

# Effect of self-efficacy enhancement program on self-care behaviors in chronic obstructive pulmonary disease

Heidarali Abedi<sup>1</sup>, Saleh Salimi J, Aram Feizi<sup>3</sup>, Samira Safari<sup>2</sup>

## ABSTRACT

**Background:** Given the importance of the chronic obstructive pulmonary disease (COPD) and role of different factors in self-care behaviors of COPD patients, this study was conducted to determine the effect of self-efficacy program on self-care behaviors of COPD patients.

**Materials and Methods:** In this semi-experimental study, 62 COPD patients were recruited in which 31 subjects were in control group and 31 were in experimental group. Subjects were selected based on purposive sampling from Imam Hospital affiliated to the Urmia University of Medical Sciences, Iran, in 2011. Two valid and reliable questionnaires were filled after completing informed consent form. A month later, and after implementing the planned intervention, the questionnaires were completed by the subjects again.

**Results:** The mean standard deviation of age were 64.1 (9.1) years in the control group and 65.2 (8.0) years in the experimental group. There was a statistically significant difference between self-efficacy state before and after intervention. Self-care scores in the experimental group were significantly higher after intervention ( $t = 25.18, P < 0.0001$ ).

**Conclusions:** Given the high potency of self-efficacy factors on self-care behaviors of the COPD patients, enhancement of self-efficacy in these patients can be very effective in disease control, prevention of complications, reduction of hospitalization costs, and improve their quality of life. Hence, it is suggested that in empowerment programs of these patients, special emphasis will put on the strengthening of their self-efficacy.

**Key words:** Chronic obstructive pulmonary disease, nursing, self-care, self-efficacy

## INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is one of the most common and complex chronic diseases.<sup>[1]</sup> Defined by the Global Initiative for Chronic Obstructive Lung Disease (GOLD), COPD is the irreversible obstruction of air ways. It involves progressive limitation of the airways associated with an abnormal inflammatory response against particles as well as irritating and often hazardous gas. According to GOLD, this disease is estimated to rise from sixth to third position in the leading causes of death by the year 2020.<sup>[2]</sup>

Roughly, 10% of the population is affected by COPD in Iran. This disease is reported to be more prevalent in men with higher mortality and morbidity in individuals of lower

socioeconomic position.<sup>[3]</sup> The disease usually occurs in patients coming from urban areas,<sup>[4]</sup> symptoms emerge in middle ages and it is associated with aging.<sup>[5]</sup> Smoking plays a crucial role in the onset and development of COPD and although oxygen therapy, drug therapy, and rehabilitation cause relative improvements, cessation of smoking is very important in the prevention of the disease.<sup>[6,7]</sup>

Recent reports indicate that higher quality treatments reduce the morbidity and mortality associated with COPD. Involving patients in therapy and self-care are found to contribute to higher quality treatment.<sup>[8]</sup> Self-care behaviors can alleviate severe symptoms and enhance clinical outcome and also reduce further hospitalizations.<sup>[9]</sup> Several factors can impact self-care of patients including self-efficacy and the behavior of an individual,<sup>[10]</sup> in addition to the limitations and advantages for using self-care activities.<sup>[11]</sup> Self-efficacy, considered a main principle of social cognitive theory, was initially introduced by Bandura and later attracted attention of various theorists of behavior change. Self-efficacy is defined as one's belief in his/her capabilities to complete tasks and expect to reach goals. Self-efficacy is recognized as an important pre-requisite of behavior as it acts independently. It is believed by

<sup>1</sup>Nursing and Midwifery faculty, Khorasgan (Isfahan) Branch, Islamic Azad University, Isfahan, Iran, <sup>2</sup>Department of Nursing, Urmia Branch, Islamic Azad University, Urmia, Iran, <sup>3</sup>Nursing and Midwifery School, Medical Sciences University of Urmia, Iran

**Address for correspondence:** Dr. Heidar Ali Abedi, Khorasgan Branch, Islamic Azad University, Isfahan, Iran. E-mail: drabediedu@yahoo.com

Bandura that one's self-efficacy can be improved through paving the way for acquiring necessary knowledge and skill, and subsequently achieving success.<sup>[12]</sup> Moreover, it should be noted that education plays a crucial role in enhancing the function of an individual.<sup>[13]</sup>

In view of the increasing prevalence of COPD and the role that self-efficacy plays in self-care enhancement, this study was performed to determine the effect of self-efficacy in the self-care of patients with COPD.

