THE EFFECT OF THE SYMPTOM MANAGEMENT PROGRAM ON DYSPNEA IN SMOKERS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

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การวิจัยเชิงทดลองครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง กลุ่มตัวอย่างเป็นผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง จำนวน 66 คน แบ่งเป็นกลุ่มทดลองและกลุ่มควบคุมด้วยการสุ่มแบบบล็อก กลุ่มละ 33 คน ผู้ป่วยกลุ่มควบคุมได้รับการดูแลตามปกติ ขณะที่ผู้ป่วยกลุ่มทดลองได้รับการดูแลตามปกติร่วมกับโปรแกรมการจัดการกับอาการหายใจลำบากเป็นเวลา 12 สัปดาห์ โปรแกรมการจัดการกับอาการหายใจลำบากพัฒนาขึ้นจากรูปแบบการจัดการอาการของ Dodd และคณะ ร่วมกับแนวคิดการจัดการตนเองของ Tobin และคณะ โปรแกรมนี้ประกอบด้วย 4 องค์ประกอบ ได้แก่ 1) การแสดงความรู้สึกเกี่ยวกับประสบการณ์อาการหายใจลำบาก 2) การสร้างแรงจูงใจในการจัดการกับอาการหายใจลำบาก 3) การฝึกทักษะการจัดการกับอาการหายใจลำบาก และ 4) การติดตามกำกับการจัดการกับอาการหายใจลำบาก กลุ่มทดลองและกลุ่มควบคุมได้รับการประเมินอาการหายใจลำบากโดยแบบประเมินอาการหายใจลำบาก (Visual Analog Scale) และประเมินสมรรถภาพปอดโดย KoKo pulmonary function test spirometer วิเคราะห์ข้อมูลโดยใช้ Independent t-test และ paired t-test

ผลการศึกษาพบว่า กลุ่มทดลองมีคะแนนอาการหายใจลำบากต่ำกว่ากลุ่มควบคุมอย่างมีนัยสำคัญ ($p < .001$) และกลุ่มทดลองมี FEV1% predicted สูงกว่ากลุ่มควบคุมภายหลังเข้าร่วมโปรแกรมอย่างมีนัยสำคัญ ($p < .001$) ผลการศึกษานี้แสดงให้เห็นว่าโปรแกรมดังกล่าวมีประสิทธิผลในการลดอาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

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NAIYANA WONGSAITA: THE EFFECT OF THE SYMPTOM MANAGEMENT PROGRAM ON DYSPNEA IN SMOKERS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE. ADVISOR: ASSOC. PROF. SUREEPORN THANASILP, DNS., CO-ADVISOR: ASST. PROF. SUNIDA PREECHAWONG, Ph.D., 161 pp.

The purpose of this experimental research was to examine the effect of the symptom management program on dyspnea in smokers with chronic obstructive pulmonary disease (COPD). Sixty-six smokers with COPD were randomly assigned to either the experimental or control group using blocked randomization (N = 33 each). The participants in the control group received the usual care while those in the experimental group participated in the symptom management program and received the usual care. The 12-week symptom management program was developed based on the symptom management model by Dodd et al. and the self-management concept by Tobin et al. The program consisted of four components including: 1) the exploring of dyspnea experience, 2) the motivation building for dyspnea management, 3) the skill training for dyspnea management, and 4) the monitoring the practices of dyspnea management. The outcome variables were dyspnea which evaluated using visual analog scale and pulmonary function (the percentage predicted values of forced expiratory volume in one second) which evaluated using KoKo pulmonary function test spirometer. An independent t-test and paired t-test were used for data analysis.

The findings revealed that the participants in the experimental group had significantly lower dyspnea scores than those in the control group ($p < .001$). In addition, after participating in the symptom management program, the FEV1% predicted were significantly higher in the experimental group than in the control group. These findings indicate that the symptom management program can significantly improve the lung function and dyspnea in smokers with COPD.

Field of Study: Nursing Science
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CHAPTER I
INTRODUCTION

Background and Significance of the Study

Chronic obstructive pulmonary disease (COPD) is one of the most common chronic diseases caused by airflow obstruction and results in reduced airflow in the lungs (Dewar, Whit, & Curry, 2006: (Global Initiative for Chronic Obstructive Lung Disease; GOLD, 2014; Narzir & Erbland, 2009). COPD is rapidly becoming a global public health problem (World Health Organization, 2015). More than 90 % of patients who died from COPD were smokers (American Lung Association, 2013; Li et al., 2012). Cigarette smoking was reportedly the most important risk factor of COPD (Rosi & Scano, 2004; Li et al., 2012; Kocks et al., 2013; Victorson, Anton, Hamilton, Yount, & Cella, 2009). In Thailand, disease burden from COPD ranked seventh in 2005, which increased to sixth in 2009 (The Bureau of Policy and Strategy, 2009). The number of COPD patients increased by about 19.9% from 240,931 cases in 2014 to 289,026 cases in 2016. (The Bureau of Non-Communicable Disease, Department of Disease Control, 2016). Empirical evidence documented that a large number of Thai COPD patients were still smoking (Leartsakulpanitch, Nganthavee, & Salole, 2007). Approximately 36.6% to 43.3% of Thai COPD patients continued to smoke, most of them smoking 16-20 cigarettes per day (Maungtoug, 2005; Petko, 2009; Pisalwapee, 2008).

Smokers with COPD are defined as current smokers who smoked cigarettes every day or some days during the 30 days preceding the survey or smoked at least 100 cigarettes (Center for Disease Control and Prevention, 2015; Ryan, Trosclair, & Gfroerer, 2012). They are mostly aged ≥ 40 years (Stratelis, Jakobsson, Molstad, & Zetterstrom, 2004; World Health Organization, 2015). They experience severe dyspnea more frequently than nonsmokers (Nazir & Erbland, 2009; Rabe et al., 2007). In a previous study, about 40-50% of smokers were readmitted during the following year because of acute exacerbation of dyspnea (Mannino, 2002). Soler, Sanchez, Roman, Martinez, and Perpina (2004) found that about 57.1% of all hospitalizations

were attributable to exacerbation of COPD in smokers. Moreover, Sullivan, Ramsey, and Lee (2000) stated that the overall disease burden of smokers with COPD is related to dyspnea, causing 2.7 times greater hospitalization expenditure per year. In Thailand, smokers with COPD experienced exacerbation of dyspnea 3 or 4 times more frequently per year, resulting in an average number of re-hospitalization of 1.6 times per year with a length of hospital stay of 5-14 days (Chuprapawan, 2000; Noonill, Sindhu, Hanucharurnkul, & Suwonnaroop, 2007).

Dyspnea is often referred to as the sixth vital sign and progressively decreases the lung function of COPD patients (O' Donnell, Schwartzstein, Lansing, Guilfoyle, Ekin, & Banzett, 2013; Hayen, Herigstad, & Pattinson, 2013; Mahler, & O' Donnell, 2015). Dyspnea is defined as the subjective experience of breathing discomfort, which comprises qualitatively distinct sensations of varied intensity (American Thoracic Society, 2012; Lareau, Meek, Press, Anholm, & Roos, 1999). The term "*dyspnea*" can be used interchangeably with *breathlessness*, *shortness of breath*, or *not getting enough air* (Al-Ghabeesh & Ahmad, 2012; Cline et al., 2010). Dyspnea is a complex subjective sensation, perception, and experience of difficulty or labored breathing, and may produce secondary physiological, emotional, cognitive, and behavioral response (Hayen, Herigstad, & Pattinson, 2013; Lareau et al., 1999). Dyspnea was reported to be the most common and severe symptom after discharge in smokers with COPD (Ignatavicius & Workman, 2015). A previous study found that 80% of heavy smokers with COPD developed dyspnea (Willemse, Postma, Timens, & ten Hacken, 2004). Approximately 50% of them presented with dyspnea on most days (Rennard et al., 2001).

From the literature review, dyspnea was found to have affected the physical, psychological, and socioeconomic functions of smokers with COPD. For the physical aspect, dyspnea led to fatigue, sleep problems, weight loss, and sexual problems (Rabe et al., 2007; Theander & Unosson, 2004). Dyspnea also decreased functional capacity, which affected the ability to perform daily activities, and limited participation in normal family activities, and physical exercise which led to imminent disability (Durán & Vargas, 2008; Meek & Lareau, 2003; Roche et al., 2011).

