

Self-Efficacy Level Among Patients with Chronic Obstructive Pulmonary Disease

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Abstract

Background: Chronic obstructive pulmonary disease (COPD) is an important cause of morbidity and mortality worldwide. Accurate prediction of outcomes such as rate of lung function decline, exacerbations, healthcare utilization of resources and risk of death are important because it helps to identify patients whom the implementation of therapeutic measures could improve their outcomes. **Aim:** This study aims to assess level of self efficacy among patients with COPD. **Study design:** A descriptive exploratory design. **Setting:** This study will be conducted in the chest department and outpatient clinic at chest hospital at Zagazig. **Subjects:** A convenient study sample included 108 patients in chest department from the previously mentioned setting. **Tools:** Tools were used for data collection; patient interview questionnaire (demographic characteristics and patient knowledge about COPD), COPD self efficacy scale (CSES), factors that affect the level of self efficacy among patients with COPD (demographic characteristics, patient knowledge about COPD, BORG scale, depression and social support survey). **Results:** The current study showed that about slightly half of them had unsatisfactory level of total knowledge regarding chronic obstructive pulmonary disease and that more than half of the studied patients had low level of self-efficacy regarding chronic obstructive pulmonary disease, more than one third of the patients under the study had slight difficulty of breathing and sever difficulty of breathing regarding to BORG scale, about half of the studied patients had a mild level of depression regarding COPD, the study revealed that about half of the studied patients had a mild level of depression regarding COPD and about two third of the studied patients had moderate social support dysfunction. **Conclusion:** Based on the findings of the current study, it could be concluded that half of studied patients had unsatisfactory level of knowledge regarding COPD, more than half of the studied patients had low level of self-efficacy regarding COPD. It could be concluded that the physical, psychological and social factors affecting self efficacy level among the studied patients with COPD **Recommendation:** Providing health education and update information about COPD to the patients and their families from health care givers .Establishing organization for patients with COPD to improve their self efficacy and quality of life.

Keywords: COPD, self- efficacy, depression, self efficacy scale, BORG scale.

Introduction

COPD is a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases. The

chronic airflow limitation that is characteristic of COPD is caused by a mixture of small airways disease (obstructive bronchitis) and parenchymal destruction (emphysema), the relative contributions of which vary from person to person (GOLD, 2019).

Causes worldwide, the most commonly encountered risk factor for COPD is tobacco smoking, other types of tobacco, (e.g. pipe, cigar, water pipe) and marijuana are also risk factors for COPD. Outdoor, occupational, and indoor air pollution the latter resulting from the burning of biomass fuels are other major COPD risk factors. Nonsmokers may also develop COPD (**Denguezli, 2016**).

Chronic and progressive dyspnea, it is the most characteristic symptom of COPD. Cough with sputum production is present in up to 30% of the patients. These symptoms may vary from day-to-day and may precede the development of airflow limitation by many years. Wheezing and chest tightness are symptoms that may vary between days, and over the course of a single day. (**Miravitles, 2016**)

Acute COPD exacerbation defined as an acute worsening of respiratory symptoms that result in additional therapy. Exacerbations of chronic obstructive pulmonary disease (COPD) are important events in the management of COPD because they negatively impact health status, rates of hospitalization, re-admission, and disease progression. COPD exacerbations are complex events usually associated with increased airway inflammation, increased mucus production and marked gas trapping (**Gold, 2018**).

Proper management of the disease by attaining a healthy lifestyle and avoiding risk factors can play a key role in controlling and slowing down the progression of the disease. The modifiable risk factors include smoking tobacco and occupational exposure. Smoking cessation is considered one of the key components in the management of COPD. Exercise to enhance lung capacity can improve the condition of COPD patients. Pulmonary rehabilitation and oxygen therapy are other non-pharmacological methods of managing the disease (**Safka, Macivor, 2015**).

The role of the nurse in COPD is invaluable, from initial early diagnosis to the

later stages of the disease across all sectors of health care, with nurses being involved in the management of COPD at all stages, from prevention to provision of end-of-life care within a variety of settings: the community (including patients' own homes), family practice and hospitals. Nurse-led interventions are aimed at helping patients cope with their condition and improve their quality of life. They include patient smoking cessation, education, pulmonary rehabilitation programmes and guided self-management (**NICE, 2018**)

Self-efficacy is a person's belief in his or her ability to succeed in a particular situation. Bandura described these beliefs as determinants of how people think, behave, and feel. Our belief in our own ability to succeed plays a role in how we think, how we act, and how we feel about our place in the world. Self-efficacy also determines what goals we choose to pursue, how we go about accomplishing those goals, and how we reflect upon our own performance (**Bandura, 2015**).

