

# Editors Committee

**Prof .Dr /Magda M.Ali Youssef**

*Pediatric Nursing- Alexandria University*

**Prof .Dr / Sanaa Mohamed Alaa Eldeen**

*Medical surgical Nursing -Alexamndria University*

**Prof .Dr / Warda M. Youssef**

*Critical Nursing- Cairo University*

**Prof .Dr / Zienab M. Abd El- Lateef**

*Medical Surgical Nursing-Assiut University*

**Prof .Dr /Magda M.Abd Elazize**

*Medical Surgical Nursing- Ain Shams University*

**Prof .Dr / Nadia M. Fahmey**

*Obst .Nursing Ain Shams University*

**Prof .Dr / Aziza M Atia**

*Obst. Nursing -Ain Shams University*

**Prof .Dr / Sanaa Ali Nour El Dien**

*Obst Nursing- Zagazig University*

**Prof .Dr / Samia Abd El Daym**

*Psychiatric Nursing- Alexandria University*

**Prof .Dr / Sanaa M.Abd Elazize**

*Psychiatric Nursing- Alexandria University*

**Prof .Dr / Zienb Abd El Hamied Loutfy**

*Psychiatric Nursing -Ain Shams University*

**Prof .Dr / Wafaa El Said Ouda**

*Pediatric Nursing - Ain Shams University*

**Prof .Dr /Sohaier Bader El Dien**

*Community Nursing -Cairo University*

**Prof .Dr / Nawal Soliman**

*Community Nursing -Ain Shams University*

**Prof .Dr / Nawal Fouad**

*Community Nursing- Cairo University*

**Prof .Dr / Hoda Diab Fahmy**

*Community Nursing -Assiut University*

**Prof .Dr / Hwida Saddek**

*Community Nursing –Benha University*

**Prof .Dr /Samia M. Abdalla Adm**

*Nursing Administration- Ain Shams University*

**Prof .Dr / Namat M El Sayed**

*Nursing Administration- Damnhour University*

**Prof .Dr / Nihad Ezz El Din Fikry**

*Nursing Administration - Cairo University*

**Prof .Dr / Harisa El Shimmy**

*Nursing Administration - Ain Shams University*

**Prof .Dr / Soad A Ghallab**

*Nursing Administration -Assiut University*

**Prof .Dr / Mervert Aly Kamees**

*Obst. Nursing -Assiut University*

**Prof .Dr / Nagwa Reda**

*Critical Nursing- Alexandria University*

**Prof .Dr / Nefissa Mohamed**

*Psychiatric Nursing – Cairo University*

**Prof .Dr / Amro Ahmed Youssef**

*Cardiology depart -Assiut University*

**Prof .Dr / Mohamed abd el latief**

*Anesthesia depart -Assiut University*

**Prof .Dr /Esam El Sharkawy Abdalla**

*Anesthesia depart -Assiut University*

**Prof .Dr / Hamdy Mahfouz**

*Tropical &Gastro depart - Al Azhar University*

**Prof .Dr /Ahmed Mohamed El Taher**

*Urology surgery depart -Assiut University*

**Prof .Dr / Samir Shehata Mohamed Eid**

*Oncology depart -Assiut University*

**Prof .Dr / Hassn Abd El Lateff**

*Urology surgery depart -Assiut University*

**Prof .Dr / Fisal Fahmy Adm**

*Orthopedic surgery Medicine -Assiut University*

**Prof .Dr / Safwat Abd El Radi**

*Obst & Gynecology depart - Assiut University*

**Prof.Dr / Samah Mohamed Abdalla**

*Nursing Administration -Assiut University*

**Prof.Dr / Ikram Ibraheem Mohamed**

*Psychiatric Nursing - Assiut University*

**Prof .Dr /Shalabia Elsayed AboZead**

*Medical Surgical Nursing-Assiut University*

**Prof .Dr /Magda Ahmed Mohamed**

*Medical Surgical Nursing-Assiut University*

**Prof .Dr /Nadia Mohamed Tahaa**

*Medical Surgical Nursing-El Zagzig University*

**Prof .Dr /Wfaa Ismael Sheriff**

*Medical Surgical Nursing-El Mansoura University*

**Prof .Dr /Ameraa Ahmed Hasaneen**

*Medical Surgical Nursing-El Mansoura University*

**Prof .Dr / Amel Sobhy Mahmoud**

*Psychiatric Nursing- Port Saied University*

**Prof .Dr / Saidaa Ahmed Abed Latif**

*Psychiatric Nursing – Cairo University*

**Prof .Dr /Kamelia Foad Abd Alla**

*Medical surgical Nursing - Ain Shams University*

**Prof .Dr / Amal m. El dakakny**

*Obst Nursing- Zagazig University*

**Prof .Dr / Rahma Soliman Yousef**

*Obst Nursing- Zagazig University*

**Prof .Dr /Sabah Metoly Mohamed**

*Obst .Nursing Ain Shams University*

