

## Effect of implementing Empowerment Model on Chronic Obstructive Pulmonary Disease Patients' Knowledge and Self-Efficacy

<sup>1</sup>Rasha Elsayed Ahmed, <sup>2</sup>Zeinab Faried Bahgat

<sup>1</sup>Assist Prof. of Medical-Surgical Nursing, Faculty of Nursing, Tanta University, Egypt., College of Nursing, King Khalid University, Khamis Mushait, KSA.

<sup>2</sup>Lecturer of Medical -Surgical Nursing, Faculty of Nursing, Tanta University, Egypt.

### Abstract

**Background:** Chronic Obstructive Pulmonary Disease (COPD) is the 4th leading cause of death all over the world that requires long-term treatment. Although drugs can optimize airway function and decrease symptoms, self-care still crucial. Empowerment interventions aimed to improve self-care, knowledge and developing self-efficacy of patients with COPD to prevent the complications. **Aim:** This study was conducted to evaluate the effect of implementing empowerment model on chronic obstructive pulmonary disease patients' knowledge and self-efficacy. **Subjects and Method:** A quasi experimental research design was utilized, purposive sample of 60 patients with COPD, who attended the chest department and chest outpatient clinic at Tanta Main University Hospital during the period of data collection. **Tools:** Two tools were used. **First Tool:** A Structure Interview Questionnaire, which composed of three parts: Part (1): patients' socio-demographic data. Part (2): Clinical patients' data, as past medical history, causes and duration of disease. Part (3): The COPD patients' knowledge questionnaire. **Second Tool:** The COPD Coping Self-Efficacy Scale (CSE). **Results:** Most of studied patients (90%) scored low total knowledge level pre-empowerment intervention model, while the majority of them (80%) scored high knowledge level post empowerment model intervention. There was a statistically significant positive correlation between total scores of knowledge and self-efficacy patients' levels after empowerment intervention in relation to age, sex, work, educational level and marital status. **Conclusion& Recommendations:** The results of this study demonstrate that the empowerment strategy had a good impact on COPD patients' self-efficacy and knowledge. Therefore, the evidence must concentrate on enhancing self-efficacy on direct self-care practices.

**Key words:** Chronic Obstructive Pulmonary Disease, Empowerment model, Self-efficacy.

### Introduction

COPD is a group of pervasive and severe diseases. It is recognised as the fourth leading cause of death in the world, with three million Americans dying of the disease yearly. Six to ten percent of the adult population is impacted by the condition, which affects around three hundred million individuals.<sup>(1,2)</sup> COPD is a growing public health concern in Egypt, although data on its prevalence, mortality,

and morbidity are limited. As a consequence, the targets for healthy people 2020 included a reduction in hospitalization rates and visits to emergency departments; the aims for 2030 will stay unchanged.<sup>(3-5)</sup>

The prevalence of COPD is predictable to be high in the coming decades because of the changing age and structure of the world's population and the continuous exposure to COPD risk factors. As these

factors are rapidly increasing in developing countries, COPD will become a main health problem, exerting a huge demand on economic and healthcare resources in these countries. <sup>(6)</sup>

Patients with COPD experience symptoms such as sputum production, dyspnea, chronic productive cough, hyperinflation, and wheezing. Many factors are responsible for increasing COPD symptoms, these are based on two categories: occupational or environmental factors and lifestyle (typically, long-term smoking). Frequent episodes or exacerbations represent a danger to COPD patients. <sup>(7)</sup>

Empowerment is a process and an outcome, which comprehended inside a specific context, that could be found in chronic disease management in COPD. In this context, empowerment is most often conceptualized as a reciprocal association between the health professional and the patient, in which the patient acquires knowledge, skills, and confidence to concentrate on their health care problems. Empowerment theory ensures responsibilities for the patients, and gets them involved to confirm the improvement of health level through their participation in disease management. <sup>(8)</sup>

Empowerment model is planned upon effectiveness of the individual and other family member's role on the three self-problems characteristics (perceive knowledge, attitude, and perceive threat), and motivational, psychological (self-efficacy, self-control, and self-esteem). The main aim of empowered model is to strengthen patient and different individuals to improve their wellbeing level. The empowerment approach consists of four

steps: raising the level of knowledge via educational sessions employing educational assistant materials, enhancing self-efficacy, boosting self-esteem through educational participation, and assessing the empowerment sessions. <sup>(9,10)</sup>

Patient empowerment is seen as a crucial part in managing chronic illnesses. Professionals are increasingly expected to involve patients in their own self-management. Since COPD patients and their families administer the bulk of their treatment in the community, this participation is crucial to the concept of chronic care. Newly, there is evidence that some modifiable factors may contribute to the occurrence of chronic disease; such factors if recognized and well managed would control the occurrence of COPD and its complication. <sup>(11)</sup>

Over the last many decades, the fundamental objective of the health care system has been to equip patients with the necessary knowledge and abilities. Planned and methodical training enhances self-care, patient knowledge, and patient satisfaction, while reducing anxiety linked with disease outcomes. The employees of the health care system must educate patients and their families about self-care techniques, illnesses, and treatments. Additionally, patients must have a substantial role in their own decision-making. <sup>(12)</sup>

