

EFFECT OF IMPLEMENTING CLINICAL PATHWAY ON LEVEL OF DYSPNEA AND ANXIETY AMONG ELDERLY PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract

Background: Globally, one of the main causes of chronic morbidity and mortality is chronic obstructive pulmonary disease. A clinical pathway is an evidence-based interdisciplinary management tool that defines and optimizes the many tasks performed by professionals involved in patient care, improving patient outcomes and elevating staff and patient satisfaction. **Aim:** Determine the effect of implementing clinical pathway on level of dyspnea and anxiety among elderly patients with chronic obstructive pulmonary disease. **Research design:** A quasi experimental research design was utilized. **Method:** Sixty two COPD elderly patients who were attending the Mansoura University Hospital's chest medicine department were included in the purposeful sample. The individuals were split equally into two groups: study group (n=31) who received clinical pathway protocol, and control group (n=31) who received only routine care. **Results:** Patients in the study group had significantly improved perceived level of dyspnea on discharge than the control group with mean 4.22 ± 1.05 and 6.00 ± 1.36 for the study group and control group respectively. Also, patients in the study group had significantly improved level of anxiety on discharge than the control group with mean 11.38 ± 3.83 and 18.48 ± 5.98 for the study group and control group respectively. **Conclusion:** Clinical pathway is effective tool in improving chronic obstructive pulmonary disease patients' level of perceived anxiety and dyspnea. **Recommendation:** Training programs should be implemented for nurses about respiratory care based on the clinical pathway to improve nurses' performance and patients' outcomes.

Index Terms: Chronic Obstructive Pulmonary Disease, Clinical Pathway, Elderly Patients, Dyspnea, Anxiety.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a condition that can be prevented and treated. It is typically brought on by exposure to dangerous particles or gases and is defined by reduced airflow and persistent respiratory symptoms (GOLD, 2021). Frequently, age is mentioned as a COPD risk factor (Mollica et al., 2021). The structure and function of the lungs gradually deteriorate with age, increasing the risk of

developing chronic respiratory diseases like COPD. As lifespans continuing to rise internationally, this poses a serious public health concern (Tudorache et al., 2017).

The frequency of COPD is approximately 11.7% worldwide, and it causes over 3 million deaths each year. With an estimated 10% prevalence in the US population over 75 years old, chronic obstructive pulmonary disease (COPD) is frequent in the elderly (Mollica et al., 2021). According to the Global Initiative for Chronic Obstructive Lung Disease (Said et al., 2015), the prevalence of COPD among high-risk persons in Egypt is projected to be approximately 10%. COPD is an increasingly serious health issue in Egypt. It accounts for more than 120,000 fatalities in the United States and 3.2 million deaths worldwide annually, making it the fourth most common cause of death as well as the fourth most common cause of morbidity and mortality associated to chronic diseases (Rodriguez & Silveyra, 2022).

Breathlessness, coughing, and increased sputum are the main symptoms of COPD; many patients also have wheezing and chest tightness or congestion, the latter especially during periods of physical activity. Increased anxiety and/or depression, sleep difficulties and accompanying daytime sleepiness, exhaustion, weight loss, and anorexia are some other secondary symptoms and associated comorbidities (Tsiligianni & Kicks, 2020).

Patients with COPD may even have higher rates of anxiety and depression than those with other chronic concomitant diseases (Rahi et al., 2023). With estimated incidence rates of 8–80% and 2–96%, respectively, depression and anxiety are common comorbidities in COPD patients (Martínez-Gestoso et al., 2022). Furthermore, there exists a close relationship between anxiety disorders and dyspnea. Without a clear cause, anxious individuals may have dyspnea and an aggravation of the underlying symptoms of COPD. This is often the case in the context of panic disorder and agoraphobia, which increases hospitalization rates (Rahi et al., 2023).

The goals of COPD treatment are to reduce symptoms, stop exacerbations, preserve lung function, and enhance quality of life. Inhalers and oxygen therapy in the event of respiratory distress are examples of disease prevention (Phuthornchai et al., 2023). Clinical pathways (CPWs) are an essential component in efforts to raise health-related quality standards. For certain patient groups, CPWs are utilized to minimize variation, enhance care quality, and optimize results (Lawal et al., 2016).

A clinical pathway is a successful tool to direct the application of clinical treatment for a range of patient diseases and is a strategy to encourage evidence-based practice. It consists of algorithms that are represented by flow charts, a set of choices, and a comprehensive course of treatment with the goal of achieving an ideal course of care by methodical and prompt interprofessional decision-making and interventions (Asmirajanti et al., 2018).

Clinical pathway implementation is beneficial to nurses as a tool for socialization and treatment process evaluation (Wijayanti et al., 2016). Any pathway's creation, execution,

and ongoing assessment should involve nursing personnel. In order to ensure that clinical pathways incorporate best practices and provide quality patient care, nurses must be aware of their responsibilities (Abd Elhaleem et al., 2020).

