

Effect of Nursing Intervention Program on Patients knowledge and practice regarding Breathlessness in patients with Chronic Obstructive Pulmonary Disease

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Abstract

Background: Breathlessness, along with the associated inability to engage in normal activity, is one of the most distressing symptoms for patients with chronic obstructive pulmonary disease (COPD). **Aim of study:** The aim of this study was to evaluate the effect of nursing intervention program on patient knowledge and practice regarding breathlessness in patients with chronic obstructive pulmonary disease. **Subjects and Methods: Research design:** A quasi experimental research design was used. **Setting:** The study was conducted in chest department at Aswan University Hospitals. **Subjects:** Convenient sample of 40 adult patients with COPD were recruited for the purpose of the study. **Tools of data collection:** Questionnaire form about Patient Knowledge, Patients' Practices Observational Checklists, Modified Borg Scale (MBS), Hospital Anxiety and Depression Scale (HADS) and Rotterdam Symptoms Checklist were used to collect data. **Results:** All of the studied patients had unsatisfactory knowledge and practices regarding COPD and breathlessness before nursing intervention program, which improved after program intervention with highly significant differences. Also, the breathlessness, anxiety and depression and dimensions of Rotterdam symptoms checklist improved significantly in patients with COPD who received nursing intervention program. **Conclusion:** Implementation of nursing intervention program had statistically significant improvement in patients' level of knowledge, practices, dyspnea, anxiety, depression level and dimensions of Rotterdam symptoms checklist. **Recommendations:** Conducting comprehensive health education programs for patients with COPD in outpatients' clinics with simplified printed guidelines through leaflets or brochures explaining how to prevent and control breathlessness and further evaluation of the effect of strategies to prevent and ameliorate breathlessness intensity and distress responses in larger sample of COPD patients in order to generalize the results.

Key words: Breathlessness, Nursing Intervention, Patient Knowledge and Practice, Chronic Obstructive Pulmonary Disease

Introduction:

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines chronic obstructive pulmonary disease (COPD) as a common preventable and treatable disease that is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and lung to noxious particles or gases. Exacerbation and co morbidities contribute to the overall severity in individual patients.⁽¹⁾

Chronic Obstructive Pulmonary Disease is characterized by three primary symptoms: cough, sputum

production, and exertion breathlessness. These symptoms often worsen over time. Breathlessness may be severe and often interfere with patient's activities. COPD is a significant disease which affects the individual physically, emotionally, and socially and leads to an increase in the social support needs of the patients.⁽²⁾

Almost 90% of COPD deaths occur in low- and middle-income countries, where effective strategies for prevention and control are not always implemented or accessible.⁽³⁾ The prevalence of COPD in Middle

East and North Africa seems to be lower than that reported in industrialized countries. Under reporting and risk factors other than smoking may contribute to this difference.⁽⁴⁾

Breathlessness, also known as dyspnea, is a symptom unique to the patient. Definitions stress the combination of unpleasant physical sensations with adverse emotions, such as anxiety, panic, or low mood. The sensation of dyspnea arises as a result of complex synthesis of afferent signals to the brain, influenced by psychological and emotional factors and interpreted subconsciously based on a bench marking of past experience.⁽⁵⁾

When COPD patients start to feel short of breath, they worry that they are not getting enough air, which causes anxiety. Anxiety makes patient breath harder and faster, which makes the breathlessness worse. When people experience this, it can be so distressing that they start to limit their activities in order to avoid anything that may cause them to feel shortness of breath as they get into dyspnea cycle. Breathlessness cycle is not only frightening, but can lead to feelings of sadness and worry. If these feelings become overwhelming, they can start to interfere with daily life.⁽⁶⁾

Considering the general therapeutic aims proposed in treatment for COPD, it is evident that the improvement of inspiratory muscle function should be a target for any therapeutic intervention to improve the sensation of breathlessness. To improve breathlessness, several non-pharmacologic approaches have been suggested, with a focus on nutrition, training of inspiratory muscle groups, relaxation techniques and positioning of a patient.⁽⁷⁾

Providing information and education is foundational to enhance the patient and family's ability to cope. Patient's education is a critical component of COPD management and fundamental to increase a patient's ability to self-manage the

disease. Educational interventions that increase knowledge alone are insufficient; patients must also integrate the knowledge and tools they learn into their daily lives, and this must lead to behavior modification. Education offered in their preferred learning style is more likely to lead to successful learning and increases learner satisfaction.⁽⁸⁾

Significance of the study:

The wider impact of breathlessness includes restrictions of functional capacity which limits patient's ability to work, causing dependence on others. The associated loss of independence and social role can lead to feelings of anger and frustration. Other psychological responses, such as chronic anxiety and depression further increasing the healthcare burden. This study was carried out in an attempt to promote patient health status and relief symptom of breathlessness through provide patients with important knowledge and practice regarding breathlessness to assist them achieve their physical, emotional, social well-being .

