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EFFECT OF RESPIRATORY EXERCISES ON CLINICAL MANIFESTATIONS OF PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Sheeba Wiselin C* and Maneesha GL

Sivagiri Sree Narayana Medical Mission College of Nursing, Varkala, Kerala 695145, India.

ABSTRACT

Chronic obstructive pulmonary disease is known for causing extensive morbidity. COPD patients of all degrees of severity appear to benefit from respiratory exercises. The present study is intended to "assess the effect of respiratory exercises on clinical manifestations of patients with COPD in selected old age homes at Thiruvananthapuram". The objectives of the study were to identify the clinical manifestations in patients with COPD before and after giving respiratory exercises, to assess the effect of respiratory exercises on clinical manifestations of patients with COPD and find out the association between clinical manifestations of patients with COPD and selected socio demographic variables. The study was based on Betty Neuman's system model. Quantitative experimental approach was used for this study. Convenience sampling was used to select 40 samples. Patients with COPD in experimental group were selected from Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura and control group from Care home pulayanarkotta, Saigram, Thonnakkal. The tool used for this study consist of questionnaire to collect baseline information, cough questionnaire and rating scale to assess the symptoms of COPD and observation check list to assess the signs of COPD. Respiratory exercises (pursed lip breathing, diaphragmatic exercises and jump lung exercises) were given to experimental group for 5 weeks. Data analysis revealed that there was a significant difference between the mean clinical manifestations of COPD in experimental and control group. There was significant association between severity of cough and gender of patients with COPD. Respiratory exercises are effective in reducing clinical manifestations of patients with COPD.

Key words: Effect, Respiratory exercises, Clinical manifestations, Patients with COPD).

Corresponding Author	Article Info
Sheeba Wiselin. C Email:- sheebawiselin@gmail.com	*Received 12/06/2018; Revised 20/06/2018* *Accepted 04/07/2018*

INTRODUCTION

Life is in breath. He who half breathes half lives. Obstructive airway disorder has been known since ancient times. COPD is not a disease entity but a complex of conditions that contribute to airflow limitation. COPD refers to a number of disorders that affect movement of air in and out of lungs [1].

Chronic obstructive pulmonary disease, also known as chronic obstructive lung disease, chronic obstructive airway disease, chronic airflow limitation and chronic obstructive respiratory disease, are the co-occurrence of chronic bronchitis and emphysema, a pair of commonly co-existing diseases of the lungs in which the airways become narrowed. This leads to a limitation of the flow of air to and from the lungs, causing shortness of breath. In clinical practice, chronic obstructive pulmonary disease is defined by its characteristically low airflow on lung function test [1].

Chronic Obstructive Pulmonary Disease (COPD) is a chronic, progressive disorder characterized by reduced airflow on expiration due to airway obstruction that is not fully reversible and usually worsens over time (GOLD - Global Initiative for Chronic Obstructive Lung Disease, 2009). COPD is not a single condition, but is an 'umbrella' term covering a number of different types of the disorder, including the more familiar terms of chronic

bronchitis and emphysema which are now described as COPD [2].

COPD patients of all degrees of severity appear to benefit from respiratory exercises. Respiratory exercises strengthen the inspiratory and expiratory muscles and relieve breathlessness [3]. COPD is the most common chronic lung disease. It is a major cause of chronic morbidity, mortality and health care used throughout the world. It will result in an economic and social burden that is both substantial and increasing in our country.

According to National Heart, Blood, Lung Institute, currently chronic obstructive pulmonary disease and associated conditions are third leading cause of death in the world. According to WHO, 4-10% of adult population in India is now recognized to have COPD[7].It was revealed in Global Burden OF Disease that COPD held the second position among the killer diseases in India, according to a study held by Institute for Health matrix and Evaluation at the university of Washington about the causes of death and disability in 187 countries [4-8].

Chronic Obstructive Pulmonary Disease (COPD) represents an increasing burden worldwide. COPD can no longer be considered a disease which not only involves the lungs but its systemic consequences make it an important risk factor for other chronic co- morbidities. Most people don't seek medical attention until they are short of breath and unable to do normal activities. In general, lung function declines slowly but steadily until there's a sudden worsening of symptoms. The person with COPD is greatly under estimated because the disease is usually not diagnosed until it is moderately advanced. More than one half of the COPD patients die within 10 years of diagnosis [9-15].

The first symptoms of COPD are frequent coughing and more mucus or phlegm coughed up from the lungs. In general, lung function declines slowly but steadily, until there's a sudden worsening of symptoms. Symptoms of breathlessness and fatigue occur as the illness worsens. Even simplest tasks of personal care become almost overwhelming obstacle which require help from others, and daily routines such as shopping, cooking and cleaning are nearly impossible that speed up the lung damage.

Chronic obstructive pulmonary disease is a debilitating and degenerative lung disease. The air tubes in sufferers narrow, airflow becomes limited and lung function is reduced, leading to disability and premature death. While not curable, chronic obstructive pulmonary diseases is treatable, especially if diagnosed early and preventive treatments are prescribed.