The empowerment intervention enhances patients' health-related skills and knowledge and teaches them how to manage their diseases efficiently on a daily basis. <sup>(13)</sup> Providing patients with effective empowerment tools for their chronic diseases, such as knowing the impacts of risks and getting timely instructions, has led to an increase in sickness self-control

and self-management. These techniques will assist patients in adjusting their lifestyles in order to better manage their illnesses. COPD problems are characterized by a long-term prognosis; hence, patients often experience impacts and need ongoing education and comprehension to develop more autonomy. (14, 15)

### **Significance of the study**

Chronic obstructive lung disease significantly impacted the patients' psychological, cognitive, physical, and social status. Empowerment intervention directed toward increasing knowledge, awareness and improving self-efficacy of patients with COPD regarding self-control symptoms, support adopting preventive behaviors and maintain body function. (9,10)

Empowerment intervention improves the patients' skills and knowledge related to their health status and allow them to receive an effective training on how to manage their conditions on a daily basis. (13) The growth of illness self-control and self-management has emerged from providing patients with effective empowerment mechanisms for their chronic conditions, such as understanding the effects of risks and receiving timely instructions. These strategies will aid patients in modifying their lives to better manage their ailments. COPD issues are characterised by a long-term prognosis; hence, patients often encounter effects and need continual education and understanding to foster more autonomy. (14, 15) The purpose of this research is to determine the effects of applying an empowerment educational approach to COPD patients on their knowledge and self-efficacy.

### **The aim of the Study**

Was to evaluate the effect of implementing empowerment model on chronic obstructive pulmonary disease patients' knowledge and self-efficacy.

### **Research Hypothesis:**

-Post implementation of the empowerment model, the patients exhibited improve in mean score knowledge regarding COPD.

-Post implementation of the empowerment model, the patients exhibited improve in mean score of self-efficacy regarding COPD.

### **Subjects and Method**

#### **Research design**

A quasi-experimental research design (pre and posttest) was used in the present study.

#### **Setting**

The study was conducted in Chest department and outpatient clinic at Tanta Main University Hospital, Tanta City, Egypt.

#### **Subjects**

A purposive sample of 60 COPD patients, who attended the above-mentioned settings during the period of data collection. The sample size estimated by power analysis of independent t tests [One tail, Effect size = 0.55; The significance level ( $\alpha$ ) at 0.05; Power ( $1-\beta$ ) = 0.85].

#### **Inclusion criteria**

The subjects were recruited based on the following criteria:

- Adult patients (21-55 years), both gender
- Patients with tuberculosis and severe debilitating diseases were excluded.

#### **Tools of the study**

Two tools were used to collect the required data as follow:

**First Tool: "A structure interview sheet for COPD patients"** It was developed by the researcher after a reviewing of the literature. (16, 17)

It consists of three parts:

**Part 1:** patients' socio-demographic data, which includes: age, sex, marital status, education, occupation, family income, insurance.

**Part 2:** Clinical patients' data such as: past medical history, causes of disease, duration, stages of disease, weight, height and body mass index.etc.

**Part 3:** The COPD patients' knowledge questionnaire, it was developed by the researcher based on the related literatures<sup>(18,19)</sup> to assess patients' knowledge regarding COPD, it includes: general information (4 items), chest crisis (5 items), clinical manifestations of (8 items), treatment (6 items), coughing and breathing exercise (5 items), Nutrition and life-style modifications (5 items), risk factors and complications (7 items). Scored as follow; (1) for the correct answer and (0) for wrong answer. To better present knowledge, scores were presented as; low (<60), moderate (<60-<80%) and high (>80%).

**Second Tool: COPD Coping Self-Efficacy Scale (CSE):** was developed by (Emme et al., 2012).<sup>(20)</sup> ,the scale consists of 34 items and the researcher adopted 13 items self-reported questionnaire to measure self-efficacy associated with COPD it includes. Dimensions of COPD Self-Efficacy scale instrument include:

-**Physical Exertion Factor;** which consisted of five items covered patients' confidence regarding: go upstairs too fast, left heavy objects, do exercise or physical exert, hurry or rush around and exercise in a room that is poorly ventilated. Total score ranged from (0-20).

- **Weather/Environment Factor;** which consisted of five items reflects the

patients' confidence regarding: get an infection (throat, sinus, cold, the flu, etc.), during a very hot or very cold weather, there is humidity in the air, around cigarette smoke and into a cold weather from a warm place. Total score ranged from (0-20).

- **Behavior Risk Factor;** which consisted of three items related to; patients' confidence regarding: overeat, don't follow a proper diet and breathe improperly. Total score ranged from (0-12).

In this study, the scoring was conducted with the sum of the items. Items were scored by ordinal 5 points Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree).

**Total score** ranged from (0-52), with a higher score indicating a greater level of COPD self-efficacy. The level of self-efficacy were categorized as; low (<60), moderate (<60-<80%) and high (>80%).

#### **Method:**

All tools of the study were developed by the researchers after reviewing relevant literatures<sup>(16,17)</sup> except tool 2.

#### **Validity and reliability:**

The tools of the study were translated to Arabic language and back to English by an expert in English and Arabic language. Content validity of the translated version was examined by a jury of 5 experts who are holding a PhD in Medical Surgical Nursing. The reliability of the tools reported as acceptable level of 0.87.