The Aim of the Study was to:

Determine the effect of implementing clinical pathway on level of perceived dyspnea and anxiety among elderly patients with chronic obstructive pulmonary disease.

Research Hypotheses:

1. Older adults with COPD who follow a clinical pathway will experience less dyspnea than those who receive standard hospital treatment.
2. Older adults with COPD who follow a clinical pathway will experience reduced anxiety compared to those receiving standard hospital treatment.

Design of Study:

This study utilized a quasi-experimental research design (study-control). The study design was appropriate for examining the impact of a therapeutic pathway on the treatment outcomes of older adult individuals suffering from chronic obstructive pulmonary disease.

Setting:

This study was carried out at the Mansoura University Hospital's department of chest diseases. It was made up of three rooms on one floor, each with ten beds, and three units for intensive care, each with six beds. Additionally, it had room with a device for measuring pulmonary function tests and another unit for sleep disturbances.

Study Sample:

Sixty two older adult patients attending the previously described setting comprised the purposive sample. The subjects were allocated equally into two groups, with 31 people in each group for the study and the control group. The groups were chosen based on the following requirements:

Inclusion Criteria:

1. Participant of both sexes who are 60 years of age or older.
2. Admitted to the department of chest medicine after being diagnosed with COPD in accordance with the GOLD guidelines for 2022.
3. Be able to speak clearly and consent to take part in the study.

Exclusion Criteria:

1. Older adult patients with other respiratory conditions or other related conditions such unstable angina or heart failure are excluded.
2. Elderly patients with COPD who engaged in alternative nursing care programs.

Sample Size Calculation

Calculation of Sample Size

DSS research was utilized to calculate sample size ([https://www.DSS_research.com/calculating sample size using percentage](https://www.DSS_research.com/calculating_sample_size_using_percentage)). Percentage of severe dyspnea was 16.7 on discharge among group of implemented clinical pathway and it was 40.0% among control group (**Abo El Ella et al., 2018**), with alpha error of 5% (95% significance) and β error 10% (study power of 90%). Then the calculated sample size is 62.

According to the previous mentioned study criteria. The elderly patients were divided randomly into study and control groups by block randomization, the researcher was used block size of 4 that gives balanced combinations with 2 A for study group and 2 B for control group subjects will calculated as 6 (AABB, BBAA, ABAB, BABA, ABBA & BAAB). Blocks were randomly chosen to determine the assignment of all subjects.

Tools

Three tools were used in this study to collect the data:

Tool I: Structured Interview Sheet for Health and Demographic Data

In order to gather baseline data from the study participants, the researcher created this three-section tool, which is based on a review of pertinent literature:

Section 1: Demographic information: age, gender, education level, marital status, employment status before to retirement, and income source.

Section 2: Medical Health History: includes information about past chronic illness history, current medication usage, dates of admission and discharge, length of hospital stay, prior hospital admission, number of hospital admissions in the past year, and history of exposure to risk factors for illness such as dust, smoke, air pollution, and chemical fumes.

Section 3: Pulmonary Functions Tests

The obstructive ventilatory defect was assessed using it. Spirometry was used to measure the results of several tests, which included Forced Vital Capacity (FVC), Forced Expiratory Volume in First Second (FEV1), and the ratio of FEV1/FVC, which measures the two variables together.

It measures the patient's capacity to breathe in and out of air as well as the ease and speed at which they can expel air from their lungs. The spirometer is a highly valid and reliable tool for assessing lung function (Sooriyakanthan, Wimalasekera, & Kanagasabai, 2019) and (Kim and Lee, 2020).

The pulmonary function test's parameters

Spirometer test	Normal	Abnormal	
A. Forced Expiratory Volume in first second (FEV1) B. Forced Vital Capacity (FVC)	Equivalent to or over than 80%	Mild	70-79%
		Moderate	60-69%
		sever	> 60%
C. (FEV1/ FVC)	Equivalent to or over than 70%	Mild	60-69%
		Moderate	50-59%
		sever	Less than 50%

(Sooriyakanthan, Wimalasekera, & Kanagasabai, 2019) and (Kim, & Lee, 2020).

Tool II: Modified Borg Dyspnea Scale

Borg developed this tool in 1982. The purpose of this tool was to evaluate the degree of dyspnea upon admission and discharge in response to submaximal exercise and treatment. This scale has twelve items and ten rating scales, with zero denoting no dyspnea and 0.5 representing very, very slight (just noticeable), 1 denoting very slight, 2 slight, 3 moderate, 4 somewhat severe, 5 and 6 severe, 7 and 8 very severe, 9 representing very very severe (almost maximal), and 10 denoting maximal dyspnea. According to Mohammed et al. (2016), it was translated into Arabic and shown to be valid and dependable (r=0.94).