**Prof .Dr / shadia abed el kader**

*Obst .Nursing cairo University*

**Prof.dr/ Soumaya A. Badr El Din**

*Gerontological Nursing, Assiut University, Egypt.*

**Prof.dr/ Eman Shokree**

*Gerontological Nursing, Assiut University, Egypt.*

**Prof.Dr / Fatma Roshdy .M**

*Nursing Administration -Assiut University*

**Prof .Dr / Safaa Kotb**

*Community Nursing –Assiut University*

**Prof .Dr / Manal Farouk**

*Obst. Nursing –Assiut University*

**Prof.Dr / Saher Mohamed Morsy**

*Nursing Administration -Assiut University*

## INTERNATIONAL EDITORS:

**Prof.Dr /Katia Grillo Padilha**

*(Workload and Patient Safety)Medical surgical nursing – school of nursing*

*University Of São Paulo – Brazil*

**Prof.Dr /Ahmed O Kasseb, MD**

*Associate Professor, Department of Gastrointestinal Medical Oncology, The University of Texas MD Anderson Cancer Center, Houston, Texas.*

**Prof.Dr /Venessa De Brito Poveda**

*(Preoperative Nursing)Medical surgical nursing – school of nursing University Of São Paulo – Brazil*

**Prof.Dr /Lilia De Souza Nogueira**

*(Intensive Care and Cardiology)Medical surgical nursing – School of Nursing ,University Of São Paulo – Brazil*

**Prof.Dr /Deborah mc carter - Spaulding**

*PHD,WHNP-BC,RN,IBCLC*

*Associate Professor ,St . Anselm College*

**Editor in chief :**

**Prof / Zeinab Abd El- Lateef Mohamed**

*Dean of Faculty of Nursing – Assiut University*

**Associate editor:**

**Prof / Mimi Mohamed Mekkawy**

**Editorial board:**

**Prof / Samah Mohamed Abdalla**

**Prof / Hoda Diab Fahmy**

**Prof / Ikram Ibraheem Mohamed**

**Prof / Mervat Aly Kamees**

**Administration secretary:**

**Ahmed Fathy Ali Frag**

**Nagah Sayed Abo El Hassan**

**Mahmoud Ahmed Musa**

## Effect of Clinical Pathway Implementation on Outcomes of Patients with Chronic Obstructive Pulmonary Disease

Mona Mohammad Abo El-Ella<sup>1</sup>, Zienab Abd El-Lateef Mohammad<sup>2</sup> & Olfat Mostafa El-Shinnawy<sup>3</sup>.

<sup>1</sup>. Assistant Lecturer in Medical-Surgical Nursing Department, Faculty of Nursing, South Valley University, Egypt.

<sup>2</sup>. Professor of Medical-Surgical Nursing, Faculty of Nursing, Assiut University, Egypt.

<sup>3</sup>. Professor of Chest Diseases and Tuberculosis Faculty of Medicine, Assiut University, Egypt.

### Abstract

Chronic obstructive pulmonary disease (COPD) is an incapacitating and progressive respiratory state that leads to significant burden, both medically and economically. Clinical pathway (CP) promotes the quality of care through the continuum by improving risk-adjusted patient outcomes, increasing patient satisfaction, promoting patient safety, and optimizing the use of resources. **The aim of this study:** was to evaluate the effect of clinical pathway implementation on outcomes of patients with chronic obstructive pulmonary disease. **Patients and Methods:** A quasi experimental research design was used. 60 adult patients with COPD of both sexes were included; they were sequentially recruited equally into 2 groups (control and study groups 30 for each). A study was performed at the Chest Department in Assiut University Hospitals. One tool was utilized for data collection: COPD assessment sheet and Clinical Pathway Protocol. **Results:** There was highly significant statistical difference between the two groups concerning hospital stay and anxiety level and dyspnea degree on discharge. **Conclusion and Recommendations:** implementation of CP in the COPD patients' management significantly decreased the hospital stay and improved dyspnea and decrease anxiety levels therefore yielding cost savings. The CP should be implemented for COPD patients to replace the conventional nursing care plan.