#### **Ethical consideration:**

The study's directors' permission was obtained. The researchers explained to the patients that participation in the study is voluntary and they can withdraw from the study at any time without penalty. Participants are granted consent in writing.

-Confidentiality of the data and patient privacy were respected. A code number was used instead of name.

**Pilot study:**

A pilot trial was carried out on 10% of the total study sample to test the clarity and practicability of the tools. Participants in the pilot study were excluded from the study.

**Procedure of the study:**

-The current study data collected in the beginning of March until the end of August 2019, for about 6 months.

-Knowledge sheet was filled by the patient within 15 minutes and COPD self-efficacy scale within 20 minutes for each patient pre intervention.

-The empowerment intervention approach was designed based on an analysis of real patient needs assessment in a pre-test using pre-constructed instruments.

- The content was consistent with the related literatures and met the level of patients' needs.

-The empowerment intervention model's objectives were to improve patients' self-efficacy by supporting them in diagnosing the disease and its boundaries, empowering them against risk factors, and offering effective symptom management and function maintenance.

-Empowering intervention model was presented in 4 sessions, each session for 2 hours (2 sessions for knowledge & 2 sessions for self-efficacy).

-In order to aid the empowering process, the patients were separated into small groups (10 groups). Each group has six patients.

-Following the introduction of group members, the familiarisation phase ensued. This was intended to result in an accurate nursing diagnosis, identification

of patients' issues and care, motivation of patients, and determination of their care requirements. The researchers planned a 30-minute meeting to educate the participants with the empowerment process, inform them of their mutual expectations, and teach them to cooperate with the researchers.

**-The first step** (pretest) by using the pre constructed tools that given to each patient.

**-The second step** (Perceiving the Threat): Through group conversation, the second step in the process of empowering patients is to increase the perceived severity and sensitivity of the perceived risk. Therefore, the illness was addressed by enhancing patients' understanding of the nature and possibility of disease-related complications through group discussion sessions.

**-The third step** (Self-Efficacy): Patients had problem-solving sessions in which they practically confronted their concerns. Under the supervision of the researchers, participants engaged in problem-solving and conversation with one another using real instances of their situation and the steps that others have taken to address the same issues; they therefore actively chose the answers.

**-The First and Second sessions:** (4hours) of empowerment interventions were to improve the level of patients' knowledge regarding COPD; instructional method were held using lecture, group discussion and an educational booklet including the following topics: definition of COPD, causes, signs and symptoms, risk factors, complications, investigations, medical treatments, nursing education and prevention COPD.

- **The Third and Fourth sessions:** (4 hours) of empowerment interventions were to improve self-efficacy for patients with COPD, which focused on managing of signs and symptoms of the disease, controlling risk factors and threats, controlling functional disabilities, improving physical activities and breathing exercise, medical management, nutrition, lifestyle modifications. Thus, each of the required skills was demonstrated after explaining it to patient under the theory of self-efficacy.

-Training sessions were held using demonstration, re-demonstration, group discussions, real objects, power point, flip charts, and pictures were used as teaching aids. The researcher asked each patient to practice and repeat the learning demonstration to become self-efficient or empowered to the extent that he could do it without the presence of the researcher.

-Participants were contacted by telephone to ensure their continued participation in the intervention.

- Evaluation was done through a posttest using Tool (I) part three and Tool (II) which re-evaluated patients two months after implementing of the empowering intervention model.

### Statistical analysis

Data was collected, coded and organized into tables and then, analyzed using the statistical package for social science (SPSS 22). Descriptive measures, including frequency, percentage, arithmetic mean, standard deviation and F test were presented. P value was statistically significant at a level 0.05%.

### Results:

**Table (1)** represents the distribution of patients' sociodemographic characteristics. It showed that the age of the studied

patients ranged from 30-55years, with a mean age  $48.13 \pm 5.18$  years. About two thirds (63.3%) of the studied patients were male and more than three quarters (76.7%) of them were married. One half (50%) of the patients were read and write and about two thirds (60%) of them were working. The result recorded that nearly three quarters (73.3%) of the studied patients had enough family income and less than one half (43.3%) had health insurance. **Figure (1):** Shows percent distribution of studied patients according to their body mass index. It was noticed that nearly half (46.7%) of the studied patients were overweight, while little (3.3%) of them were under weight.

**Table (2) :** Explains percent distribution of the studied patients according to their clinical data. This table showed that less than half (43.3%) of the studied patients recorded that, the cause of their disease was hereditary . About three quarters (73.3%) of them reported that the duration of their disease was more than 10 years, more than one third (36.7%) of the studied patients exposed to three chest crisis/year and more than one half (58.3%) of them classified as emphysema. Two thirds (66.7%) of the patients were non smokers and about three quarters (73.3%) of them had no barrel chest shape. While less than two thirds (60%) of the studied patients had cough and nearly three quarters (73.3%) of them had shortness of breath.

**Figure (2):** illustrates percent distribution of study patients according to their past medical history. This figure showed that less than half (44%) of the studied patients had a past history for respiratory disorders. While about one quarter (23%) of them had no past medical history of any disease.