## MATERIALS AND METHODS

In a semi-experimental study,<sup>[14]</sup> a total of 62 individuals, 31 subjects in each control and trial groups, were recruited. Subjects were selected using purposive sampling and were randomized into two control and trial groups. Inclusion criteria included confirmation of COPD by a physician, age 45-75, history of at least one hospitalization for COPD, willingness to participate in the study, having no malignant or psychological disease, being able to perform daily tasks, residence in Urmia province, Iran, ability to read and write, and finally having no visual or severe auditory impairment.

The subjects were asked to fill the self-care behavior and self-efficacy questionnaires. Intervention program was first implemented for the trial group. This program involved four sessions of rehabilitation for self-efficacy enhancement which was held over a 4-week period (1 month). The intervention was based on models suggested for self-efficacy enhancement and was performed for the trial group with the following content:

First session: Educating patients about disease entity (definition, prevalence, etiology, symptoms, diagnosis, disabilities, and treatment).

Second session: Aiding patients in pulmonary rehabilitation activities with respect to respiration, nutrition, physical exertion, and risk of infection.

Third session: Further pulmonary rehabilitation in terms of thought and suggestion and dealing with lack of information on health maintenance (ways to prevent or minimize respiratory difficulties, ways to maintain an expected nutritional status, ways to preserve energy or to minimize dyspnea and fatigue, instructing the use of inhaler sprays, informing patients on the side effects and necessity of the administered drugs, care guide for using oxygen at home, and situations when visiting the physician is necessary).

Fourth session: A review of the mentioned material and handing out an educational booklet (containing a complete account of the classes) with necessary explanations and ensuring that patients are able to utilize them.

One of the researchers tutored the sessions. Classes were in the form of question and answer (Q and A) and included video and power point presentations. In the final session, an educational booklet was handed to the trial group which comprised the material presented in the four-session period. Following a period of 1 month, self-care behavior and self-efficacy questionnaires were filled by COPD patients in the trial group and self-care questionnaires were filled by COPD patients in the control group. It should be noted that during this period researchers were available to the subjects via telephone or the hospital's education office.

Self-care questionnaire for COPD patients was initially introduced by Alberto in 1990, which includes 36 items rated along a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). Scores ranged from 36 to 180. Higher scores correlated with better self-care.<sup>[15]</sup> Standardized tool for evaluating self-efficacy in COPD patients was first introduced by Wigal *et al.* in 1991<sup>[16]</sup> and its validity and reliability were revised in 2010 by Bentsen *et al.* in Norway.<sup>[17]</sup> It comprises 34 items in five domains including negative effect (12 questions), intense emotional arousal (8 questions), physical exertion (5 questions), weather and environmental risk factors (6 questions), and finally behavioral risk factors (3 questions). This questionnaire was also rated using a five-point Likert scale (from 1 = completely unsure to 5 = completely sure). Scores ranged from 34 to 170 with higher scores denoting higher self-efficacy. A number of demographic questions (age, gender, marital status, occupation, residence, educational status, and monthly income) and items about COPD disease were also included to the self-efficacy questionnaire by the researchers.

Validity of data collection tools was confirmed using content validity and their reliability was assessed by Cronbach's alpha internal consistency coefficient. In a sample of 15 subjects, Cronbach's alpha score was found to be 0.82 for self-care behavior questionnaire in COPD patients and 0.89 for self-efficacy evaluating tools in COPD patients which indicates the efficiency of these questionnaires. Data were analyzed by descriptive and analytic statistics using SPSS software (version 18; SPSS Inc., Chicago, IL, USA) and the cut-off point for statistical significance was set at  $P < 0.05$ .

## RESULTS

Mean and standard deviation for age in control and trial groups were found to be 64.1 (9.1) and 65.2 (8.0), respectively. Demographic characteristics of subjects in both groups are displayed in Table 1. No significant differences were found between mean self-care scores of control and trial groups prior to intervention in different groups of age, gender, marital status, history of smoking, educational status, occupation, residence, disease intensity, level of dyspnea, and prior hospitalization.