Patients with COPD, his ability to manage dyspnea is a specific challenge that has a major impact on functional performance and quality of life. Indeed, evidence suggests that self-efficacy in managing dyspnea predicts physical functioning as well as survival among patients with COPD. However, the role of psychological interventions to enhance self-efficacy for managing dyspnea has received little attention (**Bandura, 2015**).

Significance of the Study

Chronic obstructive pulmonary disease is expected to become the third leading cause of death by 2030, surpassed only by heart disease and stroke. More than 3 million people died with chronic obstructive pulmonary disease in 2005, which is equal to 5% of all deaths globally during that year (**WHO, 2019**).

Increasing prevalence of smoking in developing countries, and aging

populations in high-income countries, the prevalence of COPD is expected to rise over the next 40 years and by 2060 there may be over 5.4million deaths annually from COPD and related conditions (GOLD, 2019).

Aim of the Study

This study aims to assess level of self efficacy among patients with COPD through the following:

- 1- Assessing patient's level of knowledge regarded chronic obstructive pulmonary disease.
- 2- Assessing level of self-efficacy among patients with chronic obstructive pulmonary disease.

Research question:

This study is based on answering the following questions:

- What is the level of knowledge of patients regarding chronic obstructive pulmonary disease?
- What is the level of self-efficacy among Patients with chronic obstructive pulmonary disease?
- What are the factors that affect the level of Self-Efficacy among patients with chronic obstructive pulmonary disease?

Subject and Methodology

This study was portrayed under the four main designs as the following:

1. Technical design.
2. Operational design.
3. Administrative design.
4. Statistical design

1) Technical design:

The technical design includes research design, setting, subjects, and tools of data collections.

Research Design:

A descriptive exploratory deign was used to achieve the aim of this study.

Setting:

This study was conducted in the chest department and outpatient clinic at chest hospital at Zagazig,(the hospital affiliated to Ministry of Health).

Subjects:

A convenient study sample included 108 patients in chest department from the previously mentioned setting, the sample size represents about 15% of admitted patients with chronic obstructive pulmonary disease.

Tools of data collection:

Tools were constructed by the researcher to collect data pertinent to this study, these tools are:

Tool 1: Patient's interview 'questionnaire:

It is developed by the researcher after reviewing recent and related literatures. It is consisted of the following parts:

- **Demographic characteristics:** It includes: (age, gender, level of education and social status) of the study subjects
- **Medical history:** it includes: past and present history of the subjects and their families.
- **Patient's level of knowledge:** It is concerned with the assessment of patient level of knowledge regarding chronic obstructive pulmonary disease.

❖ Scoring system:

Each correct answer was given one grade and zero for incorrect answer with

total score (92 grades). The results of scoring system were classified as following:

- Less than 60% (<48 grade) = Unsatisfactory level of knowledge.
- More than 60% (>48 grade) = Satisfactory level of knowledge.

Tool 2: Self-Efficacy Scale

It is standardized scale developed by (Wigal, 1991), it was translated to Arabic and retranslated into English language. It includes: (Physical exertion, intense emotional arousal, negative affect, weather / environmental and behavioral risk factors.

❖ Scoring System:

The total score for self-efficacy is 170. Responses in each domain are ranked on a five-point Likert scale: 5: very confident to 1: not at all confident. Higher scores correspond to higher confidence in managing and controlling dyspnea. Scoring (5) representing higher self-efficacy while scoring (1) representing lower intense self-efficacy.

- More than 60 % (102 grade) = High self-efficacy.
- Less than 60% (68 grade) = Low self-efficacy.

Factors that affect the level of Self-Efficacy among patients with chronic obstructive pulmonary disease it was consisted of three categories physical factor which represented by dyspnea severity (BORG scale , psychological factor which was assessed by Beck depression scale and social factor which was assessed by MOS-SSS survey

Tool 3: Modified Borg Dyspnea Scale

It starts at number 0 where patient breathing is causing him no difficulty at all and progresses through to number 10 where patient breathing is difficulty to the maximal level. That answer to the question

How much difficulty is patient breathing causing him right now?

- Mild severity of dyspnea score (from 0 to2).
- Moderate severity of dyspnea score (from 3 to 6).
- Severe severity of dyspnea score (from 7 to 10).

