



Effects of an Empowerment Program Using Applied Pulmonary Rehabilitation on Health Behaviors of Patients Living with Chronic Obstructive Pulmonary Disease

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Abstract

Purpose: This study aimed to examine the effects of an empowerment program using applied pulmonary rehabilitation to promote health behaviors in patients with COPD.

Design: Quasi-experimental research.

Methods: Purposive sample of 30 participants living with COPD were recruited from the outpatient department of Wiang Pai Pao hospital, Chiang Rai province between May 2007 and April 2008. The research instruments comprised of the empowerment program using applied pulmonary rehabilitation, a demographic data recording form and the health behaviors of COPD scale. Data analysis consisted of descriptive statistics and paired t-test.

Main findings: The score of participants' health behavior after participating in the empowerment program was significantly higher than that of before ($p < .001$).

Conclusion and recommendations: The findings could be used in clinical nursing practice to promote health behaviors in patients living with COPD. A longitudinal study is recommended to confirm the sustainability of good health behaviors after using applied pulmonary rehabilitation.

Keywords: COPD, empowerment, applied pulmonary rehabilitation, health behaviors

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Introduction:

Chronic obstructive pulmonary disease (COPD) is a progressive disease in which airways become narrowed resulting in chronic bronchitis and emphysema. Severe COPD is a major global public health problem and is ranked as the fifth leading cause of worldwide death reported by the World Health Organization (WHO). In Thailand COPD is the fifth and sixth leading cause of death in men (5 %) and women (3.4%).¹ In Chiang Rai Province, the number of new COPD patients admitted to Wiang pai pao hospital increased from 362 and 380 patients in 2005 and 2006, respectively. In addition, COPD was the second leading cause of death after digestive system diseases.² This information indicates that COPD is a serious health problem that affects clients condition and health care systems substantially.

Causes of COPD are not definitely determined; however factors contributing to the more severe forms of COPD include cigarette smoking, both direct and second hand inhalation. Symptoms of COPD can be treated and controlled, but not cured. Any factor that interferes with normal breathing induces anxiety, depression, and changes in behavior. Constant shortness of breath and fatigue may make the patient irritable and apprehensive to the point of panic. Restricted activity (and reversal of family roles due to loss of employment), the effort in breathing, and the realization that the disease is prolonged and unrelenting may cause the patient to become angry, depressed, and demanding.³ Health behaviors of patients with chronic COPD consist of the following three aspects: 1) General Health behavior, which refers to activities necessary for COPD patient to protect themselves from severe breathing difficulties such as maintaining good nutrition, having appropriate

medication use, and avoiding respiratory irritants; 2) Relaxing behaviors; 3) Health behaviors in breathing exercise and exercise training for COPD sufferers⁴.

In early 2007, approximately 30 COPD patients had revisited the out-patients department twice a week or more at Wiang Pai Pao hospital each month. Out of these 30 patients, ten reported that they did not fully understand the disease process and preventive health behaviors despite already receiving education on pulmonary rehabilitation. These patients who did not have health behaviors were unable to control symptoms of the disease. Consequently, it is necessary to help COPD patients build up their competencies to encounter the disease accurately and appropriately, recognize their ability to manage the disease symptoms, and feel successful in adjusting their lifestyles for the disease and treatments.

As a nursing professional and a member of the health care team, the researcher realizes that complex problems caused by COPD can affect patients and their families. Therefore, it is crucial for COPD patients to obtain an empowerment program for pulmonary rehabilitation to manage symptoms of the disease that would result in better health behaviors, long-term behavioral change, and better patient outcomes. Such a self-management intervention program would be beneficial for nurses to improve the quality of care provided to COPD patients.

Purpose: This study aimed to compare the health behavior of COPD patients before and after receiving the empowerment program using applied pulmonary rehabilitation.

Hypothesis: The mean scores of health behaviors of COPD patients after participating in the empowerment program using applied pulmonary rehabilitation were higher than those before participating in the program.

The empowerment program using applied pulmonary rehabilitation consists of a four-stage process⁵

Stage one: The discovery of personal reality of the situation

Stage two: Critical reflection to search for and identify the root cause of that reality

Stage three: Decision made for appropriate practices.

Stage four: Implementing and holding on to such appropriate practices.