**Table (3)** :Explains percent distribution of study patients according to their COPD stages. Most of the studied patients (40.0% & 36.7%) were in mild and moderate stage of COPD disease, with ( $FEV1 \geq 80\%$  predicted &  $50\% \leq FEV1 < 80\%$  predicted) air flow limitation and appeared of symptoms (cough, sputum production, dyspnea).

**Table (4)**: Shows a comparison of self-efficacy pre and post empowerment model among the studied patients. It reported that there was a high significant difference between all items of self-efficacy and score of self-efficacy pre and post empowerment among studies patients, where P value was  $< 0.05$ . In addition, most of the studied patients (87.3%, 73.3%) acquired high scores of self-efficacy regarding confidence regards physical exertion factor and confidence related weather /environment factor, while less than two thirds (60%) of them scored high confidence related to behavior risk factor post empowerment intervention model.

**Table (5)** :shows a comparison between levels of patients' knowledge pre and post empowerment model intervention. In relation to the level of total knowledge, most of studied patients (90%) scored low total knowledge level pre-empowerment intervention model, while the majority of them (80%) scored high knowledge level post empowerment model intervention. So, there was significant improvement of total patients' knowledge regarding all items of knowledge related to COPD post empowerment model intervention where ( $P= 0.001$ ).

**Table (6)** :shows the relation between socio demographic data and total score of self- efficacy empowerment model intervention airing studied period. There

were significant differences between socio-demographic data in relation to gender, marital status, level of education, occupation and total score of self-efficacy post empowerment since  $P < 0.05$ . Whereas, the highest percent among studies patients who reported high self-efficacy score post empowerment model intervention were males, married, read and write and worked (72.1%, 100%, 46.5%, 60.5% respectively) compared to pre-empowerment intervention (65.5%, 75.9%, 51.7%, 58.7% respectively) who reported low self-efficacy scores.

**Table (7)** :Shows relation between socio demographic data and total level of knowledge among studied patients pre-and post-empowerment model intervention. There were significant differences between socio-demographic data in relation to gender, marital status, level of education, occupation and total level of knowledge post empowerment intervention, where  $P < 0.05$ . Whereas, the highest percent among studies subjects who reordered good knowledge level post empowerment intervention were males, married, worked and read and write (70.8%, 95.8%, 47.9%, 60.4% respectively) Compared to pre-empowerment intervention model (63.0%, 74.1%, 55.6%, 55.6% respectively) who recorded moderate knowledge level.

**Table (8)** :Explains correlation among socio-demographic characteristics of study patients and their total levels of knowledge and total score of self-efficacy post empowerment. There was a statistically significant positive correlation between socio-demographic characteristics among studied patients in relation to gender, marital status, level of education, occupation and their total levels of

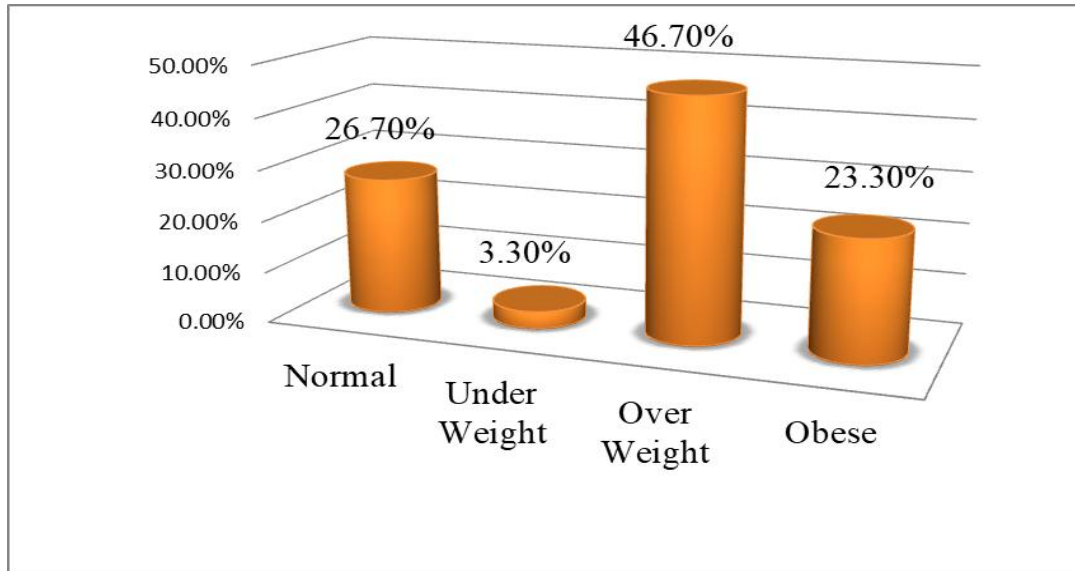
knowledge and total score of self-efficacy post empowerment, where  $P < 0.00$ .