In the present study if the flexible line defense is strong, it will prevent the intrapersonal, interpersonal, extra personal factors and keep the COPD patients free from stressor reaction or symptoms of COPD. Normal line of defense protects the COPD patients from against stressors reflects a state of comfort or symptom free that has developed over time [16-19].

Line of resistance is the inner most broken ring which protect the basic structure and it attempt to decrease the impact or disability of stressor on system's functioning. In this study stressor has not penetrated this line of resistance of COPD patients.

Neumann identifies three levels of prevention as presented in the framework which can be initiated as nursing intervention to bring stability.

- Primary prevention
- Secondary prevention
- Tertiary prevention

Primary prevention is associated intervention initiated before the stressors occur. In this frame work practicing respiratory exercises to strengthen the respiratory muscle and system and avoiding or controlling stressors are primary preventive measures which will strengthen flexible line of defense.

Secondary prevention is associated with the intervention after stressor has been encountered. In the present study COPD patients with signs and symptom are selected.

Respiratory exercises were given to group-1 and same number of group – II was selected for comparison to measure the symptom. Pursed lip breathing, diaphragmatic exercises, jump lung exercises are practiced by the patient 2 times a day.

Tertiary prevention is associated with intervention after the system has been treated through secondary prevention strategies. It includes rehabilitation and re- education. Here the subjects are already suffering from signs and symptoms. Measures should be taken to prevent worsening of signs and symptoms by providing respiratory exercises.

Methodology

This chapter discusses the methodology adopted for the study. The methodology includes research approach, research design, variables ,setting of the study, population , sample and sampling technique, criteria for selection of sample, data collection instrument, content validity, reliability, pilot study, data collection procedure and data analysis.

Schematic representation of study:
Setting of the study

The present study was conducted in Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura, Care home pulayanarkotta, Saigram Thonnakkal. In this Day care center with old age home for women consist of 168 inmates, Asha bhavan for men consist of 220 inmates, Care home pulayanarkotta consist of 260 inmates and Saigram consist of 115 inmates. Samples in experimental group were taken from Asha Bhavan for men and Day care center with old age home for women. Patients with COPD who are residing at Day care centre with old age home were 9 and 14 in Asha

bhavan. Samples in control group were taken from care home Pulayanarkotta and Saigram Thonnakkal. The COPD patients residing in Care home Pulayanarkotta was 15 and 9 in Saigram Thonnakkal.

Population

In the present study population comprised of patients with COPD residing in old age home at Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura, Care home pulayanarkotta and Saigram Thonnakkal.

Sample and Sampling technique

The study sample was 40 patients with chronic obstructive pulmonary disease (20 in experimental group) from Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura and 20 in control group from Care home pulayanarkotta,Saigram Thonnakkal).

In the present study convenience sampling technique was adopted for selecting the 40 samples (from 49 patients with chronic obstructive pulmonary disease) based on inclusion and exclusion criteria.

Inclusion criteria:

1. Patients with chronic obstructive pulmonary disease between the age group of 50-70 years
2. Patients who have been diagnosed to have chronic obstructive pulmonary disease for the minimum of 1 year
3. Patients with chronic obstructive pulmonary disease who are not taking medication continuously.

Exclusion criteria:

1. Patients with chronic obstructive pulmonary disease who are regularly practicing respiratory exercises.
2. Patients with chronic obstructive pulmonary disease who were critically ill
3. Patients with chronic obstructive pulmonary disease who cannot do the respiratory exercises

Tool / instruments:

The technique is means of gathering data with the use of specific tool.
The data collection instrument used in present study were
Tool 1:Questionnaire to collect baseline information
    Section A: demographic profile
    Section B: clinical data
Tool 2: To assess the clinical manifestations of chronic obstructive pulmonary disease
Part 1: To assess the symptoms of chronic obstructive pulmonary disease.
Section A –cough questionnaire Section B -rating scale to assess dyspnoea
Part 2: Observation check list to assess the signs of chronic obstructive pulmonary disease.
    Measuring tape, stethoscope, wrist watch, peak flow meter.

Development of tool:

The initial draft was prepared by the investigator after the extensive review of literature and discussion with nursing expert. Changes were made in the tool as per opinions and suggestions received from physician, pulmonologist, expert personals from medical surgical nursing, respiratory therapist and biostatistician.

Description of tool

Demographic profile:
The investigator constructed this to collect back ground data of study subjects. It consists of 5 items age, gender, previous occupation, personal habits, and family history of any disease.
Clinical data:
It consist of 3 items which are duration of chronic obstructive pulmonary disease after diagnosis, measure taken to relieve symptom, frequency of occurrence of shortness of breath in the last two week.
Tool 2: To assess the clinical manifestations of COPD
Part 1: To assess the symptoms of COPD.
Section A – Cough questionnaire
Cough questionnaire was developed to assess the severity of cough in COPD. It consisted of 10 questions. It was provided to record the response and columns were provided to mark the response before and after intervention. All the questions are scored positively.
The rating of question
Yes: 1, No=0
The scoring scale
1-4 = mild
5-7 = moderate
8-10=severe
Section B: Rating scale:
The rating scale was developed to assess the severity of dyspnoea. A five grade scale was provided to record the response before and after the intervention.
Score**:**

Ratings	Grade
1	I
2,3	II
4,5	III

Grade I - mild
Grade II - moderate
Grade III- severe
TOOL 2
Part 2

Observation check list to assess the signs of chronic obstructive pulmonary disease.