Three aspects of health behavior of COPD patients⁴

- 1) General Health behavior
- 2) Relaxing behavior
- 3) Health behavior in breathing and exercise training

Figure 1: research Framework

Methods

This study was a quasi-experimental research with one group pre – post test design. The aim of this study was to examine the effects of the empowerment program using applied pulmonary rehabilitation on health behaviors of patients with COPD. Power analysis was used to determine the sample size required for this study. With the power set at .80, effect size .70 and Alpha .05, 30 patients were estimated⁶. The required 30 COPD patients were selected from the outpatient department of Wiang Pai Pao hospital, Chiang Rai. Data were collected from May 2007 to April 2008.

Instruments

1. The instruments for data collection consisted of a demographic data questionnaire and the Health Behaviors Scale of COPD used for data collection, which was created by Niyana Inprasit.⁷ This instrument consisted of 40 items (3 dimensions) concerning the health behavior in COPD patients participating in a pulmonary rehabilitation program. Each item was worded positively and rated on a 3-point Likert scale (1= non, 2= sometime, 3= usually). The total scale scores ranged from 40 (low health behaviors) to 120 (high health behaviors). Higher scale scores indicated a greater degree of health behaviors in living with chronic obstructive pulmonary disease. Cronbach's alpha reliability coefficient was 0.84.

2. The research intervention was the empowerment program using applied pulmonary rehabilitation which was developed by the researcher based on concepts of empowerment by Gibson⁵, guidelines of American Association of Cardiovascular and Pulmonary Rehabilitation⁸ and 12 important activities facilitating different steps of the empowerment process⁹. This program was inspected by three health professionals whose comments and suggestions were used to revise and improve the program. The complete version was tested in three COPD patients to evaluate its possible use.

Research methodology

Preparation steps

1. Submission of the research proposal to the Ethics Committee of Wiang Pai Pao Hospital for their approval.

2. Presentation of the official letter of the director of Wiang Pai Pao Hospital to the institute related to

data collection to indicate objectives of the study and ask for their cooperation.

3. Protection of Human Subjects After obtaining permission to collect the data from ethics committee, the study was conducted at the outpatient clinic of the particular hospital. The prospective subjects were informed about the purpose and method of the study. They were also informed the participation in the study was voluntary, and that they could refuse to participate in the study without being penalized or losing or benefits. There were no risks or costs involved with participation in this study. The prospective subjects were notified that their responses would be kept confidential and that their identities would not be revealed. The prospective subjects who agreed to participate in this study were asked to sign a written consent before answering the survey.

Data collection

Data in the COPD sample were collected in the following orders:

1. Introduced the researcher of this study and explained the research process, data collection, and protection of the rights of COPD patients.

2. The researcher distributed the demographic questionnaire and the health behavior scale to COPD patients and asked them to fill these forms. The researcher spent about 20-30 minutes per COPD case.

3. The researcher performed the study in accordance with the empowerment program by applying pulmonary rehabilitation in which 4 activities were done in the first, third, fifth, and eighth week, including a one-time home visit after the end of a research period of 4 months. Each activity required 1-2 hours to complete.

3.1 The first activity (1st week: stage 1) focused on the empowerment program in the discovery of the personal reality of the situation and stage 2 was critical reflection to search for and identify the root cause of that reality. The researcher asked COPD patients to recognize problems of pulmonary rehabilitation and perform activities such as giving knowledge of COPD pathology and appropriate medication use assessing and managing problems and difficulties of everyday life – important activities of pulmonary rehabilitation, analyzing patients' problems, summarizing all activities, and scheduling the next appointment in the third week.

3.2 The second activity (3rd week: stage 2)

focused on making decisions for appropriate practices, urging patients to review the first activity, and asking patients to tell about their self-management experience. For this week, activities included assessment for exercise training, effective breathing and coughing exercises, demonstration and feedback demonstration in a research group, social support, relaxation, and quitting cigarette smoking. The researcher looked for appropriate practices for patient subjects and encouraged them to follow their self-management continuously, summarized all activities, and scheduled the next appointment in the fifth week.

3.3 The third activity (5th week: stage 3) focused on decision making for appropriate activities, urging patients to review the second activity. The COPD patients were asked about their experience of breathing and exercise training, compare between their own practices and suggested ones, and exchange their ideas in the group. The Researcher looked for proper ways to stimulate experience exchange in the group and accompanied COPD patients to look for appropriate practices. Also, the researcher urged the patients to follow their self-management continuously, summarized all activities, and scheduled the next appointment in the eighth week.