**Table (1): Percent Distribution of Patients' Socio-demographic Characteristics.**

Socio-demographic Characteristics	Patients sample (no= 60)	
	No	%
<b>Age (year)</b>		
30- > 40	2	3.3
40->50	28	46.7
50-55	30	50.0
<b>Range</b>	35-55	
<b>Mean±SD</b>	48.13±5.18	
<b>Gender</b>		
Male	38	63.3
Female	22	36.7
<b>Marital Status</b>		
Married	46	76.7
Single	8	13.3
Widow	4	6.7
Divorced	2	3.3
<b>Level of education</b>		
Read and write	30	50.0
Primary education	6	10.0
Secondary education	8	13.3
University education	10	16.7
Post graduate education	6	10.0
<b>Occupation</b>		
Work	36	60.0
Not work	18	30.0
Retired	6	10.0
<b>Family income</b>		
Enough	44	73.3
Not enough	16	26.7
<b>Health insurance</b>		
Yes	26	43.3
No	34	56.7



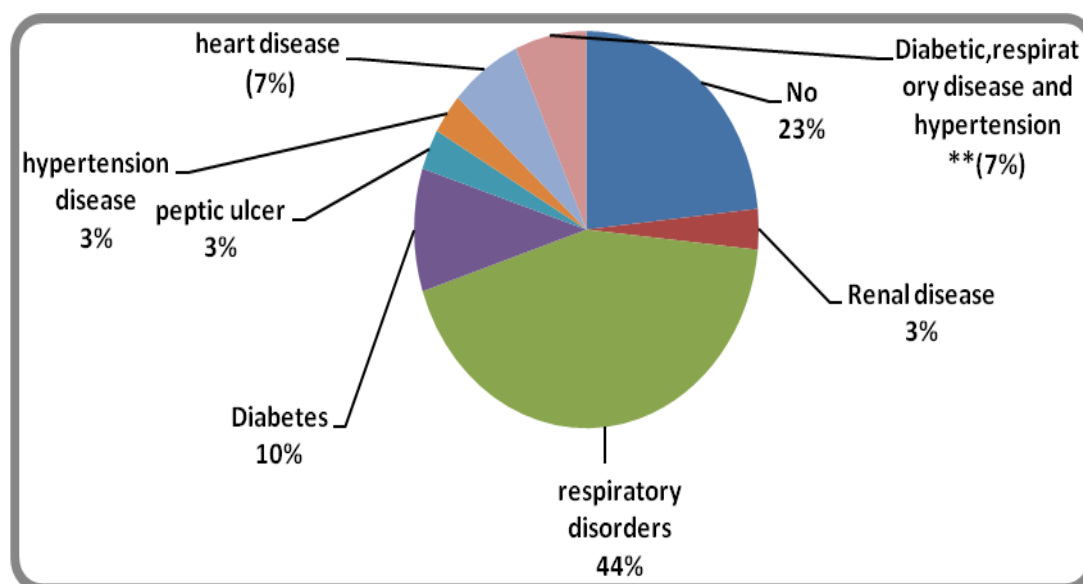
**Figure (1): Percent Distribution of Studied Patients According to their Body Mass Index.**



**Table (2): Distribution of the Studied Patients According to Their Clinical Data.**

Clinical data	Patient sample (no= 60)	
	No	%
<b>Causes of COPD</b>		
Hereditary causes	26	43.3
Acquired causes	8	13.3
Air pollution	12	20.0
Smoking	12	20.0
Others	2	3.3
<b>Duration of disease</b>		
<5 years	2	3.3
5-10 years	14	23.3
>10 years	44	73.3
<b>How many chest crises you have/ year?</b>		
One	18	30.0
Two	18	30.0
Three	22	36.7
more than three	2	3.3
<b>Classification of COPD</b>		
Emphysema	35	58.3
Chronic bronchitis	25	41.7
<b>Smoking</b>		
No	40	66.7
Yes	20	33.3
<b>Barrel chest</b>		
No	44	73.3
Yes	16	26.7
<b>Cough</b>		
No	24	40.0
Yes	36	60.0
<b>Shortness of breath</b>		
No	16	26.7
Yes	44	73.3

**Figure (2): Percent Distribution of Studied Patients According to Their Past Medical History.**



**\*\*More than one answer**

**Table (3) Percent Distribution of the Studied Patients According to Their COPD stages.**

Classification of COPD Stages				
Stage	FEV1/FVC ratio	Symptoms	N.	%
(0) <b>at risk</b>	Normal spirometry	No symptoms	0	0
(1) <b>Mild</b>	FEV1 ≥ 80% predicted	May have symptoms	24	40.0
(2) <b>Moderate</b>	50% ≤ FEV1 < 80% predicted	May have chronic symptoms	22	36.7
(3) <b>Sever</b>	30% ≤ FEV1 < 50% predicted	May have chronic symptoms	8	13.3
(4) <b>Very sever</b>	FEV1 < 30% predicted.	severe chronic symptoms	6	10.0

**Table (4): Comparison of Self-Efficacy Pre and Post Empowerment Model among the Studied Patients.**

self-efficacy items		Pre (no =60)		Post (no=60)		X <sup>2</sup>	P
		No	%	No	%		
<b>Confidence regards: Physical exertion factor</b>	<b>Low</b>	53	88.3	5	8.3	<b>92.15</b>	<b>0.001*</b>
	<b>Moderate</b>	4	6.7	8	13.3		
	<b>High</b>	3	5.0	47	87.3		
<b>Confidence regards weather / Environment factor</b>	<b>Low</b>	55	91.7	7	11.7	<b>90.65</b>	<b>0.000*</b>
	<b>Moderate</b>	5	8.3	9	15.0		
	<b>High</b>	0	0.0	44	73.3		
<b>Confidence regards: Behavior risk factor</b>	<b>Low</b>	58	96.7	5	8.3	<b>94.02</b>	<b>0.001*</b>
	<b>Moderate</b>	2	3.3	19	31.7		
	<b>High</b>	0	0.0	36	60.0		
<b>Total</b>	<b>Low</b>	58	96.7	5	8.3	<b>87.19</b>	<b>0.001*</b>
	<b>Moderate</b>	2	3.3	12	20.0		
	<b>High</b>	0	0.0	43	71.7		