In term of the psychological aspect, smokers with COPD mostly showed emotional manifestations, especially altered mood stages, feeling of fear, anger, and stress (Peruzza et al., 2003). The problems that particularly affected smokers with COPD with increasing dyspnea severity included the feeling of confusion and loss of control (Rozenbaum, 2008; Tiep & Barnett, 2008). In addition, progressive dyspnea can lead smokers with COPD to experience social isolation, and changing of roles. (Durán & Vargas, 2008). In addition, smokers with COPD encountered many socioeconomic problems caused by dyspnea, which led to absence from work, frequent visits to the physician, high re-hospitalization rate, and economic loss due to health care expenses (Dahlen & Janson, 2002; Rennard et al., 2001).

Diverse factors contributed to increased risk of dyspnea in smokers with COPD, including family support (Artpadungkul, 2007; Suwanno, 2005), anxiety (Borges-Santos et al., 2015) (Martinez, Curtis, & Albert, 2008; Pauwels & Rabe, 2004), depression (Martinez, Curtis, & Albert, 2008; Pauwels & Rabe, 2004), dietary (Borges-Santos et al., 2015; de Batlle et al., 2009; Odencrants, Ehnfors, & Grobe, 2007), (Ferreire, 2003; Stoll, Foerster, Virchow, & Lommatzsch, 2016) and symptom management of dyspnea (Bauldoff, 2009; Campion & Snyder, 2015; Worth & Dhein, 2004). Among these factors, symptom management of dyspnea was the most important factor that can improve dyspnea. Empirical evidence showed that symptom management of dyspnea was a statistically significant factor for improving dyspnea (Campion & Snyder, 2015; Kotta, 2004; Thomas, 2009).

Information related to various interventions to manage dyspnea and to reduce smoking, which triggered dyspnea in patients with COPD, was studied. Paz-Díaz, De Oca, López, and Celli (2007), and Shetty et al. (2006) used a pulmonary rehabilitation program involving exercise training to decrease the incidence of dyspnea. Their results revealed that the incidence of dyspnea was significantly reduced and the severity of the disease improved in smokers with COPD after participating in the program. Thomas (2009) developed dyspnea management strategies by providing information related to medications, energy conservation, decreasing activities, and relaxation. The result showed that the strategies were effective to use during acute exacerbation of dyspnea. Moreover, Gift et al. (1992)

conducted a randomized clinical trial to determine the effects of progressive muscle relaxation on dyspnea, anxiety, and airway obstruction in patients with COPD. Patients in the experimental group showed lower prevalence rates of dyspnea and anxiety, and higher airway obstruction rate than the control group. Similarly, their study, Kesharia and Amita (2013) evaluated the effects of nebulization and breathing control in patients who had airway limitation and found significant improvements of dyspnea and airway obstruction.

In addition Liu and colleagues (2012) conducted a randomized controlled trial to examine the effects of Qigong in patients with COPD. The result revealed that health Qigong exercise could decrease the Frequency of exacerbation for patients with COPD. In Thailand, additional interventions were conducted to decrease the risk of dyspnea in smokers with COPD as follows: Maungtoug (2005) conducted Qigong exercise to increase pulmonary function and improve severe dyspnea. The result showed that after smokers with COPD performed 8 weeks of exercise, the severity of their dyspnea declined. Similarly, the study of Apirukworakul (2008) found that a folk dance program could significantly decrease the risk of dyspnea in smokers with COPD.

In both Western and Thailand studies, most empirical studies conducted interventions by using pulmonary rehabilitation and exercise training to decrease the risk of dyspnea in smokers with COPD. However, little is known about using a symptom management model to guide interventions in the management of the impairing symptom. It is interesting that the symptom management model was applied to conduct interventions for managing target symptoms such as pain (Punpho, 2007), fatigue (Buranaruangrote, 2006), hallucination (Pila, 2010), and dyspnea (Kotta, 2004). In various symptoms, symptom management was used to alleviate each symptom in diverse populations such as patients with lung cancer (Buranaruangrote, 2006), psychiatric disease (Pila, 2010), human immunodeficiency virus–infected/acquired immunodeficiency syndrome (Spirig, Moody, Battegay, & De Geest, 2005), and COPD (Kotta, 2004). Symptom management could be useful for smokers with COPD. Unfortunately, symptom management to reduce the incidence of dyspnea in smokers with COPD is lacking in Thailand.

Dyspnea is considered an important indication to conduct interventions for the management of the disease and control its progression in smokers with COPD. Symptom management is a strategy to manage symptoms before an individual experiences the symptom or at its onset. Symptom management was modified through individual outcomes and the influences of nursing domains, including the patient, health or illness, or environment. Furthermore, the gold standard for the study of symptom management was based on the perception and self-report of the individual experiencing the symptom (Dodd et al., 2001). The symptom management model includes three concepts, namely symptom experience, management strategies, and outcomes. Symptom management can help patients with COPD to understand their dyspnea experience, respond, and judge the specific symptom as dyspnea. Health-care providers need to provide appropriate guidelines or information to manage dyspnea that would lead to the desired outcome, which is dyspnea improvement.

Dyspnea management is a symptom management strategy for smokers with COPD that could be used to manage dyspnea occurrence with a goal of averting or delaying negative outcomes. Promoting dyspnea management in smokers with COPD is necessary to decrease risk factors (i.e., cigarette smoking). Smoking cessation plays an important role in the encouragement of success in decreasing and managing dyspnea (Li et al., 2012; Tashkin & Murray, 2009). It clearly improves respiratory symptoms, including dyspnea symptom, and could prevent an excessive decline in lung function (Willemse et al., 2004). Smoking cessation is the strategy promoted by the World Health Organization and indicated in article 14 of the Framework Convention on Tobacco Control (FCTC) regarding the demand reduction measures concerning tobacco dependence and cessation (World Health Organization, 2015). In Thailand, the Department of Disease Control developed the National Strategic Plan for Tobacco Control 2010–2014 to promote cessation of tobacco smoking through reduction of tobacco consumption among tobacco consumers and adequate treatment of tobacco dependence (Bureau of Tobacco Control, 2010).

Although numerous studies have been conducted to decrease the incidence of dyspnea in smokers with COPD, most of these studies used diverse strategies to

manage dyspnea but did not focus on smoking cessation. Moreover, a literature review showed that smokers with COPD who continued smoking developed dyspnea (Rosi & Scano, 2004). In Thailand, conventional care was provided by nurses and health-care providers by focusing on the essential nursing care and health education regarding information on COPD, breathing technique, medication taking and inhalation, avoidance of risk factors of COPD, and severe or abnormal symptom that patients should be concerned of (Burapadaja, Konkaew, Tuntipathananandh, & Sanguansermsri, 2006).

Moreover, the previous nursing care and treatment for COPD patients focused on palliative care but not on prevention of the risk of exacerbation and delay of the progress of COPD (Global Initiative for Chronic Obstructive Lung Disease; GOLD, 2014). However, the usual care did not emphasize dyspnea management involving smoking cessation. As a result, smokers with COPD were still currently smoking and developed dyspnea later (Pisalwapee, 2008). Therefore, symptom management involving smoking cessation could be a beneficial intervention to decrease the incidence of dyspnea in smokers with COPD.

The symptom management program in the present study was conducted based on the symptom management model (Dodd et al., 2001), self-management concept (Tobin, Reynold, Holroyd, & Creer, 1986), and smoking cessation guided by the clinical practice guideline for smoking cessation in patients with COPD (Tashkin & Murray, 2009). The content of the program was based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guideline for COPD patient (GOLD, 2014). The program focused on dyspnea management and smoking cessation related to knowledge on COPD, dyspnea, smoking cessation, and practices on dyspnea management behavior, as well as on progressive muscle relaxation, breathing technique, Qigong exercise, energy conservation method, stress management, dietary, appropriate drug use, and smoking cessation.

Nurses are key persons to encourage smokers with COPD to deal with dyspnea. During nursing care, nurses have the opportunity to assess the needs of smokers with COPD and provide holistic care to identify, interpret, and implement dyspnea symptom management. Therefore, the aim of this study was to develop an

intervention that adds smoking cessation into the symptom management program in order to evaluate the effect of the symptom management program on dyspnea in smokers with COPD who participated in the program.

Research Question

Does the symptom management program decrease dyspnea in smokers with COPD?