The observation checklist was used to assess severity of the signs of chronic obstructive pulmonary disease. It consisted of 10 questions. The investigator observed the signs of chronic obstructive pulmonary disease on the 1st week (1st day) and 5thweek (37th day)

with the help of peak flow meter, measuring tape and stethoscope. The investigator place tick mark on appropriate column according to the score.

The scores includes 0,1,2,3

Scoring scale**:**

0= normal

1-10 =mild

11-20= moderate

21-30=severe

Content validity

In order to establish content validity the tool along with plan of exercises, objectives, hypothesis, methodology, plan for data collection were submitted to one physician, one pulmonologist, ten nursing expert and one respiratory therapist. The suggestions from experts were incorporated into tool and tool was modified accordingly.

The modified questions are

Tool 2

Section A

Question number 9 'your cough made you frustrated' restated as 'Have your cough made you frustrated'?

The reliability of tool:

The reliability of rating scale, questionnaire were established by cronbachs alpha. Reliability 'r' value was 0.821. The reliability of observation check list was established by inter rater method[52]. Inter rater Correlation coefficient value was .940.This indicates high correlation, tool was considered as reliable.

Pilot study:

After obtaining permission from the manager of Karthika Thirunal Rani Lekshmi Bayi Geriatric Centre, Poojappura and Saint Ignatius Charity Kendram Vattappara, investigator conducted pilot study from 30-01-2014 to 6-02-2014.on 6 samples. Investigator has given a brief introduction regarding self and study to samples. An informed consent has obtained from each sample. The objective of the study was explained to each sample and confidentiality was assured. Patients come under inclusion criteria were assessed for clinical manifestations of COPD. Respiratory exercises were administered to 3 samples from experimental group for 5 days and no intervention was given to 3 samples from control group. On the 6th day post test was done to know the effect of respiratory exercises for both groups. Data was analyzed using experimental and inferential statistics. The results of the study were found to be feasible.

Data collection process

Data collection is the identification of subjects and pre use systematic gathering of information relevant to research purpose or specific objectives, question or hypotheses of the study.

A prior permission was obtained from the Director of old age home for conducting the study. The study was conducted in Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura, Care home pulayanarcotta, Saigram Thonnakkal from 20-02-2014 to 28-03-2014. On 20.02.2014 the investigator started study in Care home Chackai, Saigram Thonnakkal (control group) has introduced herself to study participants. From 24 patients with COPD, 20 patients were selected by convenience sampling technique. The investigator has assured confidentiality and obtained informed consent from each subject. Pre test was done using cough questionnaire, rating scale and observation check list and no intervention was given. On the 37th day post test was done using cough questionnaire, rating scale, and observation checklist.

On 20-02-2014, the investigator started study in Day care centre with old age home for women Poojapura, Asha bhavan for men Poojapura (experimental group) has introduced herself to subjects. From 25 patients with COPD 20 patients were selected by convenience sampling technique and objectives of the study were briefly explained to the study participants. The investigator has assured confidentiality and obtained informed consent from each subject. Pre test was done using cough questionnaire, rating scale and observation check list .The study participants were divided into two groups (12, 8). Participants practiced respiratory exercises for 15 minutes for 5 week in morning in the presence of investigator. The participants were cooperative and showed interest towards the exercise. On 37th day, post test was done using cough questionnaire, rating scale, and observation checklist to know the effect of respiratory exercises on clinical manifestations of COPD in experimental group.

The data collection process was concluded by the investigator expressing her gratitude to the subjects for their cooperation. The data was collected and compiled for data analysis.

Plan for Data analysis:

The data collected from the subjects were transferred into master sheet and analyzed using Statistical Package for Social Sciences (SPSS) 16 version. The clinical manifestation in patients with chronic obstructive pulmonary disease before giving respiratory exercises was analyzed using descriptive statistics. Effect of respiratory exercise was analyzed using paired t test and independent t test. Association between clinical manifestations of COPD and selected demographic variables was assessed using chi square test. The data are represented in the form of tables.

RESULT

The results of the present study were discussed under following headings.

Section I: Description of COPD patients according to selected socio demographic variables

Section II: Description of COPD patients according to clinical data

Section III: Identification of clinical manifestations of COPD patients before and after respiratory exercises

Section IV: Effect of respiratory exercises on clinical manifestations of patients with COPD in experimental and control group.

Section V: Association between clinical manifestations and selected socio demographic variables

Section I: Description of COPD patients according to socio demographic profile.