**Keywords:** *Clinical Pathway, Hospital Stay & Chronic Obstructive Pulmonary Disease.*

### Introduction

Chronic obstructive pulmonary disease (COPD) may be a respiratory turmoil characterized by gradual, partly reversible airway obstruction and lung hyperinflation. This leads to dynamic dyspnea, constraint of daily activities and declining health-related quality of life, as well as increasingly repeated and severe exacerbations. It is frequently result of exposure to tobacco smoke, but is additionally associated with air pollution, biomass and occupational exposures to chemicals and dusts. The illness is essentially underdiagnosed, driving to hardness in calculate approximately spread at both the national and international level (O'Donnell et al., 2008 & Plishka et al., 2016).

The COPD is the 4<sup>th</sup> leading reason of death in the world, and the WHO prognostic further increments in spread and mortality. Although a growing body of associated knowledge, there stays much to learn about patient and family-driven goals for medical and surgical treatment to support self-management strategies, to guide nursing practice, and to provide a context for therapeutic outcomes (Gullick & Stainton, 2008).

With a viewpoint to diminish the burden of COPD, high-quality guidelines have been sophisticated. Usually, these guidelines indicate disease identification through spirometry, management through a combination of smoking cessation, pharmacologic treatment, physical activity,

inoculation, prevention and ideal management of exacerbations of COPD. When implemented, these steps have uncovered considerable increases in client quality of life, as well as a lowering in healthcare utilization (O'Donnell et al., 2008 & Plishka et al., 2016).

Clinical pathway (CP) is structured multidisciplinary care plan which addresses specific clinical scenarios which help to coordinate and standardize care. The CP is evidence based integrating proven best practice but ideally can be adapted to any given hospital environment and culture. The CP purposes to boost the competence and quality of care through the continuum by improving risk-adjusted patient outcomes, promoting patient safety, increasing patient satisfaction, and optimizing the use of resources (Duggal et al., 2014 & Schrijvers et al., 2012).

In reality, the CP can be seen as a road map health care providers and the patient should keep track of it to drive the patient's care management and convalescence. As the patient advances along the path, indicated objectives ought to be achieved. In case a patient's advance veers off from the planned path, a change has happened and health care providers must make an activity arrange to address the problem or issue. The CP was sophisticated in reaction to the need to distinguish cost-effective care plans and quality to diminish the patient's length of remains in the hospital (Cherry and Jacob, 2014).

### The Study Significance

The COPD has obtained a solicitude as a major public health concern. It is presently the concentrate of intense research because of its tirelessly increasing spread, mortality, and disease burden. In Assiut, the number of COPD patients who were admitted to chest department was approximately 550 cases in 2016 (it represents nearly half of all cases admitted to the chest department in this year) (**Assiut University Hospitals Records, 2016**) The patient suffering from COPD is demanding and requiring the integration of skills from numerous different specialties. These patients often have prolonged hospitalizations, which may be marked by many complications. This study proposes that appropriately implemented clinical pathway has the probable to reduce length of hospital stay and restrict variability in care, thereby yielding cost provision.

### The Study Aim

The study aimed to evaluate the effect of clinical pathway implementation on outcomes of patients with chronic obstructive pulmonary disease.

### Research Hypothesis

1. Patients with COPD to whom clinical pathway is implemented will have less hospital stay than those who will receive a conventional hospital care.
2. Patients with COPD to whom clinical pathway is implemented will improve dyspnea and decrease anxiety level than those who will receive a conventional hospital care.

## Patients & Methods

### Design of Research

A quasi experimental research design was used in this study.

### Technical Design

#### Setting

The study was accomplished in the Chest Department at Assiut University Hospitals.

#### Study Sample

60 adult patients with COPD aged from 18 to 65 years old of both sexes were involved in this study. They were sequentially recruited equally into 2 groups (control who received a conventional hospital care and study group who received a clinical pathway 30 for each).

### Tools of data collection

#### Tool (I): COPD outcome assessment sheet

The researcher developed this sheet using relevant national and international literatures. It was designed to assess patient's outcome and it included three parts to cover the following data:

**Part I: Patient profile as:** name, sex, age, marital status, level of education, occupation, date of discharge and admission, hospital stay, previous

admission to hospital, number of admissions in the last year.

#### Part II: Assessment of patient's condition

**through:** anxiety level by Hamilton Anxiety Scale: The scale consisted of 14 items, each determined by a series of symptoms, and measures both somatic anxiety and psychic anxiety. Each item was scored on a scale of 0 (not present) to 4 (very severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe (**Hamilton, 1959**).

#### Part III: Dyspnea level by (Modified Borg Dyspnea Scale):

It was adopted from **Borg (1982) & Kendrick et al. (2000)**. This scale was used to measure the degree of dyspnea on admission and discharge. It ranged from 0 to 10. Nothing at all (0), very very slight (Just Noticeable) (0.5), very slight (1), slight (2), moderate (3), somewhat severe (4), severe (5-6), very severe (7-8), very very severe (Almost Maximal) (9) and maximal (10).