3.4 The fourth activity (8th week: stage 4) focused on implementing and holding on to such appropriate practices, the researcher urged the COPD patients to discuss their problems and difficulties in performing the activities and exchange their ideas to select appropriate and effective practices, and assessing health behaviors of COPD patients. The patients were also informed about ending a home visit, and urged to recognize the importance of progressive self-management. At the end of the study, the researcher followed up progressive self-management at patients' homes, assessed environmental risk factors contributing to the severity of COPD such as dust, smoke and smoking cigarette and evaluated health behaviors of COPD patients again at the end of the 4th month.

Data analysis

Data were analyzed using statistical software as follows:

1. Demographic Data were analyzed by descriptive statistics.

2. The mean scores of COPD patients' health behaviors before and after enrollment in the empowerment program using applied pulmonary rehabilitation were compared by using paired t-test.

Findings

The results of this study were presented in the following two parts.

Part 1: Demographic Data: The sample group consisted of 66.7% male and 33.33% female patients with COPD aged 67 to 75 years with a mean age of 67.53 years. The majority of patients were (73.33%) married; 60% had primary school education; 50% had an average family income of 2,001 - 4,000 baths/month, 93.3% had smoked in the past. Of these smokers, 92.88% smoked fewer than 20 cigarettes a day and 64.28% stopped smoking for a year or less; 2 patients had never smoked at all. In the sample group, 73.3% and 26.7% had severe COPD level 3 and 4, respectively. The majority of the patients had suffered from COPD for 1 to 5 years (66.6%).

Part 2: Comparison of mean scores of COPD patients' health behavior before and after enrollment in the empowerment program using applied pulmonary rehabilitation

The mean scores on health behaviors of the COPD patients after participating in the empowerment program using applied pulmonary rehabilitation were significantly higher than those before participating in the program at the .001 level (Table 1). The mean scores on health behaviors of the patients before and after enrollment in the empowerment program using applied pulmonary rehabilitation were 77.33 and 117.6, respectively. At the end of the 4th month (The mean score on health behaviors of the patients) were 115.

Table 1 The differences between the pretest and poster scores on health behaviors of the COPD patients after participating in the empowerment program using applied pulmonary rehabilitation (n=30)

Health Behavior scores	Minimum	Maximum	Mean	SD	dependent t-test	p-value
Pretest	55	80	77.33	8.73	-15.947	0.001
Post test	105	119	117.6	2.02		

In addition, after participating in the pulmonary rehabilitation program, 80% of patients in the studied group appeared to have a good impression on the study observed from their ideas, face expressions, and attitudes, and adherence with appointment schedules.

Discussion

This study was primarily conducted to examine the effects of the pulmonary rehabilitation on health behaviors of 30 patients with COPD. The results of this study supported the hypothesis that the mean scores on health behaviors of the COPD patients after participating in the empowerment program using applied pulmonary rehabilitation were significantly higher than those prior to taking part in the program ($p < .01$).

The empowerment process consisted of 4 stages on the basis of Gibson's concept of empowerment⁵ and 12 important activities for facilitating empowerment⁹ which increased the patients' confidence in their ability to control their COPD symptoms such as breathlessness and their attempts to maintain positive behavior change. Results of this study were consistent with other previous studies using an empowerment process for patients with chronic disease in order to improve health status. For example, the case study by Jantiya¹⁰ explored the effect of the group empowerment program on COPDs patients' ability to take care of themselves. The finding of the present study revealed that self care behavior of the COPD patient after participation in the empowerment program was significantly higher than of before ($p < .001$).

In this study, it was also found that taking part in the pulmonary rehabilitation program had a positive impact on patients' ability to control their uncomfortable breathing and maintain a positive behavior change. This finding was similar to Janjira's study¹¹ that showed the pulmonary rehabilitation program affected breathlessness and quality of life for COPD patients. After taking part in the program, patients reduced breathing problems, thus resulting in better life outcomes. The finding was consistent with Jantrakul K¹² the results of this study revealed that quality of life of the COPD patients after receiving pulmonary rehabilitation with family support was significantly higher than before, ($p < .01$). The study of Budsagorn Aonnone¹³ explored the effect of the group empowerment program on diabetes patients' ability to

take care of themselves. The finding revealed that the mean score of self-care behaviors of the diabetes patients after participating in the group empowerment program was significantly higher than prior to taking part in the program ($p < 0.001$), which indicated that Gibson's concept of empowerment can promote self-care behaviors of the patients with chronic diseases.