Result of the study shows majority (80%) of COPD patients were between the age group of 50 years and 64 years

Regarding the sex, majority of samples (65%) were male and only 35% were females

Based on their previous occupation, 37.5% of the COPD patients were coolies.

Among the sample half of the COPD patients were smokers.

According to family history, study shows that 45% of the experimental group and control group have the family history of respiratory diseases.

Section II: Description of COPD patients according to clinical data.

1. Distribution according to duration of COPD after diagnosis shows that 82.5% of patients have COPD more than 3 years

2. According to occurrence of dyspnoea in last two week the result shows that majority (72.5%) of the COPD patients have dyspnoea for one time.

3. According to measures taken to reduce the symptoms of COPD the result shows that half of the COPD patients are taking medication when symptoms arise.

Section III: Identification of clinical manifestations of COPD patients before and after respiratory exercises.

In pre test severity of cough, the study shows that 72.5 % of patients had severe cough. Post test value shows that among the samples none in the experimental group had severe cough against 85 % in the control group.

In pre test severity of dyspnoea, the study shows that 20% in experimental group had severe dyspnoea and in control group 10% had severe dyspnoea. Post test value shows that among the samples none in the experimental group had severe dyspnoea against 55 % in the control group.

In pre test COPD signs score, study shows that 35% in experimental group had severe COPD signs and in control group 25% were having severe COPD signs. Post test value shows that among the samples none in the experimental group had severe COPD signs against 85 % in the control group.

Section IV: Effect of respiratory exercises on clinical manifestations of patients with COPD in experimental and control group.

It is found that in experimental group pre test mean value of severity of cough assessment score is 7.5 and in post test it become 4.85. Computed paired t value is 13.57. It is significant at .001 level. In experimental group pre test mean value of the severity of dyspnoea score is 2.75 and in post test it become 1.45. Computed paired t value is 10.72. It is significant at 0.001 levels. In experimental group pre test mean value of severity of COPD sign score is 19.4 and in post test it become 9.23. Computed paired t value is 22.925. It is significant at 0.001 level. Hence H_1 is accepted that is there is significant difference in mean score of clinical manifestations among experimental group before and after the respiratory exercises.

The mean severity of cough assessment scores in experimental group after the respiratory exercises was 4.85 and in control group the it was 1.2. The computed independent 't' value was 14.325, which is significant at 0.001 level.

The mean value of severity of dyspnoea score in experimental group after the respiratory exercises was 1.45 and in control group it was 0.75. The computed independent t value was 12.03, which is significant at 0.001 levels. This shows that respiratory exercises are effective in reducing symptoms of COPD.

The mean value of severity of COPD sign score in experimental group after the respiratory exercises was 9.2 and in control group it was 2.8. The computed independent t value was 19.804 which is significant at 0.001 level. This shows that respiratory exercises are effective in reducing signs of COPD. Hence H_2 is accepted that is there is significant difference in mean post test score of clinical manifestations among experimental and control group.

Section V: Association between clinical manifestations and selected socio demographic variables

Chi- square test was done to find out the association between clinical manifestations of patients with chronic obstructive pulmonary disease and selected socio demographic variables. There was significant association between severity of cough and gender of patients with chronic obstructive pulmonary disease ($\chi2=4.062$, $p< 0.05$). There is no association between clinical manifestations of COPD and other selected demographic variables.

Table 1. Distribution of COPD patients according to age

(n=40)

Age (in years)	Experimental group		Control group		Total	
	f	%	f	%	f	%
50-54	3	7.5	1	2.5	4	10
55-59	7	17.5	4	10	11	27.5
60-64	8	20	9	22.5	17	42.5
65-70	2	5	6	15	8	20

Table 2. Distribution of COPD patients according to sex

(n=40)

Sex	Experimental group		Control group		Total	
	f	%	f	%	f	%
Male	12	30	14	35	26	65
Female	8	20	6	15	14	35

Table 3. Distribution of COPD patients according to previous occupation

(n=40)

Previous occupation	Experimental group		Control group		Total	
	f	%	f	%	f	%
Industrial worker	5	12.5	4	10	9	22.5
Coolie	8	20	7	17.5	15	37.5
Farmer	2	5	1	2.5	3	7.5
Govt employee	1	2.5	3	7.5	4	10
Others	1	2.5	3	7.5	4	10
Nil	3	7.5	2	5	5	12.5

Table 4. Distribution of COPD patients according to duration of COPD after diagnosis

(n=40)

Duration of COPD (in years)	Experimental group		Control group		Total	
	f	%	f	%	f	%
1-2	4	10	3	7.5	7	17.5
3-4	9	22.5	10	25	19	47.5
5-6	6	15	5	12.5	11	27.5
>6	1	2.5	2	5	3	7.5

Table 5. Distribution of COPD patients according to pre test severity of cough

(n= 40)

Pre test severity of cough	Experimental group		Control group	
	f	%	F	%
Moderate	6	30	5	25
Severe	14	70	15	75

Table 6. Distribution of COPD patients according to pre test severity of dyspnoea

(n=40)

Pre test severity of dyspnoea	Experimental group		Control group	
	f	%	F	%
Mild	0	0	2	10
Moderate	16	80	16	80
Severe	4	20	2	10

Table 7. Distribution of COPD patients according to post test severity of dyspnoea

(n=40)

Post test severity of dyspnoea	Experimental group		Control group	
	F	%	F	%
Mild	14	70	0	0
Moderate	6	30	9	45
Severe	0	0	11	55

Table 8. Distribution of patients according to pre test severity of COPD signs

(n=40)

Pre test severity of COPD signs	Experimental group		Control group	
	F	%	F	%
Moderate	13	65	15	75
Severe	7	35	5	25

Table 9. Distribution of patients according to post test severity of COPD signs.