#### Clinical Pathway Protocol

This protocol was adopted from **Grey Bruce Health Network (2011)**, and then modified after the approval of collaborative pathway team. The pathway consisted of the following:

#### I: Pre-Printed Orders (COPD Admission Order Set):

Once a patient was admitted with COPD, these orders were initiated in an in-patient unit.

#### II: COPD Clinical Pathway

The COPD clinical pathway had a 5 day predestined length of remain. It had two stages (stage (1) was almost 2 days and stage (2) was almost 3 days). If the patient met the outcomes at the top of the page, he was ready to transfer to the next stage. Staff member used the column for his shift and initial tasks as they were done, or enter not implemented and initial if they are not implemented to the patient. Throughout each stage, staff pointed out and completed the discharge criteria page (If any of the criteria had been met, these initialed and dated).

#### III: Patient Pathway

It explained to the patients what was happened to them during hospitalization. It was offered to the patient at admission to discharge.

#### IV: Patient Education Materials (COPD booklet):

It was developed according to assess COPD patients' needs and prepared in an arabic language by the researcher and based on the related literature and expertise opinions.

#### Content of COPD booklet

- **Theoretical part covered:** introduction about the disease, anatomy and physiology of respiratory system, definition of COPD, types, stages of COPD, causes, signs and symptoms, complications, factors that can make symptoms worse (COPD

exacerbation), suggestions to reduce or avoid exposure to those factors, diagnosis, management, smoking cessation, nutrition and prevention.

- **Practical part covered:** using inhalers, breathing and coughing exercise, body positions to reduce shortness of breath and relaxation techniques.

#### **V: COPD Teaching Checklist**

It was set within the chart and utilized to track what information had been given to the patient and what was dropped to teach to the patient before hospital discharge.

#### **Operational Design**

##### **Administrative Design**

An official consent to perform the study was taken from the responsible authorities at the previously mentioned research setting after explaining the study aim.

##### **Data Collection Technique**

The study was accomplished on 3 phases:

##### **Phase (1): Preparatory Phase**

It included reviewing of literature related to the effect of clinical pathway implementation on outcomes of patients with COPD; theoretical knowledge about various aspects of problem using books, articles periodicals, scientific journals, research and the internet was done in order to get a clear picture of all aspects related to COPD and CP, in addition to, to form the tool for data collection and for implementation of CP.

##### **Tool Validity**

It was instituted by panel of seven expertises in nursing (4 professors) and medical (3 professors) staff who checked the tool for its efficiency, slight modifications were needed.

##### **Tool Reliability**

It was established by Alpha Cronbach's test which is used to measure the internal consistency ( $r = 0.87$ ).

#### **Pilot Study**

A pilot study was implemented on 10% of sample in a selected setting to assess the clarity and appropriateness of the created tool. No needful change was done, so the patients selected for the pilot study were implicated in the main study.

##### **Phase (2): Implementation Phase**

- An agreement was taken from the head of the chest department at Assiut University Hospitals.
- Each patient involved in the study (in the control then the study group) was assessed for his medical condition (Tool I). Data was collected from control group first then from the study group to avoid sample confusion. The control group received the routine hospital care while the study group undergone developed clinical pathway protocol.
- The researcher presented herself and elucidated the study aim for the patients who were involved in the

study. The researcher confident that the data collected and information were confidential and would be used only to improve their health.

- Staff members who involved in the patient care (all nurses and physicians in the department) were met in separated sessions to explain the pathway in brief and outline the main roles to be played by each one to be applied by them on the assigned patients.
- The researcher explained to each patient in the study group the patient's pathway and the contents of the booklet and taught them how to do breathing and coughing exercises.
- Data were collected from patients with COPD from admission until discharge from the Chest Department in Assiut University Hospital daily during three shifts for both groups.

##### **Phase (3): Evaluation Phase**

This phase consisted of comparing the patient's outcomes (length of stay, anxiety level and dyspnea scale) of both groups during the admission and discharge using tool I.

#### **Statistical Design**

The data assembled were tabulated and statistically analyzed to compare the patient's outcomes of both groups during the admission and discharge as regards the various variables. The statistical analysis was done using computer program SPSS ver. (23). Descriptive statistics (number, percentage, mean  $\pm$  S.D) were done. Qualitative variables were comparing by chi-square test. For independent samples, quantitative variables were comparing by t-test. P. value was calculated to be significant if:

- $P > 0.05$  Non significant (ns).
- $P < 0.05$  Significant.
- $P < 0.01$  Highly significant.