Aim of the study:

The present study aimed to evaluate the effect of nursing intervention program on patient knowledge and practice regarding breathlessness in patients with chronic obstructive pulmonary disease.

Research Hypothesis:

The knowledge and practice scores regarding breathlessness of patient with COPD post program will be improved than that of their pre-program score.

Subjects and methods:

Research design:

A quasi experimental research design was conducted to achieve the aim of the study.

Study setting:

The study was conducted in chest department at Aswan University Hospitals.

Study subjects:

All available patients with COPD were recruited for the purpose of the study. Subjects were included in the

study: their age ranges from 20 to 60 years old, didn't participate in any previous program and can attend for treatment and follow-up.

Tools of data collection:

Data was collected by the researcher based on review of literature and under supervision in simple Arabic language using the following tools:

1. Interview Questionnaire form about patient knowledge:

It was design by the researcher to assess the knowledge of chronic obstructive pulmonary disease patients regarding breathlessness and used by the researcher, including the following parts:

Part I: Personal characteristic of patients it was contained five closed ended questions as the following: Age, Gender, Marital status, Educational level and Work.

Part II: Patient health history it was contained Present history, Past history and family history was contains

Part III: Patient's knowledge about COP developed by researcher and guided by White, et al. ⁽⁹⁾ related to definition of breathlessness and COPD, causes, signs and symptoms, nutrition, treatment and self-management of breathlessness. The score converted into percent score. The patient's knowledge was considered satisfactory if the percent score was 60% or higher and unsatisfactory if less than 60%.

2. Observational Checklist for Improving Breathlessness:

It was adapted from Altman, et al ^(10,11,12) and modified by the researcher to assess patients' practice regarding improvement of breathlessness before and after the program then in follow up. It was contained the following: incentive spirometry, Breathing retraining exercise, using inhaler, stretching & strengthening exercise. The score converted into percent score. The patient's practice was considered satisfactory if the percent

score was 75% or higher and unsatisfactory if less than 75%.

3. Modified Borg Scale It was adopted from Borg ⁽¹³⁾. Used to measure degree of breathlessness. It ranges from 0 to 10. No breathlessness at all (0), very very slight breathlessness (0.5), very slight breathlessness (1), slight breathlessness (2), moderate breathlessness (3), somewhat severe breathlessness (4), severe breathlessness (5-6), very severe breathlessness (7-8), very very severe breathlessness (Almost Maximum) (9) and maximum breathlessness (10). The scores given by each patient were summed up and divided by the total number of patients, giving a mean score for the scale.

4. Hospital Anxiety and Depression Scale: It was adopted from Zigmond & Snaith ⁽¹⁴⁾ it consists of 14 items (7 each for anxiety and depression). Each item is rated on a four point scale ranging from 0 (not at all) to 3 (very often). Responses are based on the relative frequency of symptoms over the preceding week. Scores range from 0 to 21 for each subscale. An analysis of scores on the two subscales supported the differentiation of each mood state into:

- No anxiety (scores 0-7).
- Borderline (scores 8-10).
- Severe anxiety (scores 11 -21).

5. Rotterdam Symptom Checklist It was adopted from De Haes., et al ⁽¹⁵⁾ It is a self-report measure. It was designed to cover, originally, domains: physical symptom distress, psychological distress, activity level and, overall global life quality. Patients reporting no problems ('not at all') and the percent of patients reporting have been bothered by the symptom (taken 'a little', 'quite a bit' and 'very much' together). Thus an overview of patients being burdened by each symptom is given.

- The physical symptom distress scale consists of 23 items referring to different physical symptoms.

-The psychological distress scale consists of 7 items

-The activity level scale consists of 8 items regarding functional status. These items form a scale in which mobility as well asocial and role activities are covered. Its Likert-type scale used to determine level of dysfunction range from 1 to 4 in which unable (4), only with help (3), without help with difficulty (2), without help (1).

-The overall valuation of life (sometimes called either global quality of life or overall quality of life) is measured by one single item included in the checklist. Item scores range from 1-7. Excellent (1), good (2), moderately good (3), neither good nor bad (4), rather poor (5), poor (6), extremely poor (7) . The score were summed –up and converted into percent .The score was 0 to ≤ 50 implies a level of no impairment; > 50 to100 implies the highest level of impairment.

Content validity and Reliability:

It was established by a panel of 5 experts in nursing and medical staff including: professor of community health nursing, professor geriatric nursing, two professor of Medical Surgical Nursing, and professor of chest disease who reviewed the instruments, and designed booklet for clarity, relevance comprehensive, understanding, applicability, and easiness for administration. Minor modifications were required. It was established by Alpha Cronbach test which is used to measure the internal consistency (reliability of the used tool or instrument). The reliability scores of the all tool as above 0.87, which indicates the high tool internal consistency of the used tool.