(n=40)

Post test sign	Experimental group		Control group	
	F	%	F	%
Mild	16	80	0	0
Moderate	4	20	3	15
Severe	0	0	17	85

Table 10. Mean, Standard deviation and t test value of severity of cough assessment score in the experimental and control group.

(n=40)

Severity of cough	Mean	SD	t
Experimental	4.85	1.60	14.32***
Control group	1.21	1.00	

*** Significant at .001 level.

Table 11. Mean, Standard deviation, t test value of severity of dyspnoea of COPD patients before and after respiratory exercises

(n=40)

Group	Mean	SD	t
Experimental			
Pre test	2.75	.786	
Post test	1.32	.470	10.72***
Control			
Pre test	2.61	.820	
Post test	3.35	.82	-6.95

*** Significant at .001 level

Table 12. Mean, Standard deviation, t test value of severity of COPD signs of patients before and after respiratory exercises

Group	Mean	SD		t
Experimental				
Pre test	19.41	2.41		
Post test	10.27	2.04		22.925***
Control				
Pre test	18.20	2.66		
Post test	21.00	2,247		-6.212

*** Significant at .001 level

DISCUSSION, SUMMARY AND CONCLUSION

This chapter gives a brief account of the major findings of the present study and discussions in relation to similar studies conducted by other researchers. It further includes summary, conclusion, nursing implication, limitations and recommendations for the study.

The present study focused on the effect of respiratory exercises on clinical manifestations of patients with chronic obstructive pulmonary disease in selected old age homes at Thiruvananthapuram. The findings of the present study show that majority (80%) of COPD patients were between the age group of 50 years and 64 years. Regarding the sex majority of samples (65%) were males. According to previous occupation that 37.5% of the COPD patients were coolies. Among the samples, half of the COPD patients were smokers. Among the two groups 75% had the family history of respiratory diseases. Among the samples 82.5 % of patients had COPD more than 3 years. Occurrence of dyspnoea in last two weeks, the study shows that majority (72.5%) of the COPD patients had dyspnoea for one time. According to measures taken to reduce the symptoms of COPD the study shows that half of the COPD patients are taking medication when symptoms arise.

The first objective of the study was to identify the clinical manifestations in patients with chronic obstructive pulmonary disease before and after giving respiratory exercises. Results revealed that in experimental group 30% had moderate cough and 70% had severe cough and in the control group 25% had moderate cough and 75% had severe cough. After the intervention, 90% in the experimental group had mild cough ,10% had moderate cough and none of them had severe cough.In control group 15% had moderate cough, 85% had severe cough and none of them had mild cough. In the case of severity of dyspnoea, 80% in experimental group had moderate dyspnoea, 20% had severe dyspnoea and none of them had mild dyspnoea. In control group 10% had mild dyspnoea, 80% had moderate dyspnoea and 10% had severe dyspnoea. After the intervention, 70% in the experimental group had mild dyspnoea, 30% had moderate dyspnoea and none of them had severe dyspnoea. In control group 45% had moderate dyspnoea, in 55% had severe dyspnoea and none of them had mild dyspnoea. In the case of severity of COPD signs, 65% in experimental group had moderate COPD signs, 35% had severe COPD signs and none of them had mild COPD signs. In control group 75% have moderate COPD signs, 25% had severe COPD signs and none of them had mild COPD signs. After the intervention 80% in the experimental group had mild COPD signs, 20% had moderate COPD signs and none of them had severe COPD signs. In control group 15% had moderate COPD signs, in experimental group 85% had severe COPD signs and none of them had mild COPD signs.

The second objective was to assess the effect of respiratory exercises on clinical manifestations of patients with chronic obstructive pulmonary disease and the results revealed that the mean severity of cough assessment scores in experimental group (4.85) was higher than that of the control group (1.2). The computed independent 't' value of the experimental and control group was 14.325, $p < 0.001$.

The mean value of severity of dyspnoea score in experimental group (1.45) was higher than that of control group (0.75). The computed t value for experimental and control group was 12.03 $p < 0.001$. Respiratory exercises are effective in reducing symptoms of COPD. The mean value of severity of COPD sign score in experimental group (9.2) was higher than that of control group (2.8). The computed t value for experimental and control group was 19.804, $p < 0.001$. Respiratory exercises were effective in reducing clinical manifestations of patients with chronic obstructive pulmonary disease.