#### **The study limitations**

- The work place circumstances where the data were collected required almost permanent presence in the department and which was unsuitable for me and my job place.
- The spirometry stopped working for a period of time which postponed the research for a while.
- The closure of the chest department to re-structure and transfer to another place which had less capacious leads to reduction of number of admitted cases.
- Lack of pervious scientific studies that applied the clinical pathway to COPD patients.

## Results

Table (1): Frequency distribution of demographic data for the patients with COPD in the study and control groups (n=60).

Variables	Study (N=30)		Control (N=30)		p.value
	N	%	N	%	
<b>Age groups:</b>					0.28 ns
18 - < 35 years	2	6.7	0	0.0	
35 - < 50 years	3	10	5	16.7	
50 - 65 years	25	83.3	25	83.3	
<b>Sex:</b>					0.09 ns
Male	19	63.3	13	43.3	
Female	11	36.7	17	56.7	
<b>Marital Status:</b>					1.00 ns
Single	0	0.0	1	3.3	
Married	30	100	28	93.3	
Divorced	0	0.0	0	0.0	
Widower	0	0.0	1	3.3	
<b>Level of Education:</b>					0.89 ns
Illiterate	20	66.7	20	66.7	
Read and write	6	20	7	23.3	
Secondary school	4	13.3	3	10	
High education	0	0.0	0	0.0	
<b>Occupation:</b>					0.37 ns
Employee	1	3.3	2	6.7	
Industrial work	0	0.0	1	3.3	
Manual work	5	16.7	6	20	
Farmer	8	26.7	4	13.3	
Retied	4	13.3	2	6.7	
House wife	11	36.7	14	46.7	
Not working	1	3.3	1	3.3	
<b>Address:</b>					0.66 ns
Urban	3	10	3	10	
Rural	27	90	27	90	

Use cross tabulation for this comparison, significant statistical difference  $P \leq 0.05$  ns =Not Significant

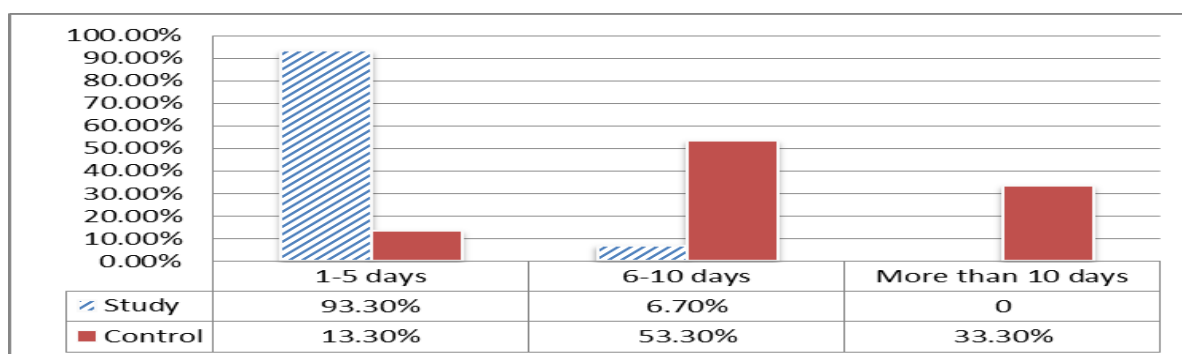


Figure (1): Length of stay in hospital among the studied patients with COPD in the study and control groups

Use cross tabulation for this comparison, significant statistical difference  $P \leq 0.05$

**Table (2): Frequency distribution of anxiety level of the studied patients with COPD in the study and control groups (n=60).**

Items	Study group (N=30)				Control group (N=30)				P <sub>1</sub>	P <sub>2</sub>
	On Admission		On Discharge		On Admission		On Discharge			
	N	%	N	%	N	%	N	%		
Mild severity	0	0.0	25	96.2	0	0.0	1	3.3	-	0.001*
Mild to moderate severity	0	0.0	5	14.7	0	0.0	7	23.3		
Moderate to severe	30	100	0	0.0	30	100	22	73.3		

Independent t-test used for this comparison

\*\* = Highly Significant Difference

P<sub>1</sub>: Comparison between study and control groups on admissionP<sub>2</sub>: Comparison between study and control groups on discharge**Table (3): Frequency distribution of Dyspnea degree among the studied patients with COPD in the study and control groups (n=60).**

Severity	Study (n=30)				Control (n=30)				P <sub>1</sub>	P <sub>2</sub>
	On Admission		On Discharge		On Admission		On Discharge			
	N	%	N	%	N	%	N	%		
Nothing at all									0.09 ns	0.001 **
Very, very slight (just noticeable)										
Very slight										
Slight										
Moderate			12	40%			1	3.3%		
Somewhat severe			11	36.7%			2	2.6%		
Severe	0	0.0%	5	16.7%	0	0.0%	12	40%		
Very severe	22	73.3%	2	6.7%	15	50%	15	50%		
Very, very severe (almost maximal)	3	10%			7	23.3%				
Maximal	5	16.7%			8	26.7%				