Research Objective

To examine the effect of the symptom management program on dyspnea in smokers with COPD

- Compare the difference in dyspnea score between before and after participating the program and between the experimental and the control group.
- Compare the difference of the FEV1% predicted before and after participating the program and between the experimental and the control group.

Theoretical Framework

This present study used the symptom management model of Dodd et al. (2001) as the major theoretical framework. In this theoretical perspective, symptom management is a dynamic process and uses a systematic approach to determine intervention strategy through question. This approach was taken to affect symptom experience and patient outcome. The symptom management model was selected to provide a comprehensive analysis of the determinants of symptom sensation, to form a basis for developing an intervention to enhance patient outcome, and to provide a foundation for the theory's propositions about human capabilities and symptom management behavior (Peruzza et al., 2003). Moreover, symptom management affected smokers with COPD's activities performance for decreasing the symptom of dyspnea through the individual perception (Dodd et al., 2001). Thus, the symptom management model is the important aspect for smokers with COPD for using as the strategies to manage dyspnea symptom that occur in their life

The symptom management model used for conducted the symptom management program through the three essential concepts. Firstly, symptom

experience included an individual's perception of a symptom, evaluation of the meaning of a symptom and response to a symptom for a change in one's usual feeling (Sidani, 2003). This concepts use for encouraging the smokers with COPD to express their dyspnea experience. Secondly, the symptom management strategies were efforts to avert, delay, or minimize the symptom experience. The strategies could be effective in three ways; reducing the frequency of the symptom experience, minimizing the severity of symptoms, and relieving the distress associated with the symptom (Humphreys et al., 2008). This concept the symptom management strategies as the dyspnea management strategies is the process for give the education, encourage smokers with COPD to practice the skill, monitor the behavior, and reinforcement them for successful in the dyspnea management strategies. Lastly, Symptom outcomes were measurable outcomes that could be assessed following the implementation of strategies. The symptom outcomes in this study focused on symptom status as the outcome of this study.

In addition, the process for conducted the symptom management program of this study integrated the self-management concept of Tobin et al. (1986) in the process of the symptom management strategies. Despite the symptom management model didn't address about the method for developed the skill in smokers with COPD. Therefore, the process of the symptom management strategies consists of the activities in the self-management coping skill which was self-monitoring, self-instruction, self-induced stimulus change, self-induces response change, relaxation, and decision making. These strategies were used as strategies to achieve greater symptom management for dyspnea improvement. The strategies could be used to manage dyspnea in smokers with COPD (Rabe et al., 2007; Shetty et al., 2006).

The symptom management program in this study are the symptom management model integrated with the self-management concept that consisted of the important component of this program including the information from GOLD (2014) including risk factors reduction and exacerbation management in COPD patient and the smoking cessation with clinical practice guideline of smoking cessation in COPD (Andreas, Hering, Muhlig, Nowak, Raupach, and Worth, 2009; Tashkin & Murray, 2009). This present study added smoking cessation into the symptom management

program and examined its effectiveness on dyspnea outcome. The beneficial effects of smoking cessation on the progression of COPD are well established (Tottenborg, Thromson, Johnson, Nielsen, & Lange, 2016). The component of the program included four parts as follows: (1) an exploring of dyspnea experience, (2) motivation building for dyspnea management, (3) skill training for dyspnea management, and (4) monitoring of the practice of dyspnea management. The conceptual framework of this study is summarized in Figure 1.

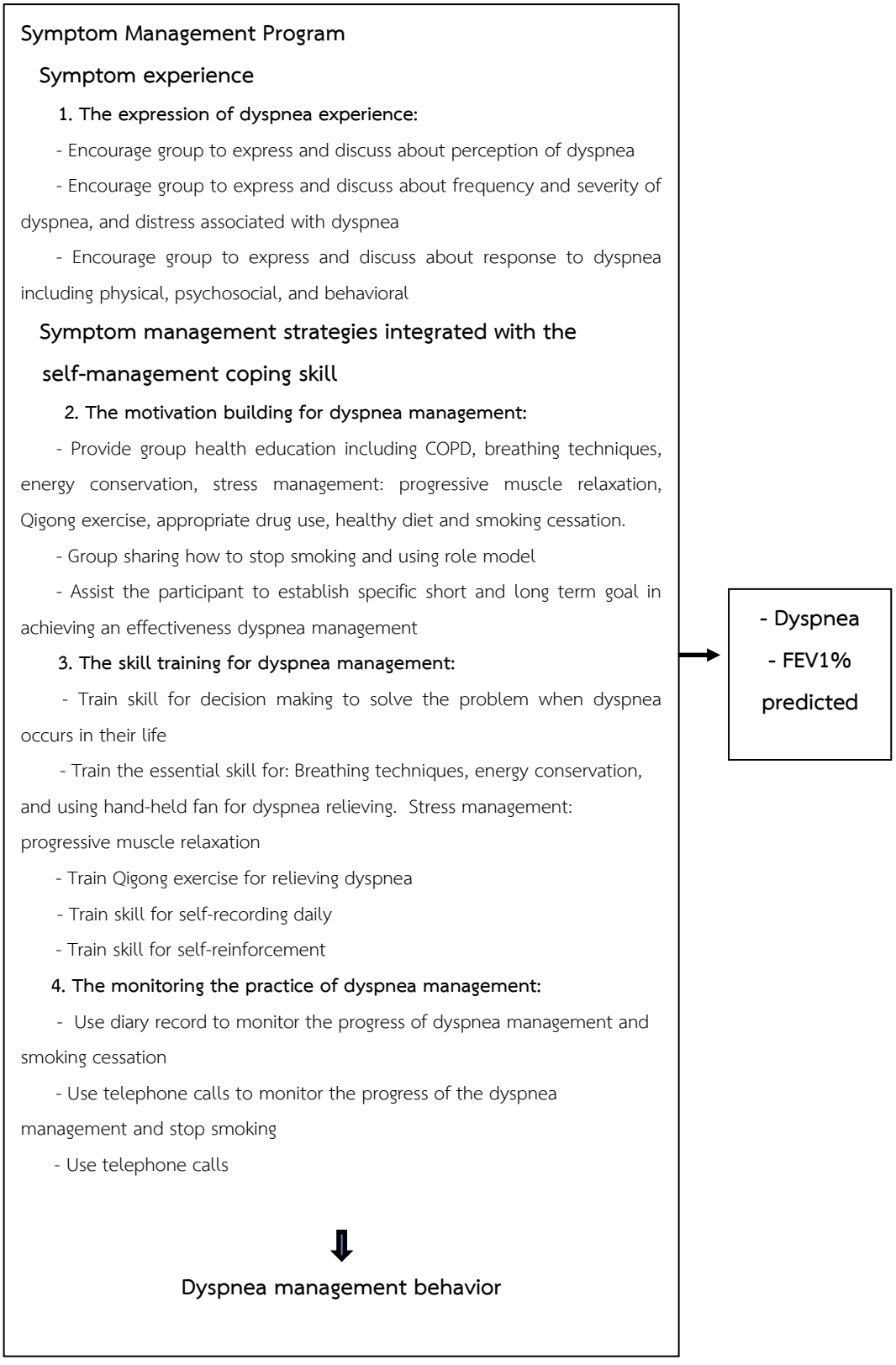

Figure 1 Conceptual framework

Research Hypotheses and Rationale

In this study, two research hypotheses are proposed as follows:

Hypothesis 1: After participating in the symptom management program, the participants in the experimental group would have better improvement in dyspnea than before participating in the program.

Hypothesis 2: The participants in the experimental group would have better improvement in dyspnea than the participants in the control group.

Rational

The symptom management program was designed to decrease dyspnea through symptom management and self-management. The symptom management program allowed the smokers with COPD to individual's perception of a symptom, evaluation of the meaning of a symptom by making judgments about the severity, cause, treatability and the effect of symptoms on their lives, and response the right and appropriate ways to solve those symptoms by using symptom management strategies.