The third objective is to find out the association between clinical manifestations of patients with chronic obstructive pulmonary disease and selected socio demographic variables. In the present study, it was found that there was significant association between severity of cough and gender of patients with chronic obstructive pulmonary disease ($\chi2=4.062$, $p< 0.05$).

The findings of the present study were compared with the findings of other studies which the investigator reviewed.

Lin WC, Yuan SC, Chien JY, Weng SC, Chou MC (2012), HW.College of Nursing, Taiwan conducted a study to assess the effects of respiratory training on lung function, and symptoms in patients with chronic obstructive pulmonary disease. Patients were randomly assigned to intervention and control groups. Respiratory training includes the pursed lip breathing and diaphragmatic breathing. This was performed for 10 minutes for twice daily for 8 weeks. Saint Goerge respiratory questionnaire and was used to assess symptoms, including frequency of cough, the volume of sputum, and conditions of wheezing attack. Result shows that there was a significant reduction symptoms ($p=6.18$;$p<.001$). A respiratory training program for patients with chronic obstructive pulmonary disease was found to relieve dyspnoea and other symptoms of COPD.[36]

SUMMARY

The present study was intended to assess the effect of respiratory exercises on clinical manifestations of patients with chronic obstructive pulmonary disease.
The objectives of the study were to:
1.   Identify the   clinical manifestations in patients with chronic obstructive pulmonary disease before and after giving respiratory exercises.
2.   Assess the effect of respiratory exercises on clinical manifestations of patients with chronic obstructive pulmonary disease.
3.   Find out the association between clinical manifestations of patients   with chronic obstructive pulmonary disease and selected demographic variables.

Review of relevant literature helped the investigator to prepare the tool. A pilot study was conducted to find out the feasibility of the proposed study among 6 patients with COPD. It was found that the tools were unambiguous and data obtained were amenable to statistical analysis.

The main study was conducted among 40 patients with chronic obstructive pulmonary disease who are residing at Day care centre with old age home for women

Poojapura, Asha bhavan for men Poojapura, Care home pulayanarkotta, Saigram Thonnakkal. Socio demographic data and clinical data were collected by using questionnaire. Symptoms of chronic obstructive pulmonary disease were assessed using cough questionnaire and rating scale. COPD signs were assessed using observation check list. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 16.