\*\* = Highly Significant Difference      ns = Not Significant

P<sub>1</sub>: Comparison between study and control groups on admissionP<sub>2</sub>: Comparison between study and control groups on discharge**Table (4): Relation between total Dyspnea degree and anxiety level among the studied patients with COPD in the study group (n =30).**

HAM-A Scale	Dyspnea Scale	p.value
	Mean ± SD	
On Admission	29.13 ± 7.56	0.001**
On Discharge	13.66 ± 6.14	

\*\* = Highly Significant Difference

**Table (1):** Indicated that majority of the control and study groups lived in rural area (90 %) and had age between 50 - 65 years (83.3 %). Two third of the study group were males (63.3 %), whereas more than half of the control group were females (56.7 %). The entire of the study group was married (100 %), whereas majority of the control group was married (93.3 %). Near the half of the two groups were housewives (36.67 %), (46.7 %) respectively and two third of both groups were illiterate (66.7 %).

**Figure (1):** Showed that the study group had less hospital stay than the control group (p < 0.001).

**Table (2):** Revealed that, regarding anxiety level on discharge, there was highly significant statistical difference between the two groups (p < 0.001).

**Table (3):** Demonstrated that, concerning dyspnea degree on discharge, there was highly significant statistical difference among the two groups (p < 0.001).

**Table (4):** Showed the relation between total Dyspnea degree and total Anxiety level and revealed there was highly statistical significant relation ( $p < 0.001$ ).

### Discussion

The CP is a multidisciplinary care plan that promotes the monotone care of patients with identical needs during a specified time frame. Also referred to as multidisciplinary pathways of care, these patient-concentrated records portray expected outcomes and clinical standards at each stage during the hospital remain. The CP is not appropriate for all patients but is intentional to implement to hardly 80 percent of patients within a diagnostic category. Although they can never subrogate professional clinical judgment, CP facilitates the provision of efficient, coordinated and evidence-based care (**D'Entremont, 2009**).

Therefore, this study was conducted aiming to assess clinical pathway implementation on outcomes of patients with chronic obstructive pulmonary disease. The present study illustrated that patients with COPD to whom clinical pathway was applied had less hospital stay, improved dyspnea and anxiety levels than those who received a conventional hospital care thereby yielding cost savings.

Based on the findings of the present study, the patient's demographic data between the study and control groups were comparable and no significant differences were observed. This finding was agreeing with **Abd-Elwanees et al., (2014)** who mentioned that there were no any significant differences in the age, gender, and other demographic and baseline characteristics between the CP and the non-CP groups.

Concerning level of education, this study illustrates that two third of both groups were illiterate. While **Ban et al., (2012)** found that the non-CP group comprised of patients with lower levels of education compared to the CP group.

Regarding length of hospital stay, this study confirmed our hypothesis that usage of clinical pathway in COPD management decreased the hospital stay; where we noticed that there was highly significant statistical difference among the two groups. Also, **Abd-Elwanees et al., (2014)** found that the mean length of stay of patients managed by the CP was less than the non-CP group who were managed according to the unit's traditional care. This was in congruence with **Ban et al., (2012)** who found a significant decline in hospital stay of the CP group as contrast to the non-CP group. Also, **Celis et al., (2004)** reported that the mean hospital stay for CP patients was less than the control group.

In the current study, with regard to anxiety level as measured by Hamilton Anxiety Score, the researcher

noticed that both study and control groups were equally distributed on admission, whereas there was highly significant statistical difference among the two groups on patient's discharge. Where the anxiety level decreased from (severe to mild severity) for most of the study group, most of the control group stilled in the severe level.

This result was almost similar to **Abd-Elwanees et al., (2014)** who found on comparing the CP and non-CP groups regarding anxiety level, both groups were nearly equally distributed and no significance differences were found between them on admission. While there was a lessening of anxiety level on discharge for the both groups and the level of lessening in the CP group was higher than its level in the non-CP group. In addition, results of **Santamaria et al., (2004)** referenced that there was significantly decrease in anxiety levels in the pathway group.

This study demonstrated that there was significant statistical difference among both groups with regard to total anxiety level on admission and there was highly significant statistical difference among the two groups on discharge. **Mohamed et al., (2017)** found that, there was a highly statistically significant difference among mean scores of total mood disorder pre and post implementation of COPD care protocol. This may be because of the reality that, the care protocol implementation had a positive impact on ameliorating their level of dyspnea which consequently ameliorating their mood.

