees during the expiration placing the body in relaxation phase. Studies done had noticed regular practice of Bhramari pranayama improves the respiratory status of chronic obstructive pulmonary disease patients.⁵ The present study was conducted to explore the effect of Bhramari Pranayama on dyspnoea among the patients with chronic obstructive pulmonary disease.

Statement of Problem: Efficacy of Bhramari Pranayama on dyspnoea among the patients with chronic obstructive pulmonary disease.

Objectives:

1. Assess the existing level of dyspnoea of COPD patients in study and control group.
2. Evaluate the impact of Bhramari Pranayama on dyspnoea of COPD patients on study group.
3. Associate the level of dyspnoea scores with selected socio-demographic variables of the study group.

Materials and Method

Research Design: Quasiexperimental study with control group design with evaluative approach.

Variables: Independent variable: Bhramari Pranayama

Dependent variable: Dyspnoea scores

Setting: Pravara Rural Hospital, Loni (Bk), Maharashtra

Sample: Chronic Obstructive Pulmonary Disease patients.

Sample Size: 60 (Study group: 30 and control group: 30).

Sampling technique: Non probability convenient sampling technique.

Inclusion Criteria:

1. COPD patients who are admitted at Pravara Rural Hospital, Loni (Bk)
2. Age above 35 years
3. Willing to participate and provides written informed consent.

Exclusion Criteria: Critically ill patients

Tools:

1. Socio- Demographic profile of COPD patients
2. Clinical Characteristics of COPD patients
3. Modified Borg's Dyspnoea scale

Data Collection Procedure: The study proposal approval was obtained from Ethical Committee of PIMS-DU (Ref No : PMT/PIMS/RC/2017/240). Prior permission was obtained from Medical Superintendent, Head of Department of Medicine and Chest Physician and of Pravara Rural Hospital, Loni (Bk), Maharashtra. The researcher had undergone the training of Bhramari Pranayama from Dr Rajendra Waman, Yoga Professor from Sangamner College. The purpose of study was explained to the patients, and written informed consent was taken from COPD patients to undergo Bhramari Pranayama training in the study group. Semi structured interview was to collect the data. In study group every four hourly Bhramari pranayama training session were by the conducted by the investigator till discharge. Exercise diary was provided by the researcher to record the exercise performed after discharge. Study group COPD patients practiced Bhramari Pranayama for 25 minutes thrice in a day for a period of 12 weeks. Follow up visit was conducted by the researcher every 15 days till 12 weeks. The control group received the routine care.

Results

Table No. 1: Distribution of Socio Demographic variables of COPD patients

Variables	Study group (n=30)		Control group (n=30)	
	Frequency	Percentage	Frequency	Percentage
Age (Years)				
35-44 year	5	17	2	7
45-54 year	3	10	4	13
55-64 year	2	7	11	37
Above 65 year	20	66	13	43
Gender				
Male	27	90	19	63
Female	3	10	11	37
Educational status				
Illiterate	19	63	14	47
Primary	8	27	6	20
Higher Secondary	2	7	8	27
Graduate and above	1	3	2	6
Occupation				
Agriculture	18	60	11	37
Laborer	6	20	7	23
Factory worker	2	7	3	10
House maker	4	13	09	30
Monthly Income				
Lower Class < 938	16	53	11	37
Lower Middle Class 938-1875	5	17	9	30
Middle Class 1876-3186	6	20	3	10
Upper Middle Class 3127- 6253	2	7	5	16
Upper Class ≥6254	1	3	2	7
Place of residence				
Rural	29	97	26	87
Urban	1	3	4	13

Table No. 1 revealed highest percent (66%) and (43%) in study and control group were in age group above 65 years. Majority (90%) and (63%) were males in study and control group. Highest percent (63%) in study group and (47%) in control group were illiterate. Most

of the subjects (60%) and (37%) in study and control group were farmers. Regarding income most (53%) in study group and (37%) in control group had income below < 938/- month. Both the groups (97%) and (87%) COPD patients resided in rural area.

Table No. 2: Distribution of clinical characteristics of COPD patients

Characteristics	Study group (n=30)		Control group (n=30)	
	Frequency	Percentage	Frequency	Percentage
History of exposure to smoke				
Active smoking	23	77	19	63
Passive smoking	1	3	3	10
Biomass fuel	6	20	8	27
If active smoker, cigarette/bid is packet				
Less than 1 packet/day	26	87	17	57
More than 1 packet/day	4	13	13	43
History of Allergy				
Yes	19	63	18	60
No	11	37	12	40
If Yes Allergens				
Pollens	14	47	17	57
Dust	4	13	5	17
Pesticide spray	12	40	8	26
Duration of illness				
Less than 5 years	11	37	8	27
More than 5 years	19	63	22	73

Table No. 2 depicts more than half (77%) and (63%) were active smokers in study and control group. In study and control groups (20%) and (27%), females had exposure to biomass fuel. Highest percent (87%) and (57%) in study and control group smoke less than one packet per day. In study group (63%) and (60%) in

control group had history of allergy. Maximum (47%) and (57%) in study and control group had allergy due to pollens. Most of the subjects (63%) in study group and (73%) in control group had duration of illness above 5 years.