Student's *t*-test showed that in the trial group, subjects exhibited significantly higher self-care scores after intervention [Table 2]. No significant differences were found between mean self-care scores of control and trial groups prior to intervention. Paired *t*-test indicated significant differences in self-efficacy scores following intervention in the trial group, it was increased from 76.6 (13.3) to 143.3 (16.1) ( $P < 0.001$ ).

## DISCUSSION

The aim of this study was to assess the effects of self-efficacy factors on self-care behaviors of COPD patients. Significant difference between mean self-care scores before and after intervention in the trial group was found. Moreover, mean self-care scores were found to be significantly different between control and trial groups following intervention. In a study conducted by Chen *et al.* on the effects of self-efficacy improvements on self-care behaviors of asthma adult patients, the trial group patients receiving self-efficacy interventions had significantly higher self-care behaviors compared to the control group with no interventions which was consistent with our findings.<sup>[18]</sup>

In another semi-experimental study by Kara *et al.*, targeted trainings were found to enhance self-efficacy in COPD patients.<sup>[19]</sup> Our results reported self-efficacy trainings to be effective in preventing pulmonary disturbances. Catharine *et al.*, in a study performed to evaluate the effects of self-efficacy factors on self-care and self-monitoring of glycosylated hemoglobin in youth with type-I diabetes, found individuals receiving self-efficacy interventions to have higher self-care behaviors compared to those with solely improved self-esteem and no self-efficacy interventions. The latter also indicates high self-efficacy levels to be superior in enhancing self-care and self-monitoring of glycosylated hemoglobin compared to other factors such as self-esteem.<sup>[20]</sup> Results, outlined above, are an elegant proof to the positive effects of self-efficacy programs in enhancement of self-care in COPD patients. According to our findings, the poor self-

**Table 1: Demographic characteristics**

Risk factor	Subgroup	Control group (%)	Trial group (%)
Gender	Male	71	64.5
Marital status	Married	87.1	80.6
Smoking	Smoked in the past	58.1	41.9
Educational status	Reading and writing	54.8	61.3
Disease intensity	Mild and moderate	44.8	57.1
Occupational status	Unemployed	80.6	64.5
Residence	City	80.6	51.6

**Table 2: Mean self-care scores in control and trial groups before and after intervention**

self-care status	Control	Trial	Mean difference	P value
Before intervention	69.3 (7.40)	69.7 (12)	0.35	0.88
After intervention	68.7 (8.4)	119.6 (7.3)	50.90	0.0001
P value	0.6	<0.0001		

efficacy levels of most subjects in the control group were made good and very good following intervention. Findings of Aljaseem *et al.* about the effects of self-efficacy on self-care behaviors of patients with type-II diabetes<sup>[21]</sup> and Krichbaum *et al.* about the relationship between self-efficacy and self-management in diabetic patients<sup>[22]</sup> indicated the positive effects of self-efficacy on self-care behaviors which were in accordance with our results. Similar findings were reported by Shakibazadeh *et al.* in a study performed on the relationship between self-efficacy and perceived barriers of self-care in type-II diabetic patients.<sup>[23]</sup>

## CONCLUSION

This study found enhanced self-care activities with self-efficacy improvements in COPD patients which is consistent with health-belief patterns and social-cognitive theories.<sup>[24]</sup> Both of the latter theories insist on the role of self-efficacy on health behaviors. In our study, self-efficacy had a positive effect and patients with higher levels of self-efficacy had advanced self-care behaviors. These findings can prove effective in various educational programs. Thus, to gain enhanced self-care activities of individuals, self-efficacy should be improved through encouraging preferred interests over barriers. In order to strengthen individual's beliefs in their own abilities in performing self-care activities, their internal control source should be enhanced by educating them so as to believe that they themselves are crucial in controlling disease symptoms and prevention by taking the necessary measures.

Self-efficacy enhancements, through improving self-care behaviors in COPD patients, can be very effective in prevention of potential symptoms, reduction of hospitalization costs as well as treatment and improvement of the quality of life in these patients. Therefore, in order to improve self-care behaviors of patients, it is crucial to enhance their self-efficacy and stress on rehabilitation programs.

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