Using dyspnea management strategies based on symptom management model (Dodd et al., 2001) and self-management model (Tobin et al., 1986) are the significant strategies for increasing the practices of dyspnea symptom management related to the decrease for dyspnea and pulmonary function improvement. This program is included the crucial knowledge for the patients with COPD to understand the nature of the disease, the risk factors for its progression, and the performance for management dyspnea symptom. In this program, the participants in the experimental group began with the symptom experience: an individual's perception of a symptom, evaluation of the meaning of a symptom and response to a symptom. Perception of symptoms refers to whether an individual notices a change from the way he or she usually feels or behaves. The patient evaluated their symptoms by making judgments about the severity, cause, treatability and the effect of symptoms on their lives. Responses to symptoms include physiological, psychological, sociocultural and behavioral components. Then the researcher helped to reframe the symptom and also explained how they could be a part of the exploring of dyspnea.

In addition, smokers with COPD are performed the important activities in the dyspnea management strategies as the symptom management strategies. The goal of symptom management is to avert or delay a negative outcome through biomedical, professional and self-care strategies. Management begins with assessment of the symptom experience from the individual's perspective. Symptom management is a dynamic process, often requiring changes in strategies over time or in response to acceptance or lack of acceptance of the strategies devised. The last important part in the dyspnea management strategies is the symptom outcome: outcomes emerge from symptom management strategies as well as from the symptom experience. Eight factors compose the dimension of symptom outcomes in the symptom management model: functional state, emotional state, mortality, morbidity and comorbidity, quality of life, cost, self-care and symptom status.

Integration between symptom management and self-management strategies were utilized to foster dyspnea management behavior for breathing technique, exercise and smoking cessation performance. Symptom experience is assessment of dyspnea occurrence used to analyze perception of dyspnea, evaluate dyspnea, and response to dyspnea occurrence. It encouraged patients to understand which skills and behaviors were necessary for managing dyspnea, and helped them to set and achieve realistic short and long term goals, or, learn through accomplishments based on actual performance, and implement problem-solving strategies and control dyspnea. Symptom management model regarded adherence to perform with the symptom management strategies. Adherence is a critical factor that affects the outcome of the intervention and is under the control of the patient or family member who is targeted for the intervention (Dodd et al., 2001).

Moreover, the dyspnea management program emphasized on manipulates smoking cessation which is the significant factors to decrease dyspnea. Therefore, the participants who participated in this program can improve dyspnea management behavior and smoking cession at the same time.

Likewise, Parveen (2013) found that patients with COPD who participated in dyspnea management methods could reduce their dyspnea. Correspondingly, Kotta (2004) revealed that the symptom management program based on the symptom

management model (Dodd et al., 2001) showed that the experimental group reported significantly less dyspnea than before receiving the intervention at the end of the program and the posttest mean score on dyspnea of the experimental group was significantly lower than that of the control group. Moreover, Liu et al. (2012) found that the therapeutic effects of Qigong had positive effects on subjective symptoms and functions among COPD patients. Furthermore, (Bobby et al. (2011) recommended Qigong as a form of traditional Chinese exercise appropriate for rehabilitation of patients with COPD. The result of the study shows that Qigong exercise can improve functional capacity.

Scope of the Study

The scopes of the study are as follows:

1. This study was conducted among Thai patients with COPD who were smoking and were classified in stages 2 and 3 as defined according to the GOLD guideline (2014) at the chest outpatient department of a hospital located in Bangkok Province, between September 2015 and January 2016. All the participants in the control group received the usual care. The participants in the experimental group received the usual care and attended the symptom management program through five sessions during the 3-month period.

2. The independent variable was the symptom management program. The dependent variable was the dyspnea.

Operational definition

Smokers with COPD refer to patients who were reported as smoking cigarettes every day or some days, during the 30 days preceding the survey, and were diagnosed as having COPD by a physician, based on symptoms of disease and results of pulmonary function tests conducted at the Chest outpatient department.

Dyspnea refers to symptoms, and a sensation of difficulty or labor or uncomfortable breathing of smokers with COPD. It was measured by using the visual analogue scale (VAS) (Gift, 1989).

FEV1 % Predicted refers to the percentage predicted values of forced expiratory volume in one second. FEV1% predicted was measured by a KoKo pulmonary function test spirometer.

Symptom Management Program refers to multicomponent nursing interventions that promote symptom management for dyspnea in smokers with COPD by using the symptom management model developed by Dodd et al. (2001), integrated with the self-management concept of Tobin et al. (1986). In addition, the important component of this program included the information from GOLD (2014), risk factors of reduction and exacerbation management in patients with COPD, and the smoking cessation according to clinical practice guidelines for smoking cessation in COPD (Andreas, Hering, Muhlig, Nowak, Raupach, and Worth, 2009; Tashkin & Murray, 2009). The symptom management program comprises of the following four steps: (1) expression of dyspnea experience, (2) motivation building for dyspnea management, (3) skill training for dyspnea management, and (4) monitoring the practice of dyspnea management.

The symptom management program was emphasized in dyspnea management strategies through the health education and encouraging smokers to engage in activities to improve COPD, including providing information about COPD, dyspnea management strategies related to smoking cessation, encouraging them to practice progressive muscle relaxation, breathing techniques, Qigong exercise, energy conservation method, stress management, healthy diet, appropriate drug use, and smoking cessation.

Usual care refers to routine nursing care and health education given by other health-care providers to smokers with COPD at the chest outpatient department. The nursing care and information on COPD, breathing methods, medication taking and inhalation, prevention of risk factors of COPD, and severe or abnormal symptoms, which patients should be concerned of and for which they should undergo follow-up with their physicians. In addition, patients should rest when dyspnea occurs. These nursing care and health information were provided for individual smokers with COPD through pamphlets while they wait to see the physician.

Expected Usefulness of the study

1. The findings of this study will be used as a nursing practice guidelines in outpatient sittings for improving the behavior toward management of dyspnea in smokers with COPD and thereby improve the quality of nursing care.

2. The symptom management program was developed based on the symptom management model integrate with self-management concept. Therefore, it can be proved to be a valuable intervention for smokers with COPD, and will be a useful supplement to respiratory care.

3. In the area of nursing management, the results of this study will provide insight into the symptom management program in other areas in order to manage and improve dyspnea in smokers with respiratory diseases. Furthermore, the knowledge gained from this study will present directions for policy setting of nursing care.

CHAPTER II

LITERATURE REVIEW

This chapter contains a review of the existing literature of this study including empirical findings, and theories relevant to the study. The literature review consists of eight parts as follows.

1. Chronic Obstructive Pulmonary Disease (COPD)
    - 1.1 Definition of COPD
    - 1.2 Classification of the severity of COPD
    - 1.3 Risk factors of COPD
    - 1.4 Smokers with COPD
    - 1.5 Impacts of COPD in smoking patients
2. Dyspnea in smokers with COPD
    - 2.1 Definition of dyspnea
    - 2.2 Component of dyspnea
    - 2.3 Factors related to dyspnea in smokers with COPD
    - 2.4 Impact of dyspnea in smokers with COPD
    - 2.5 Measurement of dyspnea
3. The symptom management model
4. The self-management concept
5. Existing intervention for decreasing dyspnea in smokers with COPD
6. The Symptom Management Program
7. Smoking cessation intervention for smokers with COPD

1. Chronic Obstructive Pulmonary Disease (COPD)

COPD is a significant cause of chronic morbidity and mortality worldwide (Thompson & St-Hilaire, 2010). It is rapidly raise the public health concern around the world. It is predicted that approximately three million people are to die from the disease in 2006 (Pauwels & Rabe, 2004; Rabe, 2006a). Besides, more than 90 % of COPD deaths were smokers with COPD (American Lung Association, 2013).

1.1 Definition of COPD: COPD is "a chronic lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible" (Rabe et al., 2007).

1.2 Classification of the severity of COPD: COPD is characterized by chronic pulmonary obstruction, causing permanent lung dysfunction (Mikkelsen, Middelboe, Pisinger, & Stage, 2004). The typical symptoms of COPD include chronic cough, wheezing, large amount of secretions, thick mucus, increased respiratory tract infection, and especially airflow obstruction, resulting in dyspnea (Ignatavicius & Workman, 2015). Classification or staging methods of the disease have been largely based on the level of airflow limitation even though there is an imperfect relation between the degree of airflow limitation and the symptoms presented (Pauwels, Buist, Calverley, Jenkins, & Hurd, 2001). the severity of COPD can be assessed using lung function measurement (Rizkallah, Man, & Sin, 2009).