Field work:

After an official permission was taken from the dean of the faculty of nursing, from manager of Zagazig University Hospitals and from supervisor of nurses in chest Department; the implementation phase for data collection started as following:

- The selection of patients, the collection of data and the implementation of the nursing intervention program lasted over a period of 12 months, starting from July 2015 to June 2016, which classified as following:

- During first 6 months each patient was seen daily by researcher during hospitalization until discharged from hospital, during this period before applying the program to collect the baseline patient's data using all study tools (pretest) also during this period of patient hospitalization applying and implementation of the program (from July 2015 to December 2015).

- After 3 month each patient was interviewed and immediately after applying the program sessions for posttest to assess patient knowledge and practice, severity of dyspnea, level of anxiety and depression and domain of Rotterdam symptoms checklist using all study tools from (January2016 to march 2016).

-After 3 months of posttest perform evaluation of each patients follows up test (from April 2016 to June 2016) to reassess his knowledge and practice, severity of dyspnea, level of anxiety and depression and health status using all study tools .The questionnaires filled by the researcher.

- Data used to be collected every day from patient admission until discharge from the chest department at Aswan University Hospital for patients with COPD from 9:00 am to 1:00 pm.

- It was necessary for the researcher to introduce herself and explain the purpose of the study for the subjects including in the study. The researcher assured that the data collected and information will confidential and would be used only to improve their health. Also, the data was collected by the researcher using simplified Arabic language.

- The program consisted of 12 sessions two sessions of them to identify the objective and the importance of the program. Four sessions were theoretical, and five

sessions were practical. One session for posttest, each interview took approximately 30 minutes in each theoretical session and 30 minutes in each practical session.

- The sessions began with one session for a formative assessment to show the patient's condition (interviewing the patient regarding personal data and identification), and one session for demonstrating the importance of the educational program and for assessing the patient's knowledge and practice by filling patient's knowledge and practice questionnaire before the program.

- In each session, ten minutes pre and post are directed for re-demonstration and implanted in simplified way by using paper board, pictures, videos and booklet, through group discussion, to identify self-reflection, evaluate with feedback and oral exam.

- In practical session the researcher had demonstrated using incentive spirometer, breathing retraining exercise, stretching and strengthen exercise and using inhaler using real materials within 30-45 minute; and explained the rationale for each item in the procedure. Evaluate with return demonstration and post-test.

- Questionnaire about knowledge was filled by educated patient through observation of the researcher and the observational checklist for improving breathlessness was filled by the researcher within 20-30 minute

Pilot study:

A pilot study was carried out on five patients within selected criteria to test the tools for clarity, relevance, comprehensiveness, understanding, applicability and ease for implementation. The results of the data obtained from the pilot study helped in modification of the tools, item were then corrected or added as needed. Those who shared in the pilot study were excluded from the main study sample.

Administrative and ethical considerations:

At the initial interview, each potential subject was informed about

the nature, purpose, benefits of the study, and informed that his/her participation is voluntary. Confidentiality and anonymity of the subjects were also assured through coding of all data. The researcher assured that the data collected, and information would be confidential and used only to improve their health and for the purpose of the study.

Statistical analysis:

All collected data were organized, categorized, tabulated, entered, and analyzed by using SPSS (Statistical Package for Social Sciences); a software program version 14, which was applied to frequency tables and statistical significance. The statistical significance and associations were assessed using, the arithmetic mean, the standard deviation (SD), Wilcoxon Signed Ranks test (Z test), Pearson chi-square test (χ^2) and Pearson Correlation (r) to detect the relation between the variables. Significant difference was considered if $p \leq 0.05$.

Results:

Table (1): Illustrated the personal characteristics of the studied patient, where 65.0% of patients were 50 years age or older. The age range from 40 to 60 years with a mean \pm SD 53.65 ± 5.25 years. While 90.0% of the study sample were males, and 95.0% were married.

On the other hand this table clarified that 45.0% of the study sample were illiterate, and 55.0% of patients of the study was not working.

Table (2): shows that in relation to smoking, it appears from table, that 72.5% of patients were current smoker while 17.5% were never smoked. On other hand 10.0% of study patient previous smokers. As regards of type of smoking it shows that 75.0% of patients were cigarette smoker while 15.0% was smoking shisha. Mean smoking year's was 24.19 ± 6.2 and mean years of quitting smoking were 3.96 ± 2.35 .

Table (3): This table showed that, all study subjects 100.0% had unsatisfactory knowledge level in preprogram phase, while 90.0% of

them in post program phase and 85.0% of them in follow-up phase had satisfactory knowledge level. This table also confirmed that, there was a highly statistically significant difference between pre / post and pre / follow up program phase as regarding to the total score for studied patients' knowledge about COPD and breathlessness $p < 0.01$.

Table (4): This table showed that, all study subjects 100.0% had unsatisfactory practice level in preprogram phase, while the majority 95.0% of them in post program phase and the most of them 85.0% in follow-up phase had satisfactory practice level. This table also confirmed that, there was a highly statistically significant difference between pre / post and pre / follow up program phase as regarding to the total score for studied patients' practice about COPD and breathlessness $p < 0.01$.