Tool 4: Beck's Depression Inventory,

It evaluates depression level of patients. It was composed of 20 items to indicate symptoms related to depression.

- Mild depression; from 1-16.
- Moderate depression: from 17-30.
- Severe depression :> 30.

Tool 5: The Medical Outcomes Study (MOS) Social Support Survey (SSS)

Is an interview questionnaire that includes 15 items. Developed for the Medical Outcome Study (Sherbourne & Stewart, 1991), the MOS-SSS Social Support Scale aims to evaluate the degree to which an individual relies upon the support of others to cope with different life situations.

- Mild social support dysfunction 15 - <30.
- Moderate social support dysfunction 30 - <60.
- Severe social support dysfunction 60 – 75.

2) Operational design:

It include preparatory phase, content validity and reliability, pilot study and field work.

1-The preparatory phase:

It include reviewing of the related literatures and theoretical knowledge of the

various aspects of the study using books, articles, internet, periodicals and magazines to develop \select the tools needed for data collection.

Ethical Consideration:

Ethical approval was obtained from the scientific ethical committee in Faculty of Nursing at Ain Shams University before starting the study. The researcher assured maintaining anonymity and confidentiality of the subject data and the right to withdraw from the study at any time. Ethics, values, culture and beliefs were respected.

2-Validity and reliability

Content validity

After construction of data collection tools, face and content validity of the tools was assessed by a jury group consisted of 7 experts in critical care and medical surgical nursing department, Ain Shams University (2 professor ,3 assistant professor and 2 lecturer). The tools were distributed to the jury to judge its comprehensiveness, clarity and accuracy. The tools were rephrased based on the jury opinions. Based on their recommendation, addition, correction and omission of some items were done.

Test reliability

Internal consistency reliability was assessed in the present study tools via Cronbach's Alpha reliability analysis. The reliability score of the study tools were (0.783, 0.832, 0.812, 0.809 respectively).

3-Pilot study:

A Pilot study was carried out on 10% of the study subjects from the outpatient clinic and chest department at the chest hospital under study. The Purpose of the pilot study was to test applicability, clarity, relevance, feasibility of study tool and sequence of questions to maintain consistency. The necessary modifications

(structure of the sentence) were done and the final form was developed. The patients included in pilot study were omitted from study sample and replaced with another group with the same number of patients.

4-Field work

The actual field work and the process of data collection was carried out over 3 months started from January 2019 to the end of March 2019. The purpose of study was explained to studied patients presented to any data collection. The investigator was available at study setting by rotation, three days/ weekly (Tuesday, Wednesday, and Thursday) throughout the morning shift and afternoon shift. Each patient was individually interviewed to fulfill the questionnaire ranges from 20- 30 minutes. The investigator clarified and answered any related questions.

5-Administrative Design:

An official permission was obtained from the Dean of the faculty of Nursing Ain Shams University to the medical directors and head of each department in the study settings in order to conduct the study after clear explanation about the aim of the study

Statistical Design:

Data analysis:

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.

- Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables
- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:
 - P-value ≤ 0.05 was considered significant.
 - P-value ≤ 0.001 was considered as highly significant.
 - P-value > 0.05 was considered insignificant
- Probability (P-value)

Table (3): Shows that there were high statistical significant differences between studied patients level of self-efficacy and their level of knowledge regarding COPD with ($P < 0.001$).

Table (4): Shows that there were high positive statistically significant correlations between studied patient's level of self-efficacy and their satisfactory level of knowledge. While there were highly negative statistical significant correlations between studied patient's level of self-efficacy and their dyspnea severity. Also, there was negative statistical significant correlations between patient's level of self-efficacy and their social support dysfunction ($p < 0.05$).

Results

Table (1): shows that 37% of the studied patients were from 45 to 60 years old, 72.2% of the studied patients were male, 60.1% with basic education, 65.7% are married, 57.4% had manual work, 73.1% their monthly income insufficient to cover the expenses of the treatment as their perception and 64.8% of the studied patients is living in rural areas.