Tool III: Anxiety Inventory for Respiratory Disease (AIR)

Yohannes, Goldbart, Fatoye, & Willgoss (2013) developed this tool. It was a quick, non-somatic, condition-specific self-report anxiety instrument designed to gauge anxiety in COPD patients. The AIR was a 10-item anxiety screening tool that included three questions concerning panic and seven questions about generalized anxiety. A 4-point rating system, with 0 representing "not at all" and 3 representing "almost all the time," is used to grade the responses. The total score can range from 0 to 30. A high score indicates increased anxiety symptoms in COPD patients. Cronbach's α and intraclass correlation coefficients (r=0.86) were used to evaluate the reliability (Albarrati et al., 2022).

Protocol of the Clinical Pathway

This procedure was taken from the Grey Bruce Health Network (2011) and changed with the collaborative pathway team's consent. The following made up the pathway:

Part one: COPD Admission Order Set (Orders that are pre-printed):

In an inpatient unit, these orders were started as soon as a patient with COPD was admitted.

Part two: Clinical Pathway of COPD

Clinical pathway of COPD had a predetermined duration of five days. There were two phases to it: stage 1 lasted nearly two days, and stage 2 nearly three days. The patient will be prepared to go on to the next phase if the goals listed at the top of the page are

met. A staff person entered initial duties and shift information in the column as completed, or entered not implemented and initial if not applied to the patient. Staff members completed the discharge criteria sheet at each stage, noting any criteria that had been met and initialing and dating it.

Part three: Pathway of the Patient

The patients were given an explanation by the researcher on what to expect while they were in the hospital. From admission to discharge, it was made available to the patient.

Part four: Educational Materials for Patient (booklet of COPD)

Based on the researcher's assessment of the needs of COPD patients and an analysis of relevant literature, the booklet was created in Arabic, based on recent evidence (Australian Lung Foundation (2018), Agusti et al., (2023), Canadian Lung Association (2023), Cleveland Clinic (2023), Health Direct (2023), Halpin et al., (2021) & GOLD, (2022) and opinions of expertise.

COPD booklet content

- **Section of Theoretical Content:** The following topics were covered in the theoretical section: an overview of the disease, the anatomy and physiology of the respiratory system, changes brought on by aging that affect the respiratory system, the definition of COPD, its types and stages, causes, signs and symptoms, and an unusual manifestation in the elderly. Other topics covered included complications, factors that can exacerbate symptoms (COPD exacerbation), advice on minimizing or avoiding exposure to those factors, diagnosis, management, nutrition, and prevention.
- **Section of Practical content:** Using inhalers, practicing coughing and breathing, and airway clearance procedures were all covered in the practical section.

Part five: COPD Observational Checklist

It was adopted from Fadila, (2012) to evaluate how patients were managing their symptoms and quality of life following the implementation of a clinical pathway, containing the next:

Exercise of Breathing (Pursed lip and Diaphragmatic breathing): are two breathing exercises that were used to evaluate respiratory problems and enhance breathing patterns.

Techniques of Inhalers: was utilized to assess the appropriate usage of a dry powder inhaler with capsule or a metered-dose inhaler by COPD patients.

Airway Clearance Techniques (breathing and coughing exercises): It was used to assess the patient's capacity to remove secretions from the airways, which is the best strategy to reduce the risk of infection for those with COPD.

Rating Scheme

Each item on the checklist was scored using a 3-point system: 0 for no skill, 1 for partially completed skill, and 2 for fully completed skill. A total of 62 was the sum of the scores given to each technique. The final distribution of scores showed that the breathing retraining exercise received eight grades for pursed lip breathing and ten for diaphragmatic breathing, the airway clearance techniques received ten grades, and the inhaler use received thirty-four grades (16 for metered dose inhalers and 18 for dry powder inhalers) Fadila, (2012).

Validity of the Study Tools:

A panel consisting of five specialists in the fields of medical surgical nursing and gerontological nursing reviewed the data collection tools to ensure their suitability and content validity. The necessary adjustments were made.

Pilot Study:

Prior to beginning data collecting, a pilot research including 10% of the study sample was conducted to evaluate and determine the feasibility, application, clarity, relevance, and amount of time required for data collection. The appropriate adjustments were made as a result. The study sample will not include any elderly patients who were part of the pilot study.

Ethical Considerations

The Mansoura University Faculty of Nursing's Research Ethics Committee granted ethical permission. Each participant in the study gave their oral agreement after being fully informed about the purpose, nature, risks, and benefits of the research. Confidentiality of the information gathered and the study subjects' privacy were guaranteed, and it was utilized exclusively for that purpose. Every senior patient received assurances that their participation in the trial is entirely voluntary and that they can leave at any time without facing any negative consequences.