According to Global Initiative for Chronic Obstructive Lung Disease or GOLD (2014) and Thailand Clinical Practice Guideline Committee for COPD (2010) assess the severity of airflow obstruction by FEV1 as a percentage of predicted consisted of: GOLD stage 1 – mild COPD: 80 % or above (mild airflow limitation, symptom should be present to diagnose COPD in people, no dyspnea at rest, and no exacerbation), GOLD stage 2 – moderate COPD: 50-79% (worsening airflow limitation, slight dyspnea, and patients may experience mild exacerbation and usually progression of dyspnea, especially on exertion), GOLD stage 3 – severe COPD : 30-49% (further worsening of airflow limitation, moderate dyspnea as interfere activity daily of living and the risk of exacerbation significantly increase, and repeated exacerbations), and GOLD stage 4 - very severe COPD: less than 30% predicted or FEV1 less than 50% predicted

(consistent dyspnea, severe exacerbation, and presence of chronic respiratory failure).

The severity of COPD in stages 2 and 3 was used to as inclusion criteria because the smokers with COPD in these stages had mild to moderate dyspnea. Also, the smokers with COPD the stages used drug for relieving dyspnea less than the those in other stages (Nazir & Erbland, 2009).

1.3 Risk factors of COPD: Risk factors of COPD are related to an interaction between genetic environmental factors, which could also be influenced by co-morbid diseases such as cancer and cardiovascular diseases. The risk factors for COPD include deficiency of the serine protease α-1 antitrypsin, air pollution, occupational exposure (organic and inorganic dust, chemical agents, and fumes), ageing, gender, infection, socioeconomic status, and cigarette smoking(Pauwels & Rabe, 2004; Rabe et al., 2007). Worldwide, cigarette smoking has been a leading cause of COPD (Mannino & Buist, 2007) and the key agent in a cigarette that causes COPD is Tar, a dark viscous fluid from cigarette (National Institute for Clinical Excellence, 2010).

1.4 Smokers with COPD: According to an Asia survey (EPIC Asia Survey) and WHO, most patients with COPD were those who aged over 40 years old (World Health Organization, 2015). It has been frequently diagnosed in patient aged 40 or older due to gradual progression of the disease (Tiep & Barnett, 2008).

Smoking is the most significant risk factor for COPD and associated with deteriorated lung function, increased frequency of respiratory symptoms, and increased mortality from COPD. Smokers with COPD have FEV1 two to five times less than normal people, making them particularly susceptible to COPD. While a non-smoking adults have decreased FEV1 approximately 20 to 40 Ml per year (Dewar & Curry, 2006). It is estimated that 36.6 - 43.3% of Thai COPD patients continue to smoke with the average of 16-20 cigarettes per day (Maungtoug, 2005; Petko, 2009; Pisalwapee, 2008). Those who are current smokers report smoking cigarettes every day or some days smoke at least 100 cigarettes within 30-day period (Center for Disease Control and Prevention, 2015; Ryan et al., 2012). Therefore, the target population of this study is the current smokers who aged 40 or older.

1.5 Impacts of COPD in smoking patients: COPD has significant impacts on physiological, psychological, and socioeconomic aspects. In terms of physiological aspect, the disease gradually decreases the ability to do daily activities. Physical limitation leads to disability, and dependency (Durán & Vargas, 2008). COPD does not only have a negative impact on physiological health of smokers, but also has effect on psychological aspect, families, careers, healthcare organizations, and society (McKenzie, Frith, Burdon, & Town, 2003).

Impacts on psychological aspect were cognitive impairment, depression and anxiety (Mikkelsen et al., 2004; Nazir & Erbland, 2009). Furthermore, smokers with COPD has a great impact on healthcare systems and causes expensive costs to the society due to absence from work, visits to the doctor's surgery, medication, and hospital admissions (Britton, 2003). The financial burden of COPD care is very high. Marsh, Aldington, Shirtcliffe, Weatherall, and Beasley (2006) stated that the effects of smoking on those with COPD were gaining attention for the increased global burden. Thailand economy had cigarette smoking cost accounting for 9.86 million bath which was 0.48% of GDP in 2006(Leartsakulpanitch et al., 2007).

2. Dyspnea in Smokers with COPD

Dyspnea is a major symptom that makes COPD patients debilitate. It is the most common symptom reported by smokers with COPD (Rabe, 2006b). A major goal of recent COPD treatment focuses on this symptom(Celli et al., 2004).

2.1 Definition of dyspnea: It is the feeling of not getting enough air (Al-Ghabeesh & Ahmad, 2012; Cline et al., 2010). Dyspnea has been defined in several ways. It is a complex sensation that involves both subjective and objective dyspnea (Cline et al., 2010). The definitions of dyspnea are shown as follows:

Dyspnea is defined as the feeling of shortness of breath: The term of dyspnea can be used interchangeably with breathlessness, shortness of (Krzyzanowski and D LEBOWITZ, 1993)

American Thoracic Society (1999) defined dyspnea as the perception and experience of labored, uncomfortable breathing, and may cause secondary physiological, emotional cognitive and behavioral responses.

Lareau et al. (1999) defined dyspnea as a sensation of difficulty or labored breathing associated with progressively impaired lung function.

Doherty and Briggs (2004) defined dyspnea as a sensation of difficult or uncomfortable breathing. It is manifested as breathlessness or increased respiratory effort. Dyspnea was experienced when the need for oxygen exceeds the actual capacity of the lungs to respond.

Morrow (2009) defined dyspnea as a shortness of breath, air hunger, or the sensation of having the urge to breathe, that was caused by lack of oxygen in the bloodstream.

From literature review, dyspnea can be explained by the subjective and objective aspects. The subjective dyspnea is a sensation of individuald regarding breathing discomfort, a feeling of difficulty or labored breathing. The objective dyspnea occurs when the need for oxygen more than the actual capacity of the lungs to respond, and associated with progressively decreased lung function and functional status. In this study, dyspnea is defined as the symptom of smokers with COPD that is a sensation that involves both subjective dyspnea as a sensation of difficulty or labor or uncomfortable breathing and objective dyspnea as the airflow obstruction that express capacity of the lung.

2.2 Component of dyspnea

Unlike other outcomes of therapeutic interventions, dyspnea is a subjective phenomenon and related to the objective dyspnea indicators such as pulmonary function test (Akinci et al., 2013). Dyspnea in smokers with COPD is associated with activities and progresses over time to occur at rest (Belza et al., 2001). It is also the most common symptom of acute exacerbation of COPD.

2.3 Related factors to dyspnea in smokers with COPD: Smokers with COPD suffer from the progression and severity of the disease, especially from the symptom of dyspnea. Dyspnea is a common symptom of COPD and it is can present in all severity stages either at rest or under conditions of activities (Rabe, 2006b). In addition, dyspnea originates from an interaction of physiological, psychological, social, and environmental factors (The American Thoracic Society, 1999).

It is reported that the factors related to the symptom of dyspnea in non-smokers with COPD are different from smokers with COPD. The important factors identified are exposure indoor air pollution (smoke from biomass fuel and coal) and outdoor air pollution (carbon monoxide and particulate matter), exposure occupational pollution (crop farming, chemical exposures, and pollutant exposure), history of repeated lower respiratory tract infection during childhood, history of pulmonary tuberculosis, chronic asthma, poor socioeconomic status, low body-mass index and poor nutrition, and low educational attainment (Dewar & Curry, 2006; Lamprecht, Schirnhofer, Kaiser, Buist, & Studnicka, 2008; S. Liu et al., 2007; Salvi & Barnes, 2009; Zhou et al., 2009). Moreover, previous studies found many factors related to dyspnea in smokers with COPD as follows:

2.3.1 Family support

The family support is a critical factor associated with dyspnea among smokers with COPD. Rabe et al. (2007) reported that social and family support for smokers with COPD is essential for the symptom management. Smokers with COPD needed social support at a high level for emotional, esteem and tangible support, and moderate level for informational support to manage that symptom (Artpadungkul, 2007). On the other hand, Thomas (2004) demonstrated that there was no significant impact on the perception of severity of dyspnea.

2.3.2 Anxiety

Anxiety is a psychological symptom that related to dyspnea in smokers with COPD. Martinez et al. (2008) revealed that anxiety was triggered mainly by baseline dyspnea and exertion dyspnea. Anxiety is psychological factors associated with emotional state that related to dyspnea. Furthermore, anxiety directly affects the chemoreceptors, mechanoreceptors or central nervous system leading to dyspnea. In addition, Borges-Santos et al. (2015) suggested that symptoms of anxiety interfere in sensation of dyspnea and clinical control of the disease.