In this context, **Abd-Elwanees et al., (2014)** reported that there was no significance difference among the two groups concerning Hamilton Anxiety Score on patient's admission. On the contrary, on patient's discharge the mean value of Hamilton Anxiety Score was significantly reduced for the patients managed by the CP group than for the non-CP group.

In the same line, **Lamers et al., (2010)** reported that patients receiving the minimal psychological intervention had significantly less depressive symptoms and less symptoms of anxiety at 9 months than patients receiving habitual care.

**Marciniuk et al., (2011)** stated that dyspnea is a cardinal symptom of COPD, and its severity and enormousness increases as the disease progresses, leading to significant disability and a negative influence on life quality. In this regards, this study finding demonstrated that there was highly significant statistical difference among the two groups regarding dyspnea degree on discharge.

This result was almost similar to **Abd-Elwanees et al., (2014)** who found a significant dismiss in dyspnea score among patients in the both groups on discharge. It can be noticed that the level of decrease in the CP group was higher than its level in the non-CP group.



This was in congruence with the findings of **Mohamed et al., (2017)** who mentioned that, there was statistically significant difference among levels of dyspnea for patients with COPD pre and post application of COPD care protocol. This may be because of the effective continuous practicing of breathing exercise which has a positive impact on improving respiratory muscles.

The current study reported that there was highly significant statistical relation between total Dyspnea degree and total anxiety level. **Tselebis et al., (2016)** stated that dyspnea at rest or on exertion does not correlate with the degree of anxiety-related symptoms, and furthermore, the degree of decrease in dyspnea with pharmacotherapy or exercise training is not associated with the reduction in anxiety-related symptoms, this indicates that there are other factors contributing to this relationship. Moreover, although patients with panic report more calamitous misinterpretations of somatic symptoms, they don't vary from patients without panic on measures of physical functioning, disease severity, dyspnea, or psychological distress. Thereby, it has been offered that panic symptoms may reflect a cognitive demonstration of pulmonary symptoms rather than objective pulmonary status.

### Conclusion

Implementation of clinical pathway in COPD patients' management significantly decreased the hospital stay and improved dyspnea and anxiety levels thereby yielding cost savings.

### Recommendations

1. Clinical pathway should be implemented for COPD patients to replace the traditional nursing care plan.
2. The current clinical pathway should be constantly monitored and revised to ensure that it remains effective and relevant and operate in the way it was designed to.
3. Nurses should be encouraged to collaborate with the other health members to provide a comprehensive care for the patients with COPD using the clinical pathway.
4. Elaborating a training program for health team on the COPD clinical pathway implementation for better quality of care.
5. All COPD patients and their family should receive adequate knowledge and skills regarding management of COPD.
6. Replication of this study is needed with larger sample size and taking into consideration the study limitation to enhance the accuracy of the findings.

### References

1. **Abd-Elwanees A., El-Soussi A., Othman S., & Ali R., (2014):** Effect of Implementing Clinical Pathway on the Clinical Outcomes of Patients with Acute Exacerbations of Chronic Obstructive Pulmonary Disease, *International Journal of Nursing Science*, vol. (4), No. (1): 1 - 10.
2. **Assiut University Hospitals Records, (2016):** Chest Diseases and Tuberculosis Department Record.
3. **Ban A., Ismail A., Harun R., Abdul Rahman A., Sulung S., & Mohamed A., (2012):** Impact of clinical pathway on clinical outcomes in the management of COPD exacerbation, *BMC Pulmonary Medicine*, BioMed Central Ltd., vol. (12:27), <http://www.biomedcentral.com/1471-2466/12/27> (Accessed 8-4-2017).
4. **Borg G., (1982):** Psychophysical bases of perceived exertion, *Med Sci Sports Exerc.*; vol. (14), pp: 377 - 81.
5. **Celis G., Lodewijckx C., Schoonis A., & Decramer M., (2004):** Clinical Pathway for Acute COPD Exacerbations Reduces Hospital Stay and Readmission, [www.bvppv-sbip.be/pdf%20bestanden/ers2006\\_geert.pdf](http://www.bvppv-sbip.be/pdf%20bestanden/ers2006_geert.pdf) (accessed 8-11-2017).
6. **Cherry B., & Jacob S., (2014):** Contemporary Nursing Issues, Trends and Management, 6<sup>th</sup> ed., Mosby, an imprint of Elsevier Inc., unit (3), ch: (20), (21), pp: 370 - 371, 385.
7. **D'Entremont B., (2009):** Clinical Pathways: The Ottawa Hospital Experience - Future Direction, *nurse candian*, <https://canadian-nurse.com/articles/issues/2009/may-2009/clinical-pathways-the-ottawa-hospital-experience>, (Accessed 27-4-2018).
8. **Duggal S., Flics S., & Cornell C., (2014):** Introduction of Clinical Pathways in Orthopedic Surgical Care: The Experience of the Hospital for Special Surgery, Springer, ch: (31), pp: 365, [https://link.springer.com/chapter/10.1007%2F978-1-4614-0100-1\\_31](https://link.springer.com/chapter/10.1007%2F978-1-4614-0100-1_31), (Accessed 26-4-2018).
9. **Grey Bruce Health Network, (2011):** COPD Care Pathway, <http://www.healthpei.ca/carepathways/> (Accessed 22-10-2014).
10. **Gullick J., & Stainton M., (2008):** Living with Chronic Obstructive Pulmonary Disease: Developing Conscious Body Management in a Shrinking Life-world, *Journal of Advanced Nursing*, 64(6), pp: 605 - 614, <https://www.ncbi.nlm.nih.gov/pubmed/19120575>, (Accessed 5-5-2017).
11. **Hamilton M., (1959):** The assessment of anxiety states by rating, *Br J Med Psychol.*, vol. (32), pp: 50 - 55.