Process of Collecting Data

Phase I: preparatory phase:

- The Mansoura University Faculty of Nursing officially granted authorization to conduct the study and interview the senior patients in the chosen government hospital.
- A formal letter explaining the goal of the study and the timeline for data collection was sent, accompanied by consent from the head of the Mansoura University Hospital.
- The manager of the chest department at Mansoura University Hospital granted permission for the study's implementation and data gathering.
- After a careful analysis of pertinent literature, the researcher created Tool I (the Structured Interview Sheet for Health and Demographic Data).

- The researcher in this study used the Modified Borg Dyspnea Scale (tool II) in Arabic. The r coefficient ($r=0.94$) provided assurance of reliability.
- The researcher in this study utilized the Arabic versions of tools III (Anxiety Inventory for Respiratory Disease). The reliability was guaranteed by the r coefficient, which was 0.86.
- The researcher created the COPD booklet, which is divided into two sections (educational and practical), using plain Arabic and photo support. Regarding the content of the instructional management booklet's preparation, the theoretical contents covered topics such as defining chronic obstructive pulmonary disease and identifying its potential causes, among other disease-related information. The training pamphlet covered several practical topics such as utilizing inhalers, practicing breathing and coughing, and practicing airway clearance techniques.... etc.

Phase II: Implementation phase:

- The actual fieldwork took place between early September 2022 and late March 2023. Three days per week, the researchers have worked the morning shift from 9:00 a.m. to 1:00 p.m. in the study settings.
- In order to determine the proportion of recently admitted patients with chronic obstructive pulmonary disease, the researcher spoke with the relevant physicians and nursing supervisors in the department of chest diseases. Following that, patients who met the inclusion criteria were randomized, with 31 matched patients in each group, to either the study group or the control group based on when they arrived at the chest department.
- After explaining the aim of the study to each older adult patient, the researchers met them one-on-one, built rapport with them, and got their verbal consent to be recruited in the study.
- In order to complete the socio-demographic and medical data, medical records were reviewed. The required data were filled in by direct observation (barrel-shaped chest, accessory muscle use), physical examination (measured respiratory rate and SPO₂, listening to chest sound).
- To gather baseline data, each elderly patient in the study and the control groups conducted an individual interview at the start of the suggested program using tool I (Demographic and Health related Data Structured Interview Sheet), Tool II (Modified Borg Dyspnea Scale), tool III (anxiety inventory for respiratory disease).
- Clinical Pathway protocol was implemented on the study group and observational teaching checklist was carried out to ensure adherence of elderly patients.
- Following the collection of baseline data, the researcher met with the senior patients under study. Following that, the researcher organized six instructional sessions, three times a week for two weeks, lasting between thirty and forty-five minutes each.

- Every session started with a recap of the previous one, followed by an explanation of the objectives of the current one, and concluded with a time for open discussion. The following topics were discussed in the sessions:
- **In the first session**, the patients were given instruction on the meaning of COPD as well as its risk factors, symptoms, complications, diagnosis, and course of treatment.
- **In the second session**, the researcher taught the patients how to clear their airways by deep breathing and practicing coughing. We also covered breathing exercises like pursed lip and diaphragmatic breathing.
- **The third session**: Included teaching the patients how to use the inhalers (metered dose inhalers and dry powdered inhalers) and vaccination counseling was also given to the patients; influenza vaccine, pneumococcal vaccine, and corona vaccine are the recommended vaccinations for the elderly patients.
- **The fourth session**: Included a nutritional counseling session to the patients to cultivate good living and eating habits in patients with low oil, low salt, low sugar, high protein, and high fiber levels according to the dietary habits and tastes of the elderly. The patients were divided into five to six meals a day and encouraged to drink 2-3 liters of fluid per day. The consumption of spicy foods and heavy meals was strictly prohibited.
- **The fifth session**: Included smoking cessation counseling and referral; COPD patients require intensive, tailored smoking cessation support, including both behavioral and pharmacological interventions. Counseling should focus on identifying and addressing the patient's specific barriers and motivations for quitting. Strategies may include: Setting a quit date and developing a quit plan, providing education about the health benefits of quitting, and Recommending nicotine replacement therapy or other cessation medications.
- **The six session**: Included psychosocial support to the patients and their families. Educate patients on the relationship between stress and COPD exacerbations. Help patients identify and manage triggers for stress. Encourage relaxation techniques: Teach deep breathing exercises to help improve oxygen intake and reduce respiratory distress. Introduce meditation, yoga, or guided imagery to promote overall relaxation and calm. Patients also taught strategies to cope with breathlessness, breathing control and energy conservation techniques.
- Simple audio-visual materials such as a PowerPoint presentation on a lab top, booklet with illustrated pictures, and videos were used by the researchers to assist in transmitting ideas and maintaining the interest of the older adults during sessions.
- The elderly patients' phone numbers, which will be used to follow up and inquire about their adherence to these procedures.
- Control group received a conventional hospital care.

Phase III: Evaluation Phase:

This phase involved comparing the admission and discharge results of the patients in terms of their anxiety and dyspnea levels in the two groups.