2.3.3 Depression

Depression is a psychological symptom that related to dyspnea in smokers with COPD. Depression is psychological factors related to dyspnea. Depression correlated with frequent exacerbation of dyspnea in smokers with COPD (Tongprom,

2009). Furthermore, depression directly affects the chemoreceptors, mechanoreceptors or central nervous system leading to dyspnea. In addition, Borges-Santos et al. (2015) suggested that symptoms of depression interfere in sensation of dyspnea and clinical control of the disease.

2.3.4 Dietary

Dietary intake is another related factor of dyspnea severity (de Batlle et al., 2009). Inadequate dietary intake has a negative impact on the clinical outcomes including dyspnea of patients with COPD. Oxygen and nutrients are needed in the breathing process and supplying energy for the daily life activities (Ferreira, 2003). Further, dyspnea leads to malnutrition which is a common complication in patients with have dyspnea (Odencrants et al., 2007).

2.3.5 Symptom management of dyspnea

Symptom management of dyspnea has been shown to be a significant factor related to dyspnea symptom in smokers with COPD. In smokers with COPD who have inappropriate managing of dyspnea symptom. It has the impact on and severity of dyspnea (Worth & Dhein, 2004). Since COPD-specific therapies have been introduced, the goal of palliative symptom management are to relieve the patient's sense of dyspnea (Worth & Dhein, 2004), prevent complications of COPD, and improve quality of life by managing dyspnea symptoms (Bauldoff, 2009). Kotta (2004) conducted self-symptom management program to decrease dyspnea in Buddhist monks with COPD by using the symptom management model as a conceptual framework of the study. The finding showed that the subject who received the program reported significantly less dyspnea than the group that did not received the program.

In addition, Artpadungkul (2007) pointed out that smokers with COPD required dyspnea management to deal with the symptom. Therefore, symptom management is an important factor to decrease dyspnea in the patients by helping them to understand symptom experienced through symptom management strategies. In addition, symptom management could be applied to dispose the disease or minimize the impact of symptoms including dyspnea.

Empirical evidence documented that family support, anxiety and depression, dietary intakes, and symptom management of dyspnea contribute to decreased

dyspnea symptom. Moreover, the significant factors that can affect to dypnea is symptom management of dyspnea (Artpadungkul, 2007; Bauldoff, 2009; Kotta, 2004; Suwanno, 2005). Therefore, management of these factors is reqired for smokers with COPD.

2.4 Impacts of dyspnea in smokers with COPD

Dyspnea has a significant impact on the patients' life (Nishimura, Izumi, Tsukino, & Oga, 2002). It is an unpleasant symptom in COPD causing significant considerable increase in the physiological, psychological and a socioeconomic burden (Rabe et al., 2007). Particularly, smokers with COPD have higher severity, and worse dyspnea symptom than non-smokers with COPD because cigarette smoking has been found to be an important factor causing of respiratory symptoms (Rosi & Scano, 2004). The effects of dyspnea in smokers with COPD in various aspects are as follows:

2.4.1 Physiological aspect: Dyspnea is a serious problem in smokers with COPD because it can make systemic manifestations including peripheral muscle dysfunction, can elevate heart and right heart failure, increase sympathetic and decrease parasympathetic system, adverse hemodynamic consequences, limited energy reserve that affects to regain activity daily living (ADLs), sustained worsening of dyspnea leading to acute exacerbation, and also could produce respiratory failure, and might cause death (Meek & Lareau, 2003; Wouters, 2005). Moreover, it can lead smokers with COPD experience with fatigue, sleep problem, sexual problem, and malnutrition (Theander & Unosson, 2004). Furthermore, it has been found that dyspnea in smokers with COPD is a leading cause, and accounts for nearly one-fifth of total hospitalizations.

2.4.2 Psychological aspect: Most of smokers with COPD encounter with the emotional manifestation especially the feeling of fear, angry, anxiety and depression (Peruzza et al., 2003). Smokers with COPD are more prone to panic attacks, which increase patients' perception of dyspnea (Livermore et al., 2008). From a review of the literatures, there is a high prevalence of depression in smokers with COPD and depression is an independent predictor of mortality in smokers with COPD who are hospitalized for an exacerbation from the severity of dyspnea (Almagro et

al., 2002). Anxiety is a strong independent predictor of hospitalization following an exacerbation from the severity of dyspnea (Yohannes, Baldwin, & Connolly, 2000). As well as, elderly smokers with COPD show a substantial impairment in health status depending on the severity of airway obstruction such as dyspnea; symptoms related to the disease may be exaggerated by mood deflection (Peruzza et al., 2003).

2.4.3 Socioeconomic aspect: Progressive and severity of dyspnea can lead smokers with COPD experience with social isolation, changing in role, and absence of work (Durán & Vargas, 2008; Roche et al., 2011). In addition, smokers with COPD encounter with many health problems that are causes of dyspnea and lead to frequent visits to the physician, and high re-hospitalization rates. And then patients spend the money due to health care cost (Feldman, Lehrer, Borson, Hallstrand, & Siddique, 2005). The social costs of the impact of COPD due to the severity of dyspnea symptoms are high. There were 41,300 per 100,000 populations lost work days in the European Union due to COPD, resulting in an annual productivity loss of E28.5 billion (Gibson, Loddenkemper, Lundbäck, & Sibille, 2013). Furthermore, smokers with COPD often required hospitalization 1.6 times with a length of stay 5-14 days and incurring costs of 7,000-10,000 baths for each hospital stay (Chuprapawan, 2000).

2.5 Measurement of dyspnea: Since a progressive respiratory disorder, COPD is characterized by progressive airway obstruction precipitating ongoing dyspnea. From the prior evidence, there are various instruments were developed to measure both subjective and objective dyspnea as follows:

2.5.1 The instruments for measuring dyspnea are used to assess dyspnea because dyspnea is a subjective symptom by using self-reports for responding to at list of questions regarding various level of activities, intensity of dyspnea, severity of disease, situational, and limitations (Meek & Lareau, 2003). The common subjective instruments for dyspnea assessment are The Visual Analog Scale (VAS) and Modified Borg Scale (MBS).

2.5.1.1 The VAS was developed by Gift (1989). The VAS is usually a 100 mm or 10 cm line anchored at either end with descriptors. When used to measure dyspnea, these anchors are qualified to read no shortness of breath to maximum shortness of breath. It is a well standardized test to measure multiple

sensations associated with dyspnea and it can measured single dimension. The VAS has been shown to be equally valid by orienting the scale from the traditional horizontal to vertical. This instrument can provided clinical ratings of dyspnea based on the following the patient making a line. It is the simplest tools available and is completed by the patient, and allows a follow-up of the impact of treatment on dyspnea (Janssens, de Muralt, & Titelion, 2000).

Content validity maintained by using lay term to describe the sensation (Gift, 1989). Construct validity was established by using the contrasted-groups approach with repeated measures. COPD subject rated their dyspnea on the VVAS during times of severe dyspnea and little airway obstruction while measuring their PEFR. Concurrent validity was demonstrated both a VVAS and a Horizontal Visual Analogue Scale (HVAS), and then measuring their PEFR. Correlation between the VVAS and HVAS was r = 0.97; between the VVAS and the PEFR, correlation was r = -0.85. The VVAS was shown to have content, construct, and concurrent validity as a measure of dyspnea (Gift, 1989). In addition, convergent validity of this instrument showed that the VAS ratings of the sense of respiratory effort and discomfort were highly correlated in each subject (r = 0.99 ± 0.006) (Mador & Kufel, 1992). Test-retest correlations with Short-term intensity tools have been demonstrated that (r = 0.54) (Mador & Kufel, 1992).

2.5.1.2 Modified Borg Scale (MBS) was developed by Kendrick, Baxi, and Smith (2000) to assessed the rate of perceived exertion. The MBS is particularly suited for the laboratory evaluation of dyspnea under controlled exercise conditions. The modified scale has scale properties in rank 0-10. Descriptors have been modified so that 10 have been labeled extremely severe or the worse possible dyspnea imaginable. On the other hand, 0 has been labeled nothing at all. Concurrent validity of MBS, VAS scores correlated closely with simultaneous scores obtained using the MBS score (r = 0.99 ± 0.01). Moreover, MBS uses simple, descriptive, adjectives such as slight, moderate, and severe in an open-ended scale (McGrath, Pianosi, Unruh, & Buckley, 2005). Additionally, patients who used the MBS rated dyspnea with a high degree of satisfaction on ease of use and found that the language in this scale adequately expressed their dyspnea.