12. **Kendrick K., Baxi S., & Smith R., (2000):** Usefulness of the modified 0-10 Borg scale in assessing the degree of dyspnea in patients with COPD and asthma, *J Emerg Nurs.*, vol. (26), No. (3), pp: 216 - 22.
13. **Lamers F., Jonkers C., Bosma H., Chavannes N., Knottnerus J., & Eijk J., (2010):** Improving Quality of Life in Depressed COPD Patients: Effectiveness of a Minimal Psychological Intervention, *Journal of Chronic Obstructive Pulmonary Disease*, vol. (7), pp: 315 - 322.
14. **Marciniuk D., Goodridge D., Hernandez P., Rocker G., Balter M., Bailey P., Ford G., Bourbeau J., O'Donnell D., Maltais F., Mularski R., Cave A., Mayers I., Kennedy V., Oliver T., & Brown C., (2011):** Managing dyspnea in patients with advanced chronic obstructive pulmonary disease: A Canadian Thoracic Society clinical practice guideline, *Can Respir J.*, vol. (18), No. (2), pp: 69 - 78.
15. **Mohamed D., Ahmed S., Mohamed A., & Abdel Rahman A., (2017):** Effect of Care Protocol on the Knowledge, Practice and Clinical Outcomes of Patients With Chronic Obstructive Pulmonary Disease, *Journal of Nursing Education and Practice*, Vol. (7), No. (2), pp: 107 - 116.
16. **O'Donnell D., Hernandez P., Kaplan A., Aaron S., Bourbeau J., Marciniuk D., Blater M., Ford G., Gervais A., Lacasse Y., Maltais F., Road J., Rocker G., Sin D., Sinuff T., & Voduc N., (2008):** Canadian Thoracic Society Recommendations for Management of Chronic Obstructive Pulmonary Disease – 2008 – update Highlights for Primary Care, Pulsus Group Inc., *can Respir J*, Vol. (15), pp: 2A, [http://www.gov.pe.ca/photos/original/DHW\\_COPD\\_gls.pdf](http://www.gov.pe.ca/photos/original/DHW_COPD_gls.pdf).
17. **Plishka C., Rotter T., Kinsman L., Hansia M., Lawal A., Goodridge D., Penz E., & Marciniuk D., (2016):** Effects of Clinical Pathways for Chronic Obstructive Pulmonary Disease (COPD) on Patient, Professional and Systems Outcomes: Protocol for a Systematic Review, *Systematic Reviews*, 5:135.
18. **Santamaria N., Conners A., Osteraas J., Ham J., & Boodram B., (2004):** A Prospective Cohort Study of the Effectiveness of Clinical Pathways for the In-patient Management of Acute Exacerbation of Chronic Obstructive Pulmonary Disease (COPD), *Collegian*, Vol. (11), No (1), pp: 12 - 16.
19. **Schrijvers G., Hoorn A., & Huiskes N., (2012):** The Care Pathway Concept: concepts and theories: an introduction, *International Journal of Integrated Care*, vol. (12), DOI: <http://doi.org/10.5334/ijic.812> (Accessed 16-4-2017).
20. **Tselebis A., Pachi A., Iannakis I., Kosmas E., Bratis D., Moussas G., & Tzanakis N., (2016):** Strategies to improve anxiety and depression in patients with COPD: a mental health perspective, *Neuropsychiatric Disease and Treatment*, vol. (12), pp: 297 - 328.