Table No. 3: Distribution of level of dyspnoea in study and control group COPD patients

Modified Dyspnoea Score	Study group (n=30)				Control group (n=30)			
	Pre Test		Post Test		Pre Test		Post Test	
	f	%	f	%	f	%	f	%
No breathlessness at all	--	--	--	--	--	--	--	--
Very very slight	--	---	--	--	--	--	--	--
Very slight	--	---	11	37	--	---	--	--
Slight	--	---	9	30	--	---	--	--
Moderate	10	33	4	20	11	37	--	--
Somewhat severe	6	20	6	13	3	10	6	20
Severe Breathlessness	9	30	--	--	7	23	15	50
Very severe	5	17	---	---	9	30	4	13
Very very severe	---	--	---	--	---	--	5	17
Maximum	--	--	--	--	--	--	--	--
Almost Maximum	--	---	--	---	--	---	--	---
Total	30	100	30	100	30	100	30	100

Table No. 3 shows in study group over all pre test Modified Borg's dyspnoea score was (33%) and (37%) in control group, indicates moderate dyspnoea among the COPD patients. In study group over all post test level

of Modified dyspnoea score of COPD patients revealed that after implementation of Bhramari pranayama majority (37%) had very slight dyspnoea whereas in control group (50%) had severe breathlessness.

Table No. 4 Assessment of pre test level of dyspnoea score among the COPD patients

Group	Pre test Modified Borg Dyspnoea Score	
	Baseline (After 3 Days of hospitalization)	After 12 weeks
	Mean	SD
Study group (n=30)	8.47	1.81
Control group (n=30)	7.01	1.41

Table No. 4 depicts the mean pre test score of Modified dyspnoea score was 8.47 with the standard deviation 1.81 whereas the mean pre test score in control

group was 7.01 with standard deviation 1.41. Both the group had symptoms of moderate dyspnoea.

Table 5: Comparison of pre test, post test Modified Borg's Dyspnoea score of COPD patients

Group	Modified Borg Dyspnoea Score				't' test	Level of significance at 0.05 level
	Pre test		Post test			
	Baseline	After 12 weeks	Baseline	After 12 weeks		
	Mean	SD	Mean	SD		
Study group (n=30)	8.47	1.81	2.40	1.61	2.63	Significant
Control group (n=30)	7.01	1.41	5.4	1.40	2.04	Not Significant

Table No. 5 shows in study group the calculated 't' value in the study group was 2.63 shows significant difference of Modified dyspnoea score

after implementation of Bhramari pranayama training sessions at (p<0.05) level as compared to control group was 2.04 which was not significant.

Table No. 6: Association between the post test dyspnoea score and demographic variables of COPD patients

SN.	Variables	X ² value	Level of significance
1	Age	0.21	Not significant
2	Gender	3.90*	Significant
3	Occupation	0.51	Not significant
4	History of active smoking	2.73	Not significant
5	Duration of illness	3.88*	Significant

(df=1, Table value=3.84, *p<0.05)

The above Table No. 6 represents in study group, Chi-square test shows there is statistical association between demographic profile namely;gender and duration of illness at (p<0.05) level.

Discussion

The result findings are supported by Katiyar SK who also observed that the pranayama improves the lung status and there is statistically significant improvement of dyspnoea at (p<0.05 level) after the

practice of pranayama.⁶ This finding is consistent with studies conducted by Saxena T on effect of pranayama on dyspnoea among COPD patients.⁷ A study on effect of yoga on COPD patients showed that lung parameters improved after the practice of yoga and useful adjunct form of therapy for COPD. This finding is consistent with the studies conducted by Judith AP on breathing exercises for COPD patients.⁸

Conclusion

The present study demonstrated that in study group COPD patients who practiced Bhramari Pranayama for (12 weeks) had reduced dyspnoea. The study findings concluded that Bhramari pranayama was effective to minimize dyspnoea among the patients with chronic obstructive lung disease.

Ethical Clearance : Taken from Ethical Committee of PIMS-DU, Loni (Bk)

Source of Funding: Self

Conflict of Interest: Nil

Reference

1. WHO (2017) Burden of Chronic obstructive pulmonary disease (COPD). WHO, Geneva, Switzerland Available from: <http://www.who.int/respiratory/copd/burden/en/> [Accessed on 15th June 2018].
2. India; Health of the Nations States-The Indian State Level Disease Burden Initiative Maharashtra: Disease Burden Profile :1990 to 2016. Available from <https://www.healthdata.org> [Accessed on 5th December 2019]
3. Global, regional and national incidence, prevalence and years lived with disability for 310 diseases and injuries, 1990-2015; a systematic analysis for the Global Burden of Disease Study 2015.
4. India; Health of the Nations States-The Indian State Level Disease Burden Initiative Maharashtra: Disease Burden Profile :1990 to 2016. Available from <https://www.healthdata.org> [Accessed on 5th December 2019]
5. Soni R, Munish K, Singh K, Singh S. Study of the effect of yoga training on diffusion capacity of chronic obstructive pulmonary disease patients: a controlled trial. *Int J Yoga* 2012;5:123-7
6. Katiyar SK, Bihari S. Role of pranayama in rehabilitation of COPD patients—a randomized controlled study. *Indian J Allergy Asthma Immunol* 2016;20:98-104
7. Saxena T . The effect of various pranayama in patients with COPD of mild to moderate severity; 2015; 17(4):p.365-77.
8. Judith AP. Effect of breathing exercise on pulmonary functions. *Int Respiratory Journal* 2015;7(6):363.367.