\* Significant or P &lt; 0.05

**Table (5): Comparison between Levels of Patients' Knowledge Pre and Post empowerment model intervention.**

Knowledge Items of COPD		Pre (N =60)		Post (N=60)		X <sup>2</sup>	P
		No	%	No	%		
General information of COPD	Low	40	66.7	4	6.7	<b>95.23</b>	<b>.001*</b>
	Moderate	14	23.3	6	10.0		
	High	6	10.0	50	83.3		
Chest crisis	Low	36	60.0	0	0.0	<b>90.0</b>	<b>.012*</b>
	Moderate	18	30.0	10	16.7		
	High	6	10.0	50	83.3		
Clinical manifestations	Low	40	66.7	2	3.3	<b>88.57</b>	<b>.001*</b>
	Moderate	14	23.3	12	20.0		
	High	6	10.0	46	76.7		
Treatment	Low	35	58.3	0	0.0	<b>86.25</b>	<b>.002*</b>
	Moderate	20	33.3	8	13.3		
	High	5	8.3	52	86.7		
Coughing &breathing exercise	Low	30	50.0	5	8.3	<b>91.03</b>	<b>.013*</b>
	Moderate	20	33.3	10	16.7		
	High	10	16.7	45	75.0		
Nutrition & Life style modifications	Low	58	96.7	6	10.0	<b>97.25</b>	<b>.001*</b>
	Moderate	2	3.3	10	16.7		
	High	0	0.0	44	73.3		
Risk factors and complications	Low	40	66.7	0	0.0	<b>94.28</b>	<b>.000*</b>
	Moderate	14	23.3	12	20.0		
	High	6	10.0	48	80.0		
Total	Low	54	90.0	0	0.0	<b>84.15</b>	<b>0.001*</b>
	Moderate	6	10.0	12	20.0		
	High	0	0.0	48	80.0		

\* Significant or P &lt; 0.05

**(6): Relation between Socio-demographic Data and Total Score of Self- Efficacies among Studied Patients Pre- and Post-Empowerment model intervention.**

Sociodemographic data		Pre				X <sup>2</sup> P	Post						X <sup>2</sup> P		
		Low		Moderate			Low		Moderate		High				
		No	%	No	%		No	%	No	%	No	%			
<b>Age</b>	30- > 40	2	3.4	0	0.0	<b>4.13</b>	2	40.0	0	0.0	0	0.0	<b>3.25</b>		
	40- > 50	26	44.8	2	100.0		<b>0.31</b>	3	60.0	8	66.7	17		39.5	<b>0.216</b>
	≥ 50	30	51.7	0	0.0			0	0.0	4	33.3	26		60.5	
<b>Gender</b>	Male	38	65.5	0	0.0	<b>3.78</b>	3	60.0	4	33.3	31	72.1	<b>21.45</b>		
	Female	20	34.5	2	100.0		<b>0.46</b>	2	40.0	8	66.7	12		27.9	<b>0.001*</b>
<b>Marital Status</b>	Married	44	75.9	2	100.0	<b>4.65</b>		3	60.0	0	0.0	43	100.0	<b>11.26</b>	
	Single	8	13.8	0	0.0		<b>0.57</b>	1	20.0	7	58.3	0	0.0		<b>0.002*</b>
	Widow	4	6.9	0	0.0			1	20.0	3	25.0	0	0.0		
	Divorced	2	3.4	0	0.0			0	0.0	2	16.7	0	0.0		
<b>Level of education</b>	read & write	30	51.7	0	0.0	<b>3.89</b>	3	60.0	7	58.3	20	46.5	<b>10.21</b>		
	Primary	6	10.3	0	0.0		<b>0.61</b>	1	20.0	2	16.7	3		7.0	<b>0.000*</b>
	Secondary	8	13.8	0	0.0			1	20.0	2	16.7	5		11.5	
	University	8	13.8	2	100.0			0	0.0	1	8.3	9		21.0	
	Post graduate	6	10.3	0	0.0			0	0.0	0	0.0	6		14.0	
<b>Occupation</b>	Work	34	58.7	2	100.0	<b>2.87</b>	3	60.0	7	58.3	26	60.5	<b>12.68</b>		
	Do not work	18	31.0	0	0.0		<b>0.47</b>	1	20.0	3	25.0	14		32.5	<b>0.000*</b>
	Retired	6	10.3	0	0.0			1	20.0	2	16.7	3		7.0	

\* Significant or P < 0.05

**Table (7): Relation between Socio demographic data and total Levels of Knowledge among Studied Patients Pre- and Post-Empowerment model intervention.**