Table (5): This table shows severity of the shortness of breathing among the studied patients using Modified Borg scale. It reveals that 55.0% of the studied patients had moderate dyspnea pre- program phase compared with 35.0 % post program phase and 32.5% follow up phase and with highly significant difference between them. Also, the same table shows that the number of patients with severe dyspnea was lower in post and follow up phase 12.5% and 17.5% respectively with highly statistically significant difference compared with 37.5% in pre- program phase $P < 0.01$. Moreover, there is a highly statistically significant difference between the mean scores of dyspnea severity for COPD patients pre, post and follow up program $P < 0.01$.

Table (6): Illustrates severity of patients' anxiety and depression level throughout study phase. As noticed, 50 % of patients were had sever anxiety followed by 40% of them on borderline and 10% of them was no anxiety in preprogram phase, which changed into 20.0%, 27,5% and 52,5% respectively in post program phase and into 20.0%, 32,5% and

47,5% respectively in follow-up program phase with highly statistically significant difference between them at $P < 0.01$. Moreover, there is a highly statistically significant difference between the mean scores anxiety level for patients with COPD pre, post and follow up program $P < 0.01$. It also revealed that, 20.0% of patients had severe depression followed by 55.0%)of them on borderline and 25.0% of them was no depression preprogram phase, which changed into 7.5%, 27.5% and 65.0% respectively in post program phase and into 15.0%, 30.0% and 55.0% respectively in follow-up program phase, with highly statistically significant difference between them at $P < 0.01$. Moreover, there is statistically significant difference between the mean scores of depression level for COPD patients' pre, post and follow up program $P < 0.05$.

Table (7): This table showed that, in pre-program phase 72.5.0%, 67.5 %, 62.5 and 82.5% respectively had sever impairment in psychological status, physical status, activity level and overall valuation of life . While in post-program phase, the results revealed that, 75.5%, 70.0 %, 72.5 and 67.5% respectively of the study subjects had no impairment in psychological status, physical status, activity level and overall valuation of life. Regarding to follow-up program phase 70.0%, 77.5 %, 67.5 and 65.0% respectively had no impairment in psychological status, physical status, activity level and overall valuation of life

The same table revealed that, there was a highly statistically significant difference between pre / post program phase and between pre / follow up program phase as regard to all items of Rotterdam symptoms checklist at $p < 0.01$.

Discussion:

Breathlessness is the most common symptoms experienced by patients with COPD are believed to result in decreased activity levels and poor quality of life. The supported study reported severe breathlessness

in 56% of patients with COPD Mullerova et al.⁽¹⁶⁾

As regards to age, were more than half of the study sample more than 50 years old with mean \pm SD age 53.6 \pm 5.25. This might be explained by that the occurrence of COPD is increasing with age. This result agree with Salah, et al.⁽¹⁷⁾ who studied that improving breathlessness and fatigue in patient with COPD in Ain Shams University Hospital and found that age of COPD patient was more than half of the study sample had mean \pm SD age 55 \pm 5.7.

As regards to gender, the majority of the sample was male. This might be attributed to the fact that males are more exposed to risk factors, mainly cigarette smoking than females. On the same line a study carried out by Musafiri, van Meerbeeck, Musango, Brusselle, Joos, et al.⁽¹⁸⁾ to determine the prevalence and risk factors of asthma, atopy and COPD in Rwanda conclude that COPD was associated with cigarette smoking, age and male sex. These finding were in contrast with a study carried out in India by Smith⁽¹⁹⁾ who investigated the provenance of COPD in both sexes and found that high prevalence of COPD was observed among women than men and attributed that to indoor air pollution.

Regarding level of education nearly half of patient sample was illiterate. This finding agreed with Parveen⁽²⁰⁾ who studied that dyspnea experience and dyspnea management in patients with chronic obstructive pulmonary disease in Bangladesh and found that more than one third of the patients were illiterate.

Regarding occupation more than half of sample was not working. This may be attributed to the fact that people with COPD are more likely to accept early retirement than those who do not have COPD. This is in accordance with a study conducted in A cross-country (Brazil, China, Germany, Turkey, USA, UK) by Fletcher, et al.⁽²¹⁾ who revealed by the high percentage of people who had

been forced to stop working due to their COPD.

As regard smoking habits it was showed that the majority of the studied subjects were smoking, this high prevalence among males most likely due to the historically higher prevalence of smoking among them. And this explained by that smoking is a major risk factor for developing COPD. This result is in the same line with National Heart, Lung, and Blood Institute⁽²²⁾, who found that COPD most often occurs in people with a history of smoking (either current or former smokers).

Regarding passive smoking, the present study revealed that more than half of the sample was exposed to passive smoking. This is in line with Rachel, et al.⁽²³⁾ who studied the Passive smoking and chronic obstructive pulmonary disease in England Passive smoking and chronic obstructive pulmonary disease: cross-sectional analysis of data from the Health Survey for England revealed that increasing passive smoke exposure was independently associated with increased risk of COPD.