Analysis of Statistics

Version 22 of the statistical software for social science (SPSS) was used to examine the data. Count and percentage were used to characterize and condense the data. For quantitative data that was regularly distributed, the arithmetic mean (X) and standard deviation (SD) were utilized as indicators of central tendency and dispersion, respectively. When the dependent variable is categorical, Pearson's Chi square test (χ^2) was utilized to analyze differences between two or more independent groups. In the event where there were numerous small predicted values, the Pearson's Chi square test might be substituted by the Monte Carlo exact test and the Fisher exact test (FET). When the dependent variable is regularly distributed, the differences between two independent groups were compared using the Student t-test of significance. When the dependent variable is normally distributed, two related samples are compared using the Paired Sample T-test. Data visualization was achieved through the use of SPSS and Microsoft Excel to create graphs. At $p < 0.05$, statistical significance was established.

RESULTS

Table 1: Pathway and Non-Pathway Groups' Demographic and Health-related data for the Elderly COPD Patients

Demographic data	Pathway group		Non-pathway group		Test of significance
	No (31)	(%)	No (31)	(%)	
Age					
60 to less than 65	17	54.8	12	38.7	$\chi^2 = 2.178$ (0.326)
65 to less than 70	7	22.6	12	38.7	
more than 70	7	22.6	7	22.6	
Mean \pm SD	66.64 \pm 6.35		66.48 \pm 5.05		
Sex					
Male	17	54.8	23	74.2	$\chi^2 = 2.536$ (0.111)
Female	14	45.2	8	25.8	
Marital status					
Single	0	0.0	2	6.5	MC = 4.244 (0.236)
Married	16	51.6	20	64.5	
Widow	13	41.9	7	22.6	
Divorced	2	6.5	2	6.5	
Educational level					
Illiterate	18	58.1	21	67.7	$\chi^2 = 0.655$ (0.721)
Read and write	7	22.6	5	16.1	
Secondary	6	19.4	5	16.1	
Occupation before retirement					
Work	17	54.8	23	74.2	$\chi^2 = 2.536$ (0.111)
Don't work	14	45.2	8	25.8	

Current work					
Yes	2	6.5	0	0.0	$\chi^2 = 2.067$ (0.151)
No	29	93.5	31	100.0	
Residence					
Rural	20	64.5	18	58.1	$\chi^2 = 0.272$ (0.602)
Urban	11	35.5	13	41.9	
Income					
Not enough	21	67.7	23	74.2	$\chi^2 = 0.313$ (0.576)
Enough	10	32.3	8	25.8	
Living condition					
Alone	5	16.1	7	22.6	$\chi^2 = 0.166$ (0.684)
With family	21	67.7	17	54.8	
With one of children	5	16.1	7	22.6	
Presence of comorbidity					
Yes	19	61.3	18	58.1	$\chi^2 = 0.067$ (0.796)
No	12	38.7	13	41.9	

(*) Statistically significant at $p \leq 0.05$, $\chi^2 =$ chi square, MC: Monte Carlo test

Table 1 demonstrated that, the pathway group's elderly patients ranged in age from 60 to 80 years, while the non-pathway group's elderly patients ranged in age from 60 to 76 years. There were more men among the patients under study. There were 51.6% and 64.5% of married individuals in the pathway and non-pathway groups. In the pathway and non-pathway groups, the percentage of illiterates was 58.1% and 67.7%, respectively. No significant variations in the study and control groups' demographic data were found, with two thirds of both living in rural areas. The majority of the older people in the study also had another comorbid illnesses.

Table 2: The number of hospital admissions and the duration of COPD for the elderly patients in pathway and non-pathway groups throughout the course of the previous year

Medical history	Pathway group		Non-pathway group		Test of significance
	No	(%)	No (31)	(%)	
Duration of the disease					
less than 1 year	3	9.7	7	22.6	$\chi^2 = 1.916$ (0.384)
from 1 year to less than 3 years	9	29.0	8	25.8	
more than 3 years	19	61.3	16	51.6	
Previous admission to hospital					
Yes	22	71.0	21	67.7	$\chi^2 = 0.076$ (0.783)
No	9	29.0	10	32.3	
Number of previous hospitalization in last year					
Once	11	50.0	12	57.1	$\chi^2 = 1.831$ (0.400)
Twice	9	40.9	5	23.8	
Third	2	9.1	4	19.0	

(*) Statistically significant at $p \leq 0.05$, $\chi^2 =$ chi square

Table 2 revealed that, while 29.0% and 25.8% of the intervention and non-intervention groups had COPD from one year to less than three years, respectively, 61.3% of the intervention group and 51.6% of the non-intervention group had COPD for more than three years. With regard to the number of hospital admissions in the previous year, 71.0% and 67.7%, respectively, of the intervention and non-intervention groups were admitted to the hospital.

Table 3: The current complaints of the elderly COPD patients under study in both the intervention and control groups.