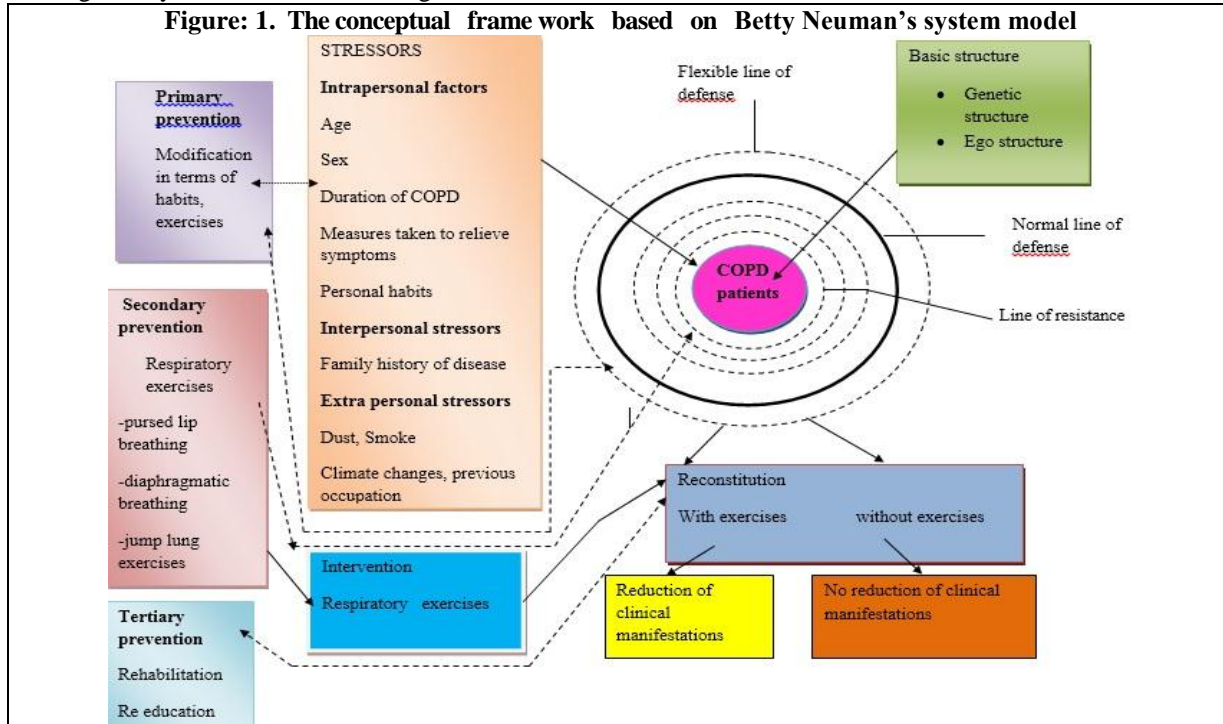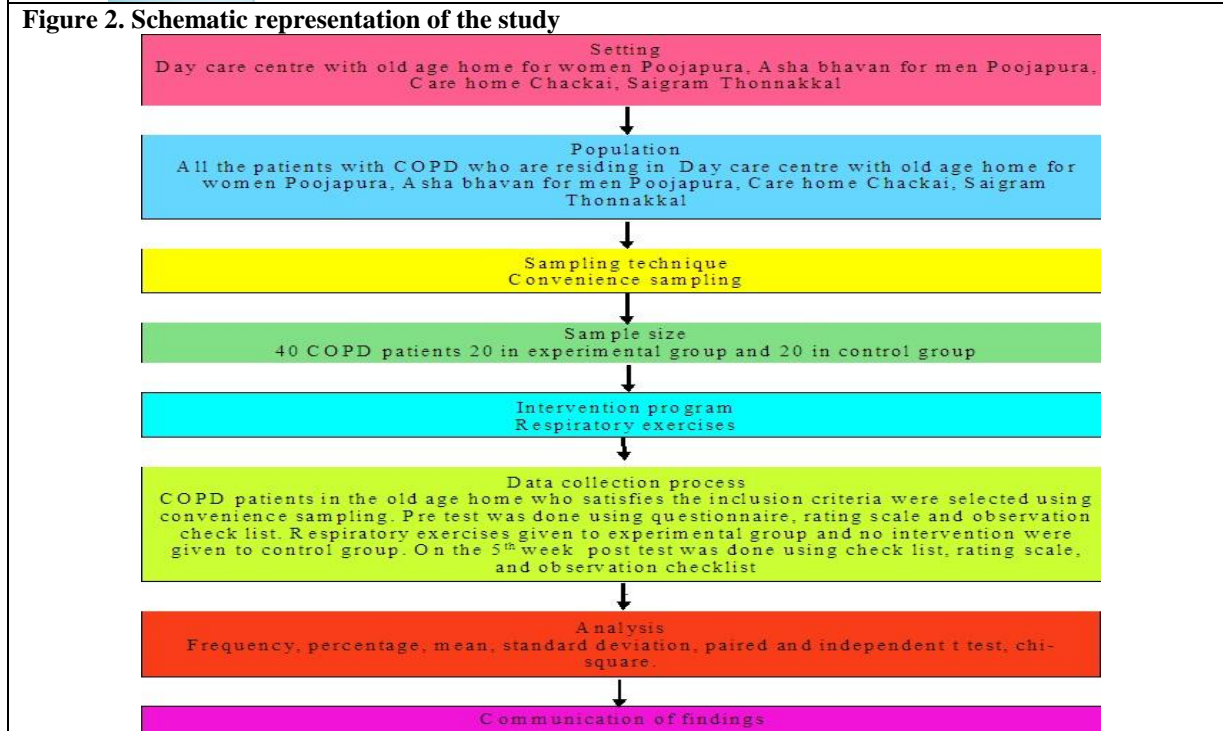## Figure: 1. The conceptual frame work based on Betty Neuman's system model

Figure 2. Schematic representation of the study

CONCLUSION

Patients can use respiratory exercises during both rest and strenuous activity for decreasing dyspnoea, improving oxygenation and slowing down the increased respiratory rate. As observed from the findings of the study, most of the patients with chronic obstructive pulmonary disease in the experimental group responded that their COPD symptoms reduced within weeks. While compared with control group practice of pursed lip breathing, diaphragmatic breathing, and jump lung exercises helped the experiential group to reduce the COPD signs.

Therefore, regular practice of respiratory exercises reduces the clinical manifestations of patients with chronic obstructive pulmonary disease. Majority of patients with COPD were interested to practice respiratory exercises.

Nursing implications

The present study has got implications in the nursing service, nursing administration, nursing education, and nursing research.

Nursing service

1. The selected respiratory exercises used in the study can be adopted by nurses working in hospitals and community health centers for reducing the clinical manifestations of patients with chronic obstructive pulmonary disease.
2. Nurses working in the clinical setting can encourage the patients with chronic obstructive pulmonary disease for practicing these selected respiratory exercises.
3. The selected respiratory exercises used in the study are cost effective. So it can be implemented to nursing practice in all settings.

Nursing education

1. The importance of selected respiratory exercises on clinical manifestations of COPD can be taught to nursing students and graduate nurses and this can be incorporated in the care of patients with chronic obstructive pulmonary disease.
2. Research report can be kept in college library for future reference.
3. In the curriculum more emphasis can be given to respiratory exercises in the management of COPD.
4. Nurse educator can encourage the students to conduct health education on selected respiratory exercises.

Nursing research

1. The study findings will serve as a background for further study.
2. Tools used in the study can be standardized by conducting similar studies.
3. On the basis of this study the nurse researcher can design further research to develop alternative therapies on reducing clinical manifestations of chronic obstructive pulmonary disease.