An important component in the international treatment guideline for COPD is the recommendation for patients' education and regular medical review. GOLD⁽²⁴⁾ Patient may be limited a given behavior because of knowledge and skills deficit. Education is considered to be necessary to help patients gain the motivation, skills and confidence to control their COPD. Caress, et al.⁽²⁵⁾ Improving knowledge is necessary, but insufficient alone, patient need to know less about the pathophysiology of their disease and more about how to integrate the demands of the disease into their daily routine. The goal of all patient education is to improve clinical outcomes by teaching appropriate self-management skill. Bischoff, et al.⁽²⁶⁾

According the present study, patient's knowledge about COPD and breathlessness was deficient before introducing nursing intervention

program. This lack of knowledge can be attributed to the lack of educational programs and unavailability of information resources about the disease and its effect. It reflects a deficiency in providers' educational role.

Regarding patients' level of knowledge pre a, post and follow-up program implementation, the study revealed that the presence of highly statistically significant improvement in all items of knowledge. After implementation of the nursing intervention program, patients' knowledge demonstrated significant improvement in comparing with preprogram which was confirmed through analysis, which indicated that the implementation of intervention was the only statistically significant independent predictor of the knowledge score. This asserts the assumption that the lack of knowledge was due to lack of educational activities provided to these patients, and indicates that the meeting of patients' information needs would fill this gap of knowledge.

This in accordance with a study by Salah, et al⁽¹⁶⁾, revealed that there was a highly statistically significant improvement in total patients' knowledge post guideline comparing with pre guidelines implementation.

Regarding patients' level of practice pre, post, follow-up program implementation, the study revealed presence of highly statistically significant improvement in all items of practice after implementation of nursing intervention program, this success of the program might be attributed to the fact that the procedures were practiced under supervision and guidance of the researchers, with demonstration and re-demonstration, using real objects. This also may be due to the effective continuous practicing of breathing exercise which has a positive effect on improving respiratory muscles. This is in agreement with Bourbeau & van der Palen,⁽²⁷⁾ who emphasized the importance of training and reinforcing

correct techniques before patients are discharged home, with provision of written COPD action plans, peak flow meters, spacer devices, deep inspiration, slow expiration and coughing technique as has been done in the current study. Also this result is consistent with Ries et al.⁽²⁸⁾ who mentioned that, coping with a chronic condition involves skills training, learning to manage a number of symptoms, and consciously assessing and making lifestyle changes. Experience has shown that those who develop a management plan with their health care team and follow it can live better with COPD.

Also, Tel, et al.⁽²⁹⁾ mentioned that, people who have COPD have more difficulty breathing out fully. The patient could practice pursed lip breathing any time while trying to catch the breath. For example, pursed lip breathing may be useful after coughing or exercising. By learning to conserve energy with everyday tasks, the patient will be able to perform many activities with less effort and less shortness of breath. Along with exercise, keeping active in normal daily activities is an important part of maintaining the fitness.

Patients with low education will face difficulties in managing their dyspnea properly. A study found that a lower level of education increased the perception of dyspnea in patients with COPD, Borge, et al⁽³⁰⁾ Education increased the patients' confidence and influenced them to manage symptom effectively. Education altered the perception and thus helped tolerance for dyspnea, American Thoracic Society.⁽³¹⁾

In relation to breathlessness, the current study concluded that level of breathlessness and the mean scores of breathlessness decreased significantly post and follow-up after implementation of program comparison to preprogram. This might be due to that the patients' craving to learn and practice relieving strategies to overcome this overwhelming problem that bother those patients.

This finding goes in the same line with Wong Goodridge, et al⁽³²⁾ who found that, 53.3% of participants in their study are reporting dyspnea at a Grade 3 level. Also with Salah, Hamdi and Shehata⁽¹⁶⁾ who found that near half of the study sample had dyspnea grade three before education which decreased significantly after educational program.

Depression is a common complication in COPD patients. The risk of depression is to be 2.5 folds higher among the severe COPD patients. Depression can affect quality of life, function and COPD symptoms and treatment failure.⁽³³⁾

Nursing intervention program have demonstrated beneficial effects on psychosocial well-being. This highlights that those with a possible or probable presence of anxiety secure benefits by using Nursing intervention program. In the current study it was discovered that, the majority of the patients on borderline and severe anxiety and depression preprogram, while a significant reduction was found in patients' anxiety and depression post guidelines. This might be a reflection of motivational factors and social support provided by regular meetings in a hospital.

A study done in Iran by Kheirabadi, et al⁽³⁴⁾ showed that psychoeducational intervention as self-management and behavior modification decreases the severity of COPD in 3 domain of its symptoms, functional and mental states and amount of decrease was more significant in the mental state domain compared with other domains and attribute that to the psychological intervention with was more effective on mental state including anxiety and depression due to disease.