Current complaints	Study group		Control group		Test of significance
	No (31)	(%)	No (31)	(%)	
Symptoms of COPD					
Difficulty of breathing	31	100.0	31	100.0	----
Cough	31	100.0	31	100.0	----
Fatigue	23	74.2	19	61.3	$\chi^2 = 1.181$ (0.277)
Wheezes	21	67.7	26	83.9	$\chi^2 = 2.199$ (0.138)
Loss of appetite	11	35.5	7	22.6	$\chi^2 = 1.253$ (0.263)
Weight loss	6	19.4	8	25.8	$\chi^2 = 0.369$ (0.544)
Anxiety	19	61.3	14	45.2	$\chi^2 = 1.620$ (0.203)
Sleep disturbance	24	77.4	22	71.0	$\chi^2 = 0.337$ (0.562)
Sexual dysfunction	6	19.4	4	12.9	FE=0.477 (0.731)
Chest pain	10	32.3	13	41.9	$\chi^2 = 0.622$ (0.403)

(*) Statistically significant at $p \leq 0.05$, χ^2 = chi square, FE: Fisher Exact test

Table 3 revealed that every patient in both the CP and non CP groups reported dyspnea, and that coughing and breathing difficulties were the primary presenting symptoms for COPD older adult patients in both groups. The CP group reported 77.4% and the non CP group 71.0% sleep disruption, the CP group reported 74.2% fatigue and the non CP group 61.3%, and the CP group reported wheezes, 67.7% CP group and 83.9% non CP group. Anxiety and appetite loss were reported by 61.3%, 35.5%, and 45.2%, 22.6% of the CP group and the non CP group, respectively. Chest pain and weight loss were reported by 32.3%, 19.4%, and 41.9%, 25.8% of the CP group and the non CP group, respectively. Regarding current complaints, there were no statistically significant differences between the two groups ($P > 0.05$)

Table 4: Compares the degree of dyspnea on arrival and before getting out between the CP and non CP groups

Dyspnea severity	CP group				Non CP group				Test of significance	
	On arrival		Before getting out		On arrival		Before getting		(p) ^a	(p) ^b
	N	%	N	%	N	%	N	%		
Nothing at all	0	0.0	0	0.0	0	0.0	0	0.0	t=1.174 (0.245)	t= 5.722 (<0.001)**
Very, very slight (just noticeable)	0	0.0	1	3.2	0	0.0	0	0.0		
Very slight	0	0.0	7	22.6	0	0.0	0	0.0		
Slight	0	0.0	11	35.5	0	0.0	4	12.9		
Moderate	0	0.0	8	25.8	0	0.0	8	25.8		
Somewhat severe	0	0.0	4	12.9	0	0.0	9	29.0		
Severe	0	0.0	0	0.0	0	0.0	6	19.4		
Very severe	4	12.9	0	0.0	7	22.6	2	6.5		
Very, very severe (almost maximal)	10	32.3	0	0.0	11	35.5	2	6.5		
Maximal	17	54.8	0	0.0	13	41.9	0	0.0		
Mean ± SD	9.41±0.71		4.22±1.05		9.19±0.79		6.00±1.36			
t- test (P) ¹	29.493(<0.001)**				12.696(<0.001)**					

Paired –sample t-test (p)¹: Comparing before (on admission) and after (on discharge) in each group

Student t-test (p)^a: Comparing the study and control group before clinical pathway implementation

Student t-test (p)^b: Comparing the study and control group after clinical pathway implementation

*significant at p≤0.05

Table 4 showed that there was a highly significant variance (p < 0.001) between the two groups with regard to dyspnea score at discharge.

Regarding the experimental group's level of dyspnea, it was discovered that during admission, over half of the participants had the highest level possible, and by discharge, one-third had a mild level. There was a statistically significant difference in the study group's dyspnea levels between admission and discharge (p < 0.001).

Conversely, of the patients in the control group, 29.0% had a somewhat severe level of dyspnea upon discharge, and 41.9% had a maximal level upon admission.

Table 5: Anxiety score at admission and discharge compared between pathway and non-pathway groups

Anxiety Index	Pathway group	Non-pathway	Test of significance
	Mean ± SD	Mean ± SD	
On admission	20.32± 5.94	18.90± 6.45	(p) ^a =0.901 (0.371)
On discharge	11.38± 3.83	18.48± 5.98	(p) ^b = 5.341 (<0.001)**
<i>T- test (p)¹</i>	10.706 (<0.001)**	2.208 (0.035)*	

Paired –sample t-test (p)¹: Comparing before (on admission) and after (on discharge) in each group

Student t-test (p)^a: Comparing the study and control group before clinical pathway implementation

Student t-test (p)^b: Comparing the study and control group after clinical pathway implementation

*significant at p≤0.05

Table 5 showed that, there was a statistically significant difference (p < 0.001) between the two groups' anxiety levels at discharge. Anxiety scores in the pathway group were 20.32±5.94 at arrival and decreased to 11.38±3.83 before getting out, with a significant difference (p <0.001); in the non-pathway group, anxiety scores were 18.90±6.45 at arrival and increased to 18.48±5.98 before getting out, with a significant difference between the two groups (p=0.035). However, the pathway participants' mean anxiety score was far lower than that of the non-pathway group. It is evident that the pathway group experienced a greater degree of decrease than the non-pathway group.