Nursing administration

1. Nurse administrator can organize the workshop on the importance of respiratory exercises in chronic obstructive pulmonary disease.
2. Nurse administrator can provide in-service education to the staff nurses regarding the use of respiratory exercises in improving quality of life of each patient with chronic obstructive pulmonary disease.
3. Nurse administrator can implement outreach programs to make the public aware of the respiratory exercises, especially for patients with chronic obstructive pulmonary disease.

Limitation

As the study was conducted in small sample, generalization of findings remains restricted.

Recommendations

In the light of present study, the following recommendations were put forwarded.
1. The same study can be conducted on a larger sample over a longer period of time which might yield more reliable results.
2. Similar study can be conducted in different settings.
3. Similar study can be replicated with random sampling technique.
4. Descriptive study can be conducted to assess the aggravating factors of clinical manifestations of chronic obstructive pulmonary disease.
5. A comparative study can be conducted to assess the effectiveness of supervised and self monitored respiratory exercises on clinical manifestations of patients with chronic obstructive pulmonary disease.

REFERENCES
1. Monahan FD, Sanda JK, Neighbors et al. Phipp's Medical surgical nursing 8th edition Noida: Elsevier publication, 2009.
2. Department of social protection, chronic obstructive pulmonary disease. Atos health care, 2012.
3. Behera D. NCP Text Book of Respiratory medicine, New Delhi: Jaypee Publications, 2010
4. Jarad N. (2011) COPD and old age. *J.Chronic respiratory Disease*, 8(2), 143-51.
5. Pradeep A. (2008) Senor citizen and elderly home. *Journal of Sociology and Anthropology*, 6(2), 125-28.
6. Kant S. (2006) Breathing exercises in the adjuvant management of COPD. *Lung India,* 23(4), 165-69.
7. National Heart Lung Blood institute. COPD learn more breath better.
8. Rema Nagarajan. (2013) India in health care hall of shame. The Times of India, 8.

9. Sushma Jaiswal Respiratory disease- the Insurance Perspective. Respiratory disease; 2009.
10. Jindal SK. (2012) COPD unrecognized epidemic in India: *Indian journal of medical research*, 160(20), 114.
11. Jarad N. (2013) COPD and old age. *J.Chronic respiratory Disease*, 8(2), 143-51.
12. Holland AE, Hill CJ, Jones AY, McDonald CF. (2012) Breathing exercises for COPD. *Coharane database of systematic review,* 10(2), 151-54.
13. Mukesh Kumar, Bansai RK. (2008) Need to support old age home resident. Indian Journal of Community Medicine, 33(2), 121-24.
14. Krishnar Carolyn. Theraputic exercises foundation and technique .4th eddition, New Delhi: Jaypee brother; 2002.
15. Vitacca M, Clini E, Bianchi L, Ambrosino N. (2008) Acute effects of deep diaphragmatic breathing in COPD patients with chronic respiratory insufficiency. *European Respiratory Journal*, 11(2), 408-15.
16. Wellington P, Yamaguti, Renata C, Claudino, Alberto PN, Maria C. Chammas, AC, Gomes. (2012) Effect of diaphragmatic breathing in reducing dyspnoa among patients with chronic obstructive pulmonary disease: A randomized controlled trial. *Archives of Physical Medicine and Rehabilitation,* 93(4), 571–577.
17. Nettina, Sandra M, Elizabeth J. (2008) Lippincott Manual of Nursing Practice, 8th Edition, New Delhi: Lippincott Williams and Wilkins; 2008.
18. Marcelo F, Alberto C, Maria I, Zanetti F. (2010) Efficacy of diaphragmatic breathing in patients with chronic obstructive pulmonary disease. *J.Chronic respiratory disease,* 81(6), 237-244.
19. Grosslink. (2006) Breathing technique in patients with COPD. *Saige Journal*, 56(3), 193-211.
20. Chen G, Txue, Zhou X, Hu X, Liu Y, Li Q. (2011) Effect of exercises on quality of function and rehabilitation in patients with COPD. *J.YixueBan*, 36(7), 682-6.
21. Gigliotti F, Romagnoli I, Scano G. (2003) Breathing retraining in patients with chronic obstructive pulmonary disease. *J. respiratory medicine*, 97(3), 197-204.
22. Singh V, Khandelwal DC, Khandelwal R, Abusaria. (2008) Pulmonary rehabilitation programme for patients with COPD. Indian Journal of Chest, 2008;1245(1):13-7.
23. Engstrom CP, Persson LO, Larsson S, Sullivan M. (2009) Pulmonary rehabilitation programme in out-patients with COPD. Journal of Rehabilitative medicine, 31(4), 207-13.
24. De Sousa JM, Martín AM, Calvo JI, Ramos GJ. (2014) Clinical benefits of home-based pulmonary rehabilitation in patients with COPD. *J.Cardiopulmonary Rehabilitation*, 13(1), 144-146.
25. Kyung KA, Chin PA. (2008) Effect of COPD on older patients with COPD. *Journal of clinical nurse*, 17(1), 118-25.