Regarding Rotterdam symptoms checklist the present study revealed that statistically significant improvement in all domains of health status namely physical, psychological, activity level and overall valuation. Although the program applied in the

present study did not include psychological intervention, the improvement in psychological domain might be due to the effect of exercise in increasing blood circulation to different part of the body and particularly to the brain in turn increase cerebral vascularization, increase dopamine level.

This result in agreement with Yorke, et al⁽³⁵⁾ who found that patients who attended nursing clinics and received the breathlessness intervention program experienced improvements in breathlessness, performance status, and physical and emotional states relative to control patients.

Conclusion:

The current study concluded that, nursing intervention program for breathlessness has statistically significant positive effect on patients' level of knowledge and practices regarding management of breathlessness, Also, breathlessness, anxiety and depression and patient health status had been improved in patients with COPD who received nursing intervention program for breathlessness. These means all the study hypotheses had been proved.

Recommendations:

Based on the results of the study the following recommendations were suggested:

- Conducting comprehensive health education programs for patients with COPD in outpatients' clinics with simplified printed guidelines through leaflets, brochures or booklets explaining how to prevent and control breathlessness.
- Patients with COPD should be given a written plan for self-management, to improve respiratory functioning and achieve satisfaction in their life without fear of breathing difficulties.
- In-service education program should be instituted for nurses about COPD, patient education, dyspnea assessment and management.

Table (1): Frequency and Percentage Distribution of Personal Characteristics

Personal characteristics	No	%
Age:		
40 - <50	14	35.0
50-60	26	65.0
Range	40.0-60.0	
Median	53.0	
Mean± SD	53.65 ± 5.25	
Gender:		
Male	36	90.0
Female	4	10.0
Marital status:		
Married	38	95.0
Widow and divorced	2	5.0
Education level:		
Illiterate	18	45.0
Read and write	10	25.0
Primary school	5	12.5
Secondary	3	7.5
University	4	10.0
Work:		
Not working	22	55.0
Employed	5	12.5
House wife	3	7.5
Worker	10	25.0

Table (2): Frequency and Percentage Distribution of Smoking Habits for Patients with COPD (N=40).

Present health history	No	%
Smoking habits:	4	10.0
No smoker	7	17.5
Current smoker	29	72.5
Previous smoker	4	10.0
Type of smoking (N=36)		
Cigarette	30	75.0
Shisha	6	15.0
Smoking years (N=36)		
< 20	15	37.5
20+	21	52.5
Range		30.0-60.0
Median		22.5
Mean±SD		24.19±6.21
Years of quitting smoking (N=29)		
<°	10	25.0
5+	19	47.5
Range		1.0-10.0
Median		4.5
Mean±SD		3.96±2.35
Cause of quitting smoking (N=29)		
Social	3	7.5
Health	26	65.0
Passive smoker		
Yes	22	55.0
No	18	45.0

Table 3: Total Score for Patients' Knowledge Regarding COPD and Breathlessness throughout the Study Phases (n=40)

	Time			Pre/Post		Pre/FU	
	Pre No (%)	Post No (%)	Follow Up No (%)	Z	p-value	Z	p-value
Total knowledge:							
Satisfactory	0 (0.0)	36 (90.0)	35 (87.5)	6.000	0.000*	5.831	0.000*
Unsatisfactory	40 (100.0)	4 (10.0)	3 (7.5)				

(*) Statistically significant at p<0.05

Table 4: Total Score for Patients' practice Regarding COPD and Breathlessness throughout the Study Phases (n=40)

	Time			Pre/Post		Pre/FU	
	Pre No (%)	Post No (%)	Follow Up No (%)	Z	p-value	Z	p-value
Total practice:							
Satisfactory	0 (0.0)	38 (95.0)	35 (87.5)	6.164	0.000*	5.916	0.000*
Unsatisfactory	40 (100.0)	2 (5.0)	5 (12.5)				

(*) Statistically significant at p<0.05

Table (5): Severity of the Breathlessness among the Studied Patients throughout the Study Phases (N=40)

Dyspnea Borg scale (max=10)	Time			Pre/Post		Pre/FU	
	Pre No (%)	Post No (%)	Follow Up No (%)	Z	p-value	Z	p-value
Breathlessness level:							
Mild(1-3)	3 (7.5)	21(52.5)	20 (50.0)	3.922	0.000*	3.545	0.000*
Moderate(4-6)	22 (55.0)	14(35.0)	13 (32.5)				
Severe (7-10)	15 (37.5)	1 (2.5)	7 (17.5)				
Mean ±SD	5.5±2.87	3.04±2.26	3.89±54	8.563	0.000*	5.625	0.000*

(*) Statistically significant at p<0.05

Table (6): Severity of Anxiety and Depression Level among the Studied Patients throughout the Study Phases (N= 40)