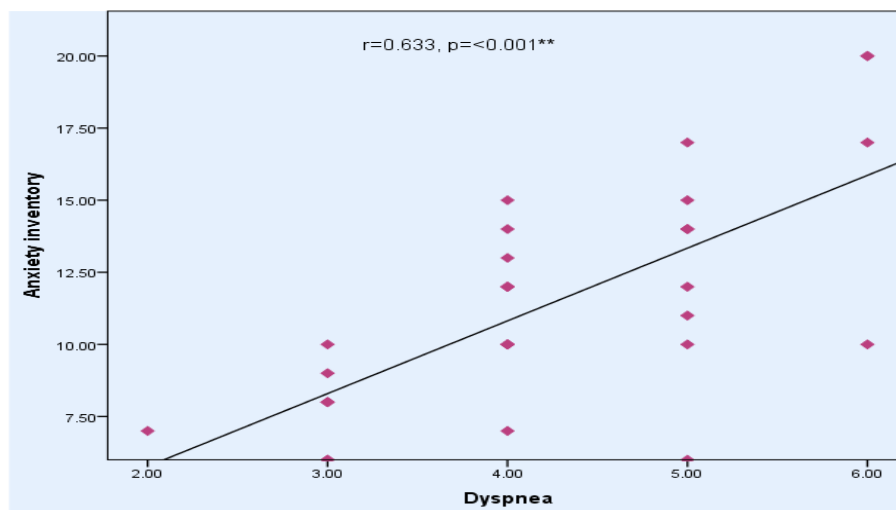


Figure 1: Shows Correlation between Anxiety and Dyspnea Level in the Pathway Group Following Clinical Pathway Implementation

Figure 1 showed correlation between anxiety and dyspnea level in the pathway group following clinical pathway implementation. It was discovered that dyspnea and anxiety had a highly significant positive association.

DISCUSSION

A common long-term lung condition with significant rates of mortality and disability is chronic obstructive pulmonary disease (COPD) (Yi, Yang & Yan, 2021). Through the promotion of effective clinical management, clinical pathways in multidisciplinary hospitals seek to lower service variation, improve outcomes, and save money (Tanumihardja & Nurwahyuni, 2023). Therefore, this study was conducted in order to determine effect of implementing clinical pathway on outcomes of elderly patients with chronic obstructive pulmonary disease.

This study included 62 chronic obstructive pulmonary disease elderly patients. They were randomly and alternatively divided into two equal groups; the study group was received clinical pathway protocol regarding control of chronic obstructive pulmonary disease and control group which received routine care.

The present study's demographic the background revealed that no discernible variations were found between the two groups' socio-demographic features. This indicates that both groups were dominated by homogeneity. This result was consistent with the findings of Abd-Elwanees et al. (2014), who reported that no significant differences were found between the CP and non-CP groups with regard to age, gender, and other demographic and baseline variables.

The mean age of the elderly patients under study was 66.64 ± 6.35 years, whereas the control group's mean age was 66.48 ± 5.05 years. This may account for the effects of aging on the respiratory system, which are a major risk factor for the majority of chronic lung diseases. These diseases include COPD and are associated with a number of detrimental lung effects, including decreased lung function, increased gas trapping, loss of lung elasticity, and enlargement of the distal air spaces (Bowdish, 2019).

Similarly, Karn et al., (2018) discovered that the average age of the participants in their Egyptian study was 64 years old. However, a study conducted in Egypt by Mohamed, Ahmed, Mohamed, & Abdel Rahman, (2017) found that almost two thirds of the participants are in the 40–60 age range.

According to the current study, men were more afflicted by COPD than women. This could be explained by the fact that men are more likely than women to be exposed to risk factors, such as smoking cigarettes. Men are also more prone than women to be exposed to occupational and environmental toxins since they are more mobile and engage in outdoor activities.

The same results were shown in a Portuguese study by Ricardo, Simoes, & Santiago, (2021), which discovered that 39.8% of COPD patients were female and 60.2% of patients were male. In a similar way, Badway, Hamed, & Yousef, (2016) study conducted in Egypt found that the prevalence of COPD was 30% in women and 70% in men.

Regarding the length of time that the study sample had COPD, the current study showed that over half of them had the disease for longer than three years, and this finding is corroborated by a study conducted in Egypt by Hamad, Abdelmoniem, & Saleh, (2022).