Sociodemographic data	Pre					X <sup>2</sup> P	Post				X <sup>2</sup> P
	Low	Moderate					Moderate		High		
		No	%	N	%		No	%	No	%	
Age	30- > 40	2	3.7	0	0.0	3.16 0.51	0	0.0	2	4.2	4.28 0.124
	40- > 50	22	40.7	6	10.0		8	66.7	20	41.7	
	50-55	30	55.6	0	0.0		4	33.3	26	54.2	
Gender	Male	34	63.0	4	66.7	2.49 0.67	4	33.3	34	70.8	22.43 0.001*
	Female	20	37.0	2	33.3		8	66.7	14	29.2	
Marital Status	Married	40	74.1	6	10.0	6.28 0.62	0	0.0	46	95.8	10.27 0.001*
	Single	8	14.8	0	0.0		7	58.3	1	2.1	
	Widow	4	7.4	0	0.0		3	25.0	1	2.1	
	Divorced	2	3.7	0	0.0		2	16.7	0	0.0	
Level of education	Read and Write	30	55.6	0	0.0	2.78 0.74	7	58.3	23	47.9	19.25 0.012*
	Primary	6	11.1	0	0.0		2	16.7	4	8.3	
	Secondary	8	14.8	0	0.0		2	16.7	6	12.5	
	University	4	7.4	6	10.0		1	8.3	9	18.8	
	Post graduate	6	11.1	0	0.0		0	0.0	6	12.5	
Occupation	Work	30	55.6	6	10.0	3.69 0.57	7	58.3	29	60.4	13.19 0.001*
	Do not work	18	33.3	0	0.0		3	25.0	15	31.3	
	Retired	6	11.1	0	0.0		2	16.7	4	8.3	

\* Significant or P &lt; 0.05

**Table (8): Correlation among Socio-demographic Characteristics of Studied Patients and their Total Levels of Knowledge and Self-Efficacy Post Empowerment intervention.**

Socio-demographic characteristics	Total levels of knowledge (post)	Total score of self-efficacies (post)
	R P	R P
Age (year)	0.045 0.124	0.067 0.216
Gender	0.678 0.001*	0.789 0.001*
Marital Status	0.781 0.001*	0.641 0.002*
Level of education	0.914 0.012*	0.872 0.000*
Occupation	0.724 0.001*	0.624 0.000*

\* Significant or  $P < 0.0$  -Pearson Correlation: R



**Discussion:**

Patient empowerment is a continuous process in which knowledge, motivation, and capacity to take control on a disease would build within a person. <sup>(21)</sup> Empowerment include self-efficacy, knowledge, and forms of active patient participation to modify health behavior and manage an illnesses. As the management of COPD, patients who have self-confidences in their abilities to manage their illness are more likely to make beneficial changes and improve quality of life with the disease. <sup>(22,23)</sup> .Improving knowledge and Self-efficacy of COPD patients are important determinants of healthcare management outcome and nursing intervention. So, the aim of the current study was to determine the effect of the empowerment model on knowledge and self-efficacy of COPD patients.

The current study revealed that, the age of the studied patients ranged from 30-55 years, about two thirds were male and more than three quarters were married, one half of them were able to read and write and about two thirds were working. Also, the result explained that nearly three quarters of the studied subjects had enough income and less than one half have health insurance. This result was contradicted with the study done in Egypt by **Mohamed, et al., (2017)** <sup>(24)</sup> who reported that the age of more than half of patients with COPD were more than fifty years. **Also, Tel. et al. (2012)** <sup>(25)</sup> who found out that, the age of the COPD patients in their study was more than 66 years. In another study conducted in Spain by **Leiva-Fernández, et al., (2014)** <sup>(26)</sup> found a high prevalence in the male sex, most likely because of the smoking habits.

Regarding to distribution of studied patients according to their body mass index. The study results explained that nearly half of the studied patients were overweight. This may be due to

lack of exercise and decrease daily living activities due to the nature of disease. This result was in agreement with **Lisa et.al.,(2017)** <sup>(27)</sup> who stated that a greater extent overweight and obesity in mild to moderate COPD patients, is related to a higher prevalence rate for the most prevalent comorbid disorders.

Regarding the clinical patients' data, the current study explained that nearly one half of the studied patients reported that, the cause of COPD was due to hereditary factors and more than one half of COPD patients diagnosed as emphysema, nearly two thirds of them non smokers but have a shortness in breath and cough whereas, about three quarters of them had no barrel chest shape. This result was in accordance with **Thomas, (2006)** <sup>(28)</sup> who reported that in this era, smoking was rare, but it is a fact that emphysema may occur in non-smokers, particularly with a familial predisposition or from environmental-provoking factors. But it was contradictor with **Leiva-Fernández, et al., (2014)** <sup>(26)</sup> who said that the tobacco is considered a major risk factor and important cause in the initial diagnoses of COPD.

As regards to distribution of studied patients, according to past medical history, the study findings revealed that about one half of studied patients had a past history of respiratory disorder. This may be due to about one half of patients had hereditary causes of respiratory diseases. This result was contradicted with **National Heart, Lung, and Blood Institute (2013)** <sup>(29)</sup> stated ,COPD most often occurs in patients with a past history of smoking. This result was in agreement with **Al-Garini, (2006)** <sup>(30)</sup> who reported that the common underlying disease was diabetes mellitus, hypertension, followed by cardiovascular and respiratory disorders. But, **Ebrahim R., (2018)** <sup>(4)</sup> found that

the cause of COPD is usually long-term exposure to irritants materials that damage airways and lungs. In the United States, cigarette smoke is the main cause. Pipe, cigar, and other types of tobacco smoke can also cause COPD, especially if you inhale them.