Anxiety and depression level	Time			Pre/Post		Pre/FU	
	Pre No (%)	Post No (%)	Follow Up No (%)	Z	p-value	Z	p-value
Anxiety level:							
No anxiety	4 (10.0)	21 (52.5)	19 (47.5)	4.87	0.000*	4.83	0.000*
Borderline	16 (40.0)	11 (27.5)	13 (32.5)				
Severe anxiety	20 (50.0)	8 (20.0)	8 (20.0)				
Mean ±SD	11.02±2.66	8.57±2.46	8.67±2.40	7.75	0.000*	7.65	0.000*
Depression level:							
No depression	10 (25.0)	26 (65.0)	22 (55.0)	3.61	0.000*	2.289	0.000*
Borderline	22 (55.0)	11 (27.5)	12 (30.0)				
Severe depression	8 (20.0)	3 (7.5)	6 (15.0)				
Mean ±SD	9.12 ±2.30	7.67 ±1.99	8.20±2.12	4.44	0.000*	2.55	0.000*

(*) Statistically significant at p<0.05

Table (7): Severity of Patient Health Status according to Rotterdam symptoms checklist among the Studied Patients throughout the Study Phases (N= 40)

Rotterdam symptoms checklist	Time			Pre/Post		Pre/FU	
	Pre No (%)	Post No (%)	Follow Up No (%)	Z	p-value	Z	p-value
Psychological distress							
No impairment	11 (27.5)	31 (77.5)	28 (70.0)	3.29	0.002*	3.09	0.002*
Impairment	29 (72.5)	9 (22.5)	12 (30.0)				
Physical distress							
No impairment	13 (32.5)	34 (85.0)	31 (77.5)	3.64	0.001*	3.41	0.002*
Impairment	27 (67.5)	6 (15.0)	9 (22.5)				
Activity level							
No impairment	15 (37.5)	29 (72.5)	27 (67.5)	2.99	0.001*	2.88	0.002*
Impairment	25 (62.5)	11 (27.5)	13 (32.5)				
Overall valuation of life							
No impairment	7 (17.5)	27 (67.5)	26 (65.0)	3.77	0.000	3.31	0.001*
Impairment	33 (82.5)	13 (32.5)	14 (35.0)				

(*) Statistically significant at p<0.05

References:

1. Global Initiative for Chronic Obstructive Lung Disease (GOLD): Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: Available at: <http://goldcopd.com/Guide/lineitem.asp?l1=2&l2=1&intId=989>. Accessed on December 2016
2. Bucher L., Susan A., Lewis S., McLean M & Dirksen SR.: Medical-Surgical Nursing: Assessment and Management of Clinical Problem. 9th ed., United States of America: Elsevier Health Sciences; 2013.
3. World Health Organization (WHO) Chronic obstructive pulmonary disease (COPD): 2013. Fact sheet No. 315, Reviewed October 2015.
4. Tageldin MA., Nafti S., Khan JA., Nejjari C., Beji M., Mahboub B., Obeidat NM., Uzaslan E., Sayiner A., Wali S., Rashid N., El Hasnaoui A.: Distribution of COPD-related symptoms in the Middle East and North Africa: results of the breath study. *Respir Med.* 2012; 6111(12):712-814.
5. Higginson IJ., Bausewein C., Reilly CC., Gao W., Gysels M., Dzingina M., McCrone P., Booth S., Jolley CJ & Moxham J.: An integrated palliative and respiratory care service for patients with advanced disease and refractory breathlessness: a randomised controlled trial. *Lancet Respir Med.* 2014; 2(12):979-87.
6. Talbot F. (2012): What is Dyspnea? COPD Foundation. Available at: <http://blog.copdfoundation.org/what-is-dyspnea>. Accessed on March 22, 2014.
7. Wong C., Goodridge D., Marciniuk D & Rennie D.: Fatigue in patients with COPD participating in a pulmonary rehabilitation program *International Journal of Chronic Obstructive Pulmonary Disease.* 2010; 5 (3):319-326.
8. Knowles MS., Holton EF & Swanson RA.: The adult learner: the definitive classic in adult education and human resource development, 7th ed., United States of America, Gulf: Houston; 2013.
9. White R, Walker P, Roberts S, Kalisky S and White P: Bristol COPD Knowledge Questionnaire (BCKQ): testing what we teach patients about COPD *Chronic Respiratory Disease J* 2006;101 (3): 123–131
10. Altman P G., Buchsel . B and Coxon V.: *Fundamentals and Advanced nursing skills book*, 3rd ed., Canada: Delmar's ; 2008;120
11. Garvey C., Hamberlin D & Malen J (2012): *Better living with COPD A Patient Guide*, 2nd ed., Philadelphia: Lipincott; 2012;99
12. Schmitz M., Schulz J & Steinberg M.: *living will with chronic obstructive pulmonary disease A Guide for pulmonary Rehabilitation*, 2nd ed., Stay Well: Canda: 2007.
13. Borg G.: "Perceived exertion as an indicator of somatic stress". *Scandinavian journal of rehabilitation medicine.* 1970; 2 (2): 92–98.
14. Zigmond AS & Snaith RP.: "The hospital anxiety and depression scale". *Acta Psychiatrica Scandinavica .* (1983); 67 (6): 361–370.
15. De Haes JM., Van Knippenberg FC & Neijt JP.: Measuring psychological and physical distress in cancer patients: structure and application of the Rotterdam Symptom Checklist. *Br J Cancer.* 1990;62: 1034-1038
16. Mullerova H., Hao Li C & Tabberer M.: Prevalence and Burden of Breathlessness in Patients with Chronic Obstructive Pulmonary Disease Managed in Primary Care. *PLOS ONE.* 2014; 9 (1):214-315.
17. Salah M., Hamdi A & Shehata H.: Improving breathlessness and fatigue in patient with COPD. *Journal of American Science.* (2013); 9 (12): 470-482.
18. Musafiri S, van Meerbeeck J, Musango L, Brusselle G, Joos G, Seminega B & Rutayisire C.: Prevalence of atopy, asthma and COPD in an urban and a rural area of an African country. *Respir Med.* 2011; 105 (11):167-244
19. Smith KR.: National burden of disease in India from indoor air pollution. *Proc Natl Acad Sci* 2010; 97: (13) 286–393.
20. Parveen S. *Dyspnea Experience and Dyspnea Management in Patients with Chronic Obstructive*