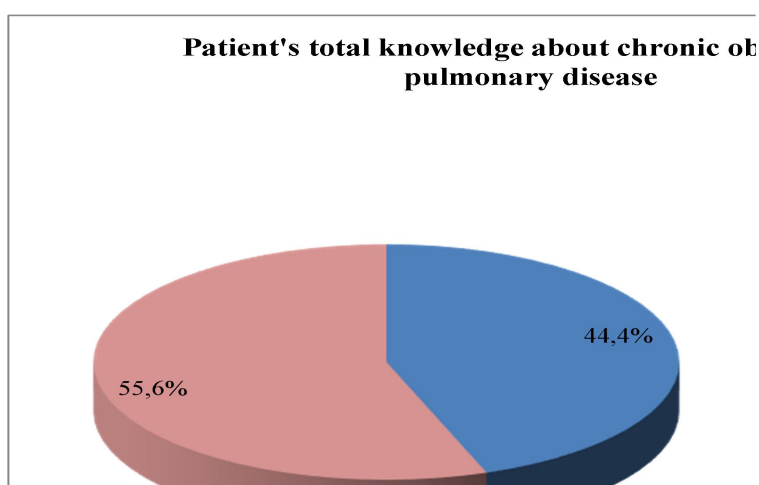
Figure (1): This figure shows that 55.6% of the studied patients had unsatisfactory level of knowledge about COPD.

Figure (2): This figure shows that 59.3% of studied patients had low self efficacy regarding COPD. and 40.7% of them had high self-efficacy regarding COPD.

Table (2): Shows that 39.8% of the studied patients had mild dyspnea, while 35.2 % had severe dyspnea, 52.8 % had mild depression while 8.3 % of them had severe depression. Also 19.4% of the studied patients had mild social support dysfunction and 62.0% of them had moderate social dysfunction.

Table (1): Frequency and percentage distribution of studied patients regarding their socio-demographic characteristics (n=108).

Demographic characteristics of the patient	No.	%
Age (years)		
30 years old<20 —	6	5.6
45 years old<30 —	35	32.4
60 years old<45 —	40	37.0
≥60 years old	27	25.0
Mean±SD	49.58±10.41	
Gender		
Male	78	72.2
Female	30	27.8
Level of education		
Can't read and write	29	26.9
Basic education	65	60.1
Higher education	14	13.0
Marital status		
Single	37	34.3
Married	71	65.7
Job/work		
Sedentary work	34	31.5
Manual work	62	57.4
Retired\ house wife\ no work	12	11.1
Monthly income as patient perception		
Insufficient to cover the expenses of treatment	79	73.1
Sufficient to cover the expenses of treatment	29	26.9
Place of residence		
Rural	70	64.8
Urban	38	35.2

**Figure (1):** Frequency and Percentage distribution of studied patients according to their satisfactory level of knowledge regarding COPD.

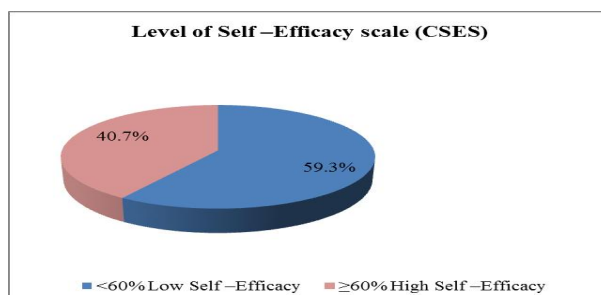


Figure (2): Percentage distribution of studied patients according to their level of self-efficacy regarding COPD.

Table (2): Frequency and percentage of distribution of studied patients according to factors affecting level of self efficacy among patients with COPD (n=108).

Items	No.	%
Severity of dyspnea according to BORG scale		
Mild	43	39.8
Moderate	27	25.0
Sever	38	35.2
Severity of depression according Beck scale		
Mild	57	52.8
Moderate	42	38.9
Severe	9	8.3
Social support dysfunction according to (MOS –SSS)		
Mild social dysfunction	21	19.4
Moderate social dysfunction	67	62.1
Severe social dysfunction	20	18.5

Table (3): Relation between studied patient's level of self-efficacy regarding COPD and their level of knowledge (n=108).

Level knowledge about chronic obstructive pulmonary disease	Level of Self-Efficacy scale (CSES)				Total		Chi-square test	
	Low (n=64)		High (n=44)		No.	%	x2	p-value
	No.	%	No.	%				
Unsatisfactory	46	71.9	14	31.8	60	55.6	15.361	<0.001**
Satisfactory	18	28.1	30	68.2	48	44.4		
Total	64	100	44	100	108	100.0		

**p-value <0.001 HS

Table (4): Correlation between studied patient's level of self-efficacy regarding COPD and factors affecting self efficacy level (n=108).