Regarding Self-Efficacy, the present study reported significant improvement among majority of the studied subjects regarding categories of self-efficacy in relation to confidence related to physical exertion factor, weather/environment factor and behavior risk factor post empowerment model intervention. This result may be due to the positive effect of the empowerment intervention model as provision of patient support for problem solving regarding maintain functions' ability, symptoms control, and provide confidence relating to environmental changes and behavior risk factors. This result was agreed with **Moattari et al.,(2012)** <sup>(10)</sup> who ensured that a combination of individual and group empowerment counseling sessions improves self-efficacy among patients with hemodialysis. Also, **Masoud et al., (2014)** <sup>(31)</sup> stated that empowerment which based on patients' educational needs promote the attitudes and behavioral signs toward their disease. Additionally, it is a suitable and effective method for patients with low-financial status.

The clinical trial results by **Vahedian et al.,(2010)** <sup>(32)</sup> and **Teymouri, (2011)** <sup>(33)</sup> show that family-oriented empowerment model supported the quality of life among asthmatic patients through demonstration, group discussion, and practical work in partnership. In addition, this result is in accordance with **Stellefson et al., (2012)** <sup>(15)</sup> who, stated that the systematic review demonstrated that most studies showed statistically significant

improvements in COPD self-efficacy following self-management education.

Regarding the patients' knowledge about COPD, there was a significant improvement of all knowledge items in relation to (general information about COPD, chest crisis, clinical manifestations of COPD, treatment, coughing and breathing exercise, nutrition and lifestyle modifications, risk factors and complications) post empowerment educational model.

Regarding the patients' level of knowledge pre implementation of intervention model, the present study findings indicated that, the majority of the COPD patients had poor knowledge regarding self-management pre intervention. This result is in accordance with **Ghahramanian et al., (2011)** <sup>(34)</sup> who reported that, education programs have positive effects on knowledge of the studied patients. This knowledge improvement might be the result of the provision of an educational program and the elevated patients' interests about life threatening and the worry of recurrence which made them more receptive to the provided instructions and knowledge.

Also, **Changizi et al., (2014), Mersal et al., (2014)** <sup>(35, 36)</sup> ensured that the patients had better knowledge and positive coping by using problem focused coping strategies post intervention. Patients' education program was enhancing patient's health status related quality of life (HRQOL), self-efficacy, knowledge, and coping mechanisms.

In the current study there was a statistically significant positive correlation between socio-demographic characteristics among studied patients in relation to gender, marital status, level of education, occupation and their total levels of knowledge and total score of self-efficacy post empowerment .Whereas the results explained that the married male patients, who can read and write and worked

were scored good knowledge level and self-efficacy post empowerment, while there was no significant relation to age. This finding may reveal that the worked males who read and write were represented half of the study sample and they were more interested to know about their disease and were understanding their role to prevent the complications and cop with a new life style according to the disease regardless their age. This was in agreement with **Berns, (2010)** <sup>(37)</sup> who reported no significant difference present between the patients' age and their total score of self-efficacies.

**Also, Wong et al. (2010)** <sup>(22)</sup> found that, the correlation between patients' age and his self-care self-efficacy is negative. Also **Salamah et al.,(2002)** <sup>(38)</sup> , **Barham et al.,(2019)** <sup>(39)</sup> ensured that confidence levels according to age indicated that the oldest male at 93 years was the least confident, with only 25% confidence in responses to Cardiac Self-Efficacy Questionnaire and overall confidence levels were highest among married educated men. Additionally, it is interesting to note that among the female subjects, confidence was not only highest among the single women, but also significantly higher than the other groups. **Tawalbeh et al., (2013)** <sup>(40)</sup>, emphasized that, the systematic education which included a combination of verbal information with booklet aid to improve patients' knowledge and their abilities to solve problems. The educational program was appropriate and standardized to the individual in terms of sex, culture, age, and socioeconomic condition. The previous factors have an important impact on the ability of individuals to participate and learn easily and to enhance their knowledge and successes of the educational program.

### **Conclusion:**

On the light of the current study findings, it can be concluded that the empowerment model intervention had a positive effect on COPD patients' knowledge and self-efficacy. There was a significant positive correlation between socio-demographic characteristic as gender, marital status, level of education, occupation and total score of self-efficacy and knowledge level post implementation of the empowerment model.

### **Recommendations:**

**Based on results of the current study the following recommendations can be deduced:**

- (1) The conceptual framework used in this study suggests that self-efficacy may be a prognostic factor in the recovery phase and health maintenance among patients with COPD. Attention needs to be focused on increasing self-efficacy on issues related to direct self-care measures
- (2) Further researches needed to emphasize the effect of the empowerment model on patients and caregivers with applying all dimensions of empowerment model for patients with COPD. Further study with larger sample, using a true experimental design, and a qualitative method would provide more understanding and knowledge in this regard.
- (3) Continues educational guidelines for nurses who work with COPD patients to identify patients' needs and assess the level of confidence to improve patient self-care, self-efficacy, problem solving, and decrease burden level of disease.

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