- Pulmonary Diseasein. Published master thesis, BangladeshFaculty of Nursing, Prince of Songkla University, 2013 pp.100-106.
21. Fletcher JM., Upton J., Taylor-Fishwick J., Buist AS., Jenkins C., Hutton J. & Walker S.: COPD uncovered: An international survey on the impact of chronic obstructive pulmonary disease [COPD] on a working age population. *BioMed Central Public Health*. 2011; 11(5): 1-13.
 22. National Heart Lung and Blood Institute: The Respiratory System, Available at: <https://www.nhlbi.nih.gov/health/healthtopics/topics/hlw/system.html>. Accessed on 5 October 2015. 3AM.
 23. Rachel E., Kar C., Martin RM. & Peymane A.: Passive smoking and chronic obstructive pulmonary disease: cross-sectional analysis of data from the Health Survey for England .*BMJ*.(2011); 1(2):150-234.
 24. Global Initiative for Chronic Obstructive Lung Disease (GOLD): Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease, 2014. Available at: <http://goldcopd.com/Guide/lineitem.asp?l1=2&l2=1&intId=989>. Accessed on 10 March.2016.
 25. Caress A., Luker K. & Chalmers K.: Promoting the health of people with chronic obstructive pulmonary disease: patients' and carers' views.*J Clin Nurs*.2010; 19(3-4):564-73.
 26. Bischoff EW., Hamd DH., Sedeno M., Benedetti A., Schermer TR. & BernardS.(2011): Effectsofwrittenactionplanadherence onCOPD exacerbation recovery. *Thorax*. 2011; 66(1):26-31.
 27. BourbeauJ,vanderPalenJ: Promotingeffectiveself-management programmes to improve COPD. *EurRespirJ* . 2010; 33 (3):461-3.
 28. Ries A., Bauldoff G., Carlin B. & Casaburi R.: Pulmonary Rehabilitation: Joint ACCP/AACVPR Evidence-Based Clinical Practice Guidelines. *Chest*.2011; 131 (5):45-425.
 29. Tel H., Bilgiç Z. & Zorlu Z.: Evaluation of Dyspnea and Fatigue among the COPD Patients, *Chronic Obstructive Pulmonary Disease – Current Concepts and Practice*. 2012, Available at: <http://www.intechopen.com/books/chronicobstructivepulmonary-cessessed> on 4 march 2016.
 30. Borge CR.,Wahl AK. &Moum T.:Associationofbreathlessnesswith multiple symptoms in chronic obstructive pulmonary disease. *Journal of AdvancedNursing*.2010; 66(33):2688-2700.
 31. American Thoracic Society: Dyspnea mechanisms, assessment, and management:Aconsensusstatement. *AmericanJournalofRespiratory CriticalCareMedicine*, 1999; 159,321-340.
 32. Wong C., Goodridge D., Marciniuk D. & Rennie D: Fatigue in patients with COPD participating in a pulmonary rehabilitation program *International Journal of Chronic Obstructive Pulmonary Disease*. 2010 ; 5 (3):319-326.
 33. Van Manen JG., Bindels PJ., Dekker FW., Zermans CJ., Van der Zee JS. & Schade E.: Risk of depression in patients with chronic obstructive pulmonary disease and its determinants. *Thorax*.2012; 57 (5): 412- 6.
 34. Kheirabadi G R., Keypour M., Attaran N., Bagherian R. & Reza M.: Effect of Add-on “Self-Management and Behavior Modification” Education on Severity of COPD *National Research Institute of Tuberculosis and Lung Disease*.2008; 7(3): 23-30.
 35. Yorke J., Brettle A. & Molassiotis A.: Nonpharmacological interventions for managing respiratory symptoms in lung cancer *Chronic Respiratory Disease*.2012;117(9):110-129.