Also the study supported the positive outcomes of the pulmonary rehabilitation program and indicated that this program can be truly applied to promote health behavior changes of COPD patients, contributing to their better well-being. Moreover, enrolling in the empowerment program of a four-stage process urged patients to share their ideas of the proper ways to achieve more appropriate health behaviors to a group including researchers.

In regard to improvement in COPD patient care, patients attended all 4 activities, indicating increased efficiency of the pulmonary rehabilitation program in important areas of taking medications correctly, adhering to appointment schedules, exercising, and breathing exercise. In addition, decreasing hospital admissions, urging patients to attend activities by relatives' participation, and using practice guidelines for preventative health behaviors help reduce the cost of patient care.

Recommendations:

1. Nursing practice. Seminar focusing on the empowerment program using applied pulmonary rehabilitation should firstly be offered for nurses and health care professionals in order to facilitate their awareness of problems facing patients affected by COPD, increase understanding of the empowerment process, and then apply the concept into practice for health promoting behaviors in patients with chronic diseases.

2. Nursing education. The results and the gained knowledge from this study should be disseminated to nursing students to ensure their understanding nursing care of COPD patients.

3. Clinical research. Further research should be directed to more clinical aspects such as lung function. Comparison between the two study groups should be conducted to provide clearer clinical data after participating in the program. Also, follow-up studies should be performed to assess long-term positive health behaviors of COPD patients.



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ผลของโปรแกรมการเสริมสร้างพลังอำนาจโดยประยุกต์ การฟื้นฟูสมรรถภาพปอดต่อพฤติกรรมสุขภาพของผู้ป่วย โรคปอดอุดกั้นเรื้อรัง

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาผลของโปรแกรมการเสริมสร้างพลังอำนาจโดยประยุกต์การฟื้นฟูสมรรถภาพปอดต่อพฤติกรรมสุขภาพในผู้ป่วยโรคปอดอุดกั้นเรื้อรัง

รูปแบบการวิจัย: การวิจัยกึ่งทดลอง

วิธีดำเนินการวิจัย: กลุ่มตัวอย่างเลือกแบบเฉพาะเจาะจง จำนวน 30 ราย เป็นผู้ป่วยโรคปอดอุดกั้นเรื้อรัง ที่มารับการรักษาที่แผนกผู้ป่วยนอกโรคปอดอุดกั้นเรื้อรังของโรงพยาบาลเวียงป่าเป้า จ. เชียงราย ระหว่างเดือน พฤษภาคม พ.ศ. 2550 ถึง เดือน เมษายน 2551 เครื่องมือที่ใช้ในการวิจัยประกอบด้วย โปรแกรมการเสริมสร้างพลังอำนาจโดยประยุกต์การฟื้นฟูสมรรถภาพปอดแบบสอบถามข้อมูลทั่วไป และแบบประเมินพฤติกรรมสุขภาพ ผู้ป่วยโรคปอดอุดกั้นเรื้อรัง การวิเคราะห์ข้อมูลใช้สถิติเชิงพรรณนา และการทดสอบค่าที (paired t-test)

ผลการวิจัย: โปรแกรมการเสริมสร้างพลังอำนาจโดยประยุกต์การฟื้นฟูสมรรถภาพปอดสามารถส่งเสริมพฤติกรรมสุขภาพในผู้ป่วยโรคปอดอุดกั้นเรื้อรังได้ โดยคะแนนพฤติกรรมสุขภาพภายหลังการเข้าร่วมโปรแกรมการฟื้นฟูสมรรถภาพปอดสูงกว่าก่อนเข้าร่วมอย่างมีนัยสำคัญทางสถิติที่ระดับ .01

สรุปและข้อเสนอแนะ: โปรแกรมการสร้างพลังอำนาจโดยประยุกต์การฟื้นฟูสมรรถภาพปอด สามารถนำไปประยุกต์ใช้ในการปฏิบัติการพยาบาล เพื่อส่งเสริมพฤติกรรมสุขภาพของผู้ป่วย และควรมีการศึกษาติดตามระยะยาวเพื่อติดตามความยั่งยืนของพฤติกรรมสุขภาพ

คำสำคัญ: โรคปอดอุดกั้นเรื้อรัง การฟื้นฟูสมรรถภาพปอด การเสริมสร้างพลังอำนาจ พฤติกรรมสุขภาพ

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