Furthermore, 71.4% of participants in a Manipal study by Castelino et al., (2017) reported having COPD for a period of one to five years. Furthermore, these results were at odds with those of Mohsen et al, (2019), who reported that 47.4% of their patients had COPD for more than ten years.

COPD patients had respiratory symptoms such as cough, phlegm, wheeze, and shortness of breath substantially more frequently than non-COPD patients (Woldeamanuel, Mingude & Geta, 2019). This confirms the results of the present study, which showed that coughing and breathing difficulties were the most common presenting symptoms in both groups of older COPD patients. The results of studies conducted in Tanzania by Walker et al. (2018) and in Spain by Miravittles & Ribera (2017) are consistent with this finding.

The current study compared the outcomes (dyspnea level and anxiety level) of patients managed with the clinical pathway (CP group) with patients managed by routine pulmonary care practices provided by nurses (non-CP group). The researcher implemented a clinical pathway for the management of elderly patients with COPD. The patients in the CP group and the non-CP group had identical access to medications, pulmonary care, and unit services, serving as a baseline for comparison.

According to O'Donnell et al. (2020), dyspnea is the most prevalent symptom of COPD. It can significantly impair quality of life, cause severe impairment, and increase morbidity. Reducing dyspnea is a major goal of managing COPD. Regarding this, the current study discovered that there was no significant difference between the study and control groups at admission, with patients in the study and control groups having nearly comparable dyspnea scores. This states to the groupings' homogeneity. The findings aligned with a study conducted by Abd-Elwanees et al. (2014).

However, the current study's results showed that patients in both groups had significantly decreased dyspnea scores at the time of discharge. Upon admission, over half of the study group (54.8%) experienced a maximal level of dyspnea, and upon discharge, one-third of them (35.5%) had a mild level of dyspnea. On admission, 41.9% of the control group experienced a maximal degree of dyspnea, and upon discharge, 29.0% of them had a somewhat severe level of dyspnea.

Nonetheless, the study's participants' mean dyspnea score was considerably lower than that of the control group. It is evident that the study group's degree of improvement was greater than the control group's ($P > 0.001$).

The enhancement in dyspnea scores observed in the study group (clinical pathway group) can be attributed to the fact that individuals in this group were guided through a clinical pathway, which includes a systematic approach, evidence-based interventions, and timely care delivery. Clinical pathways also emphasize patient education on COPD management, empowering patients to actively participate in their care.

The control group's improvement may be due to routine unit care and prescribed medication. Similarly, our results also agree with those of Hamad et al., (2022) who carried out research in Egypt and Mohamed et al., (2017) who demonstrated a statistically significant difference in dyspnea levels for COPD patients before and after the COPD care protocol was implemented.

Anxiety is common among COPD patients, which affects their prognosis and level of physical activity (Martínez-Gestoso et al., 2022). Accordingly, the present study discovered that upon admission, the anxiety levels of the study and control groups were similar. On the other hand, the study group's anxiety levels significantly decreased on discharge. In contrast to the control group, which showed a significant decrease in anxiety levels, this improvement can be linked to a clinical pathway involving pulmonary and psychological rehabilitation interventions while the control group received routine care without addressing patients' psychological concerns.

This finding is corroborated by research conducted in Egypt by Hussein, Shebl & Shaheen, (2024); in Belgium by Lodewijckx et al., (2011); and in Egypt by Abo El-Ella, Mohammad & El-Shinnawy, (2018). All of these studies reported a noteworthy decrease in anxiety levels following the implementation of the pathway.

In the clinical pathway group, the current study discovered a significant positive correlation between dyspnea and anxiety. This can be explained through, Anxiety and dyspnea often co-occur and influence each other in a bidirectional manner. Anxiety triggers hyperventilation, leading to breathlessness or dyspnea. Dyspnea, on the other hand, can trigger anxiety, causing distressing symptoms and a cycle of anxiety and breathing difficulties.

A study conducted in Egypt by Mohamed (2019) found a strong association ($p = .001$) between anxiety and dyspnea, which lends validity to this finding. Furthermore, a Turkish study conducted in 2018 by Kapisız & Eker found a significantly significant positive correlation between anxiety and dyspnea ($r = 0.505$, $p < 0.01$).

The research hypothesis was supported by the study's findings, which showed that participants who followed the clinical pathway improved more than those who received conventional care in terms of their anxiety and dyspnea levels.

CONCLUSION

The findings indicated that clinical pathway is effective tool in improving COPD patients' level of dyspnea and anxiety.

RECOMMENDATIONS

Based on The findings of this study, the following recommendations are suggested:

- Replacing the conventional nursing care plan with an integrated COPD clinical pathway.
- Nurses should be urged to work in tandem with other medical professionals to use the clinical pathway to offer patients with COPD complete, comprehensive treatment.
- Providing training on the COPD clinical pathway implementation to healthcare professionals in order to improve the quality of care.

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