	Total score of Self-Efficacy scale (CSES)	
	R	p-value
Total satisfactory level of knowledge	0.673	<0.001**
Total dyspnea severity	-0.540	<0.001**
Total level of Depression	-0.366	0.013*
Total social support	-0.719	<0.001**

*p-value <0.05 S; **p-value <0.001 HS

Discussion

The present study results showed that the mean age of the studied patients was forty nine and more than two third of them were male. This study finding agree with a study done by **Yang, Du, Chen et al. (2019)** in their study entitled “*Disease knowledge and self-management behavior of COPD patients in China*” who found that the mean age of the studied patients were 49.50 ± 10.91 and about two third of them were male.

Current study illustrated that more than half of the studied patients were from rural areas. This finding disagree with a study done by **Rosińczuk et al.(2018)** entitled “*Sociodemographic and clinical factors affecting the quality of life of patients with chronic obstructive pulmonary disease in Poland*”, as they showed that slightly more than half of the studied patients from urban areas.

The current study showed about two third of studied patients had sufficient source of ventilation in the house and their houses exposed to sun. This agree with a study done by **Woldeamanuel et al.(2019)** in which they mentioned that more than half of the studied patients had insufficient source of ventilation in the house and their houses not exposed to sun.

The current study showed that about slightly half of them had unsatisfactory level of total knowledge regarding chronic obstructive pulmonary disease. This agrees with a study done by **Mohamed et al. (2017)** in which they showed that half of the studied patients had unsatisfactory knowledge regarding COPD.

The result of the current study showed that more than half of the studied patients had low level of self-efficacy regarding chronic obstructive pulmonary disease. It might be attributed to lack of health education regarding COPD which enhancing self – efficacy of the studied patients. This study agree with **Kaya et al.(2018)** in the finding of their study entitled “*Self-Efficacy Level*

and Patient Satisfaction with Healthcare in Chronic Obstructive Pulmonary Diseases in Turkey” as they showed that most of COPD patients had low level of self-efficacy.

The current study showed that more than one third of the patients under the study had slight difficulty of breathing and sever difficulty of breathing regarding to BORG scale, While one quarter of them had a moderate difficulty of breathing. It might be attributed to the low self efficacy of the patient’s regarding COPD. This study congruent with **Farag et al.(2018)** in their study entitled “*Evaluation of health-related quality of life in patients with chronic obstructive pulmonary disease in Egypt*” as they showed that about one third of the studied patients had slight difficulty of breathing and sever difficulty of breathing regarding to BORG scale, While one quarter of them had a moderate difficulty of breathing.

The current study showed that about half of the studied patients had a mild level of depression regarding chronic obstructive pulmonary disease, it might be attributed to low self confidence of studied patients. This finding disagree with a study done by **Uchmanowicz et al. (2016)** as they showed that most of the studied patients with a high level of depression and anxiety.

The current study showed that about two third of the studied patients had moderate social support dysfunction, it might be attributed to lack of support from patient’s family. This study finding agree with **Lenfernik et al.(2018)** in their study entitled “*The role of social support in improving chronic obstructive pulmonary disease self management in Australia*” who showed that more than half of the studied patients had moderate social support dysfunction.

The current study showed that there was a statistical significant relation between patient's level of self-efficacy scale regarding chronic obstructive pulmonary disease and the following variables (total score of BORG

scale and total score of depression), it might be attributed to the patient's dynamic feeling of confidence. This result in the same line with **Kaya, et al.(2018)** who showed in their that there was statistical significant relations between patients self-efficacy scale about chronic obstructive pulmonary disease and the following variables (total score of BERGE scale and total score of depression).

The results showed that, there was statistical significant relation between patient's level of self-efficacy regarding chronic obstructive pulmonary disease and total score of MOS-SSS. This result is agree with **Lenferink et al. (2018)** in their study entitled "*The role of social support in improving chronic obstructive pulmonary disease self-management in Australia*" who showed that, there was statistical significant relation between patient's self-efficacy and total score of MOS-SSS.

Conclusion

Based on the findings of the current study, it could be concluded that half of studied patients had unsatisfactory knowledge regarding COPD, more than half of the studied patients had low level of self-efficacy regarding chronic obstructive pulmonary disease, more than one third of the studied patients had slight difficulty of breathing. Also about half of the studied patients had a mild level of depression, while two third of the studied patients had moderate social support dysfunction. Therefore it could be concluded that the physical, psychological and social factors affecting self efficacy level among the studied patients with COPD.

Recommendations:

The following recommendations were inferred from the study:

- Providing health education and update information about COPD to the patients and their families from health care givers.

- Establishing organization for patients with COPD to improve their self efficacy and quality of life.

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