This study used the VAS to measure dyspnea symptom because the definition of dyspnea that used in this study was similarly to the construct of this instrument. It can measure the symptoms including the feeling of shortness of breath as a subjective sensation of difficulty breathing. This instrument is good psychometric property both reliability and validity. Moreover, the advantages of this instrument included simplicity, brevity (least than 5 min required), and minimal expense.

2.5.2 The instrument for measuring the percentage predicted values of forced expiratory volume in one second (FEV1 % predicted) Dyspnea associated with objective symptom that expressed the airway obstruction of smokers with COPD (Cline et al., 2010). The FEV1% predicted was measure by Ko Ko pulmonary function test Spirometer.

2.5.2.1 The percentage predicted values of Forced expiratory volume in one second (FEV1 % predicted)

Pulmonary function is to bring oxygen, into the body and to release carbon dioxide. Oxygen is what the body needs to make energy and carbon dioxide is a waste that the body does not need. It was evaluated by pulmonary function testing (PFT). The PFT is a complete evaluation of the respiratory system including patient history, physical examinations, chest x-ray examinations, arterial blood gas analysis, and tests of pulmonary function. The primary purpose of pulmonary function testing is to identify the severity of pulmonary impairment. The tests measure lung volume, capacity, rates of flow, and gas exchange. This information can help your healthcare provider diagnose and decide the treatment of certain lung disorders. Spirometer is used measure the PFT. Spirometer is a simple test to measure the amount of air a person can breathe out, and the amount of time taken to do so. A spirometer is a device used to measure how effectively and how quickly the lungs can be emptied.

The percentage predicted values of forced expiratory volume in one second (FEV1 % predicted) was measured by Ko Ko pulmonary function test Spirometer which measured the level of pulmonary function. The forced expired volume in one second**;** FEV1 is a volume expired in the first second of maximal

expiration after a maximal inspiration. This is a measure of how quickly the lungs can be emptied. In addition, FEV1/FVC (forced vital capacity): maximum volume of air that can be exhaled during a forced maneuver: FEV1 expressed as a percentage of the FVC, gives a clinically useful index of airflow limitation. The ratio FEV1/FVC is between 70% and 80% in normal adults; a value less than 70% indicates airflow limitation and the possibility of COPD. FEV1 is influenced by the age, sex, height, and ethnicity, and is best considered as a percentage of the predicted normal value. (National Institute for Occupational Safety and Health, 2012). This instrument has testing to calibrate for valid test every time before using it. The testing composed of at least 3 acceptable maneuvers with consistent (repeatable) result for FEV1.

3. The Symptom Management Model

The symptom management model was developed by The University of California, San Francisco (UCSF) School of Nursing Symptom Management Faculty Group (Larson et al., 1994). A principal concern of this model is how to manage symptoms, which cause the most suffering. It focuses on the way of thinking about the symptom experience, management strategies, and outcomes of symptom management. After that the further testing of the model and its components and ongoing discussion, the UCSF symptom management was revised in 2001 by Dodd et al. (2001) adding adherence into the symptom management model. By means of the concepts of the model was slightly changed.

Dodd et al. (2001) assumed that the symptom management was a dynamic process. It was a way to manage symptom and intervention strategies might be initiated before an individual experiences the symptom. Symptom management is a strategy that patients use through biomedical, professional and self-care ways for managing symptom occurrence with a goal to avert or delay a negative outcome. In general, it is clear that symptom management can be applied to get rid of a disease or minimizing the impact of symptoms. The conceptual model of the symptom management model was shown in Figure 2

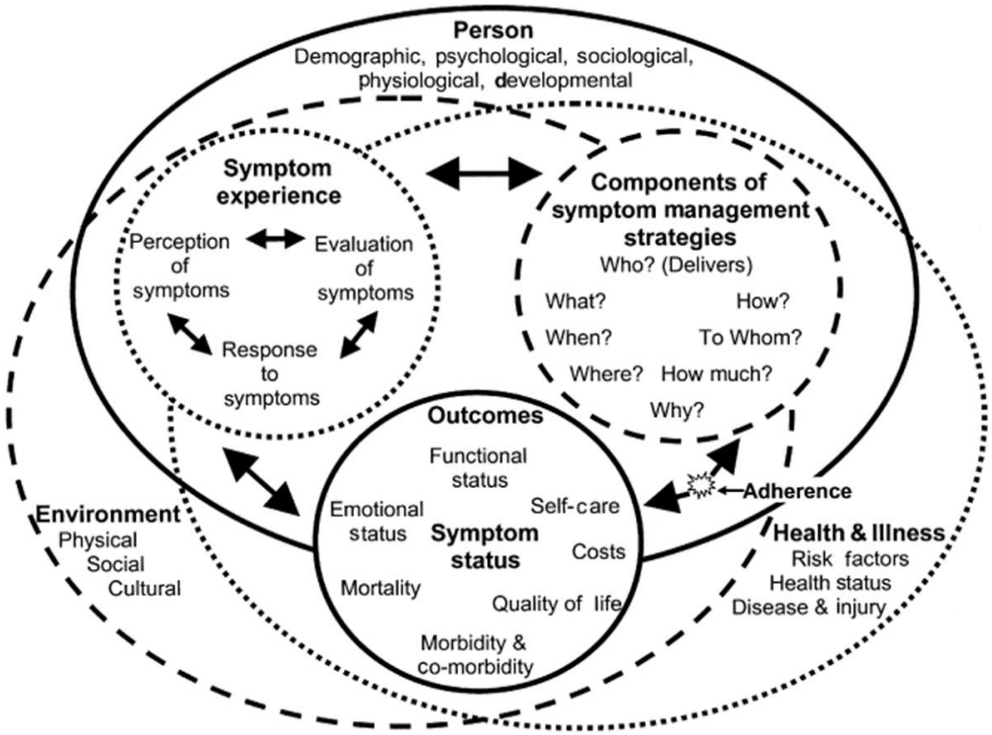

Figure 2 Revised symptom management conceptual model by Dodd et al. (2001)

Symptom management model consisted of three essential concepts as follows:

1) Symptom experience is a simultaneous perception of symptoms, evaluation of symptoms, and response to symptoms to a change in one's usual feeling. Perception of symptoms refers to the change in individual's feeling and behavior from the way he or she usually used to feels or behaves. Evaluation of symptoms refers to making judgments about symptom severity, cause, treatability, and the effect of symptoms on the lives of individuals. Response to symptoms refers to the change in an individual's functioning including physiological, psychological, sociocultural and behavioral components.

2) Symptom management strategies are efforts to avert, delay, or minimize the symptom experience. The strategy can be effective in three ways: reducing the frequency of the symptom experience, minimizing the severity of symptoms, and relieving the distress associated with the symptom (Humphreys et al., 2008). It is a

dynamic process, often requiring a change in strategies over time or in response to acceptance or lack of acceptance of the devised strategies. Symptom management is an assessment of the symptom experiences from the individual's perception, followed by identifying the focus for intervention strategies. The intervention strategies may be targeted at one or more components of the individual's symptom experience to achieve desired outcomes.

3) Symptom outcomes are measurable outcomes to assess following the implementation of a strategy. It is associated with symptom experience and symptom management strategies. Outcomes include the obvious change in symptom status, whereby the symptom is less frequent, less intense, or less distressing. This improvement in symptoms can lead to better physical and mental functioning, improve quality of life, shorter hospital stay, quicker return to work, and less cost to the individual, family, health care system, or employer (Humphreys et al., 2008). Symptom outcomes are conceptualized as eight indicators which include symptom status, functional status, emotional status, cost, morbidity and co-morbidity, mortality, quality of life, and self-care (Dodd et al., 2001).

In addition, the model of the symptom management model presented the relationship between symptom management strategies and symptom outcomes have adherence on the center of arrow. Adherence (whether the intended recipient of the strategy actually receives or uses the strategy prescribed) and intervention integrity present a potentially more challenging issue (Dodd et al., 2001). It is a critical factor that affects the outcome of the intervention and is under the control of the patient or family member who is the target of the intervention (Sidani, 2003). Intervention strategies that are too demanding are associated with increased risk for non-adherence (broken arrow between the symptom management and outcomes dimensions).

As a mention above, an adherence seems to be validity check for intervention based on the symptom management model. For this study, validity check is the dyspnea management behavior that affects the outcome of the intervention and under the control of the smokers with COPD who is the target of the intervention. Dyspnea management behavior was measured after finished

program at least 1 month and can measure by using dyspnea management behavior scale.

Furthermore, the influences of person, environment, health and illness domains, that are the domains of nursing science, were made explicit by situating the entire model within these spheres. The domains of nursing science are described as follows:

1) Person domain consists of demography, psychology, sociology and physiology of a person. This dimension can interfere with an individual's view and responses to the symptom experiences.

2) Environment domain includes physical, social and cultural variables of the patients. The physical environment may encompass home, work and hospital. The social environment includes social support network and interpersonal relationships. Cultural aspects of the environment are beliefs, values and practices that are unique to one's identified ethnic, racial, or religious group.

3) Health and illness domain comprises of variables which are unique to the health or illness state of an individual and includes risk factors, injuries, or disabilities. This domain has direct and indirect effects on symptom experience, symptom management strategies, and symptom outcomes.

The summarization for using the symptom management model in present study including the symptom management is a dynamic process and uses a systematic approach to determine intervention strategy through question. This approach was taken to affect symptom experience and patient outcome (Dodd et al., 2001). In smokers with COPD, symptom management affected their' activities performance for decreasing the symptom of dyspnea through the individual perception. Additionally, smokers with COPD with high symptom management and increasing dyspnea tended to perceive their illness as negative and to experience serious consequences in their lives, a chronic timeline, and loss of control (Durán & Vargas, 2008; Meek & Lareau, 2003; Roche et al., 2011).

The instrument to measure the dyspnea management behavior

As efforts intensify to foster successful dyspnea management in COPD patients, health professionals must both assess and better understand the dyspnea

management behavior of their patients. Other assessment instruments for use in COPD patients do exist. One example is the Dyspnea Management Questionnaire (DMQ). This instrument was developed by Norweg, Jette, Ni, Whiteson, and Kim (2011), which composed of five domains, as follows: (1) dyspnea intensity, (2) dyspnea anxiety, (3) activity avoidance, (4) activity self-efficacy, and (5) strategy satisfaction. The DMQ-56 showed good internal consistency reliability (α=0.85-0.96) and good preliminary test-retest reliability over a 3-week interval (ICC=0.69-0.92).

Another example was the Chronic Obstructive Pulmonary Disease Self-Management Scale (CSMS), which is composed of five conceptual domains: (1) symptom management, (2) daily life management, (3) emotion management, (4) information management, and (5) self-efficacy. The CSMS showed good reliability and validity in the validation study. The test-retest correlation coefficient (CC) and the Cronbach's alpha coefficient of the CSMS were 0.87 and 0.92, respectively. The content validity index of the CSMS was 0.90. The correlations of the CSMS with established COPD Self-Efficacy Scale (CSES), Chronic Disease Self-Management Behavior Scale (CDSMBS) and Chronic Disease Self-Efficacy Scale (CDSES) were 0.71, 0.61 and 0.66, respectively. The self-efficacy domain in the CSMS was highly correlated with the total score of the CSES (CC=0.82) and the CDSES (CC=0.76). Moreover, the total score of the CSMS were negatively correlated with the percentage of predicted values of forced expiratory volume in one second (FEV1 % Predicted), with a CC of -0.55. CSMS domain 1 (symptom management) and domain 2 (daily life management) had relatively high CCs (-0.57 and -0.64, respectively) with FEV1 % Predicted, indicating good criterion validity of the scale (Zhang et al., 2013).

However, the available instruments include measures for assessing clinical outcomes and psychosocial and behavioral responses, they lack a measure of COPD patient performance in managing dyspnea. Additionally, the aforementioned instruments had been developed and used predominantly in Western countries, while applications in Thai COPD patients had been limited. Therefore, this study need to develop a new instrument, intended specifically for use in Thai patients with COPD, to measure dyspnea management behavior was thus apparent and prompted us to perform in smokers with COPD.

4. The self-management concept

From the perspective of social learning theory, self-management refers to the performance of preventive or therapeutic health care activities, often in collaboration with health care professionals. Three principle therapeutic goals in social learning theory through which the self-management of chronic illness is achieved: 1) Self-control skills are learned; 2) beliefs likely to promote changes in health behavior are enhanced (e.g., efficacy expectations); and 3) environmental conditions (including family and social networks) that promote the self-control of chronic illness are created. Therefore, social learning models of self-management are concerned not only with teaching skills but also with increasing a client's belief that he can successfully perform those skills.

The types of coping skills typically introduced in self-management as follows:

4.1. Self-monitoring refers to a patient's observation and recording of factors that influence the particular health problem they are attempting to manage self–monitoring may focus on any or all of the four processes the impact health and self-care. A patient may monitor the following processes:

1) Physiological processes, including physical symptom, symptom correlated, or disease processes.

2) Environmental stimuli that may precipitate symptom onset or increased risk factors associated with health problems

3) Cognitive processes that guide self-care procedures

4) Behaviors that reduce risk factors and manage symptoms

4.2 Self-instruction refers to instructions patients provide to themselves to direct, increase, maintain, or decrease certain aspects of their responding. Self-instruction may start early in treatment' to facilitate self-monitoring of illness. Self-instruction also aids in the rehearsal and performance of behaviors that reduce risk factors or alleviate symptoms. As is self-monitoring self-instruction can be used to facilitate responses that target any or all of the interacting components in a patient's disease process. This is also true for the coping skills outlined in the following paragraphs.

4.3 Self-induced stimulus change involves any attempt to change environment conditions that can impact some aspect of a patient's illness. This can involve making environmental changes that affect a patient's illness directly. Stimulus–control may also provide more indirect interventions by focusing a patient's attention on prompts that encourage the proper response sequences.

4.4. Self-induced response change refers to a patient changing certain aspects of behavior to reinforce or punish responses that affect health. This may involve self-contracting, self-reward, or self-punishment. This may involve self-contraction, self-reward, or self-punishment strategies that encourage adaptive response sequences or inhibit maladaptive ones. These self-reinforcement strategies may be overt, or covert.

4.5. Relaxation, a form of self-induces response change involves a specific set of physiological and cognitive responses that deserve special attention. Relaxation is an important component of many behavioral treatments and the self-management of physical illness is no exception. Relaxation provides a means of controlling physiological processes that precipitate symptoms (reducing muscle tension that causes headaches) as well as one of reducing emotional arousal that may sabotage the successful performance of other self-induced response changes. It is by no means a panacea, however.

4.6. Decision making is an important part of all self-management interventions. Patients must choose among alternative courses of action in everyday self- management activities. Although decision making has always been an implicit aspect of self-management, it has not received adequate attention in clinical practice of research.

In conclusion, this study the symptom management program was developed based on the symptom management model (Dodd et al., 2001) integrated with the self-management concept (Tobin et al., 1986). The program was designed to enhance dyspnea management behavior through the using of the symptom management strategies adding the self-management coping skill (i.e., self-monitoring, self-instruction, self-induced stimulus change, self-induces response change, relaxation,

and decision making). The symptom management model integrated with the self-management coping skill was summarized in Figure 3.

Symptom experience	Symptom management strategy: Self-management coping skill	Symptom outcome
-	Self-monitoring	-
-	Self-instruction	-
-	Self-induced stimulus change	-
-	Self-induces response change	-
-	Relaxation	-
-	Decision making	-

Figure 3 The structure of the symptom management model integrated

5. Existing intervention for decreasing dyspnea in smokers with COPD

From the literature review involved the intervention to decrease dyspnea for smokers with COPD. Gigliotti et al. (2003) studied the effects of exercise training based on pulmonary rehabilitation program to manage dyspnea in patients with COPD. The finding revealed that the intervention could decrease exertion dyspnea. In addition to, Paz-Díaz et al. (2007) conducted an exercise rehabilitation program by using comprehensive pulmonary rehabilitation in patients with COPD. The exercise rehabilitation program included disease education, energy conservation techniques, relaxation, and exercise techniques. The finding showed that the program was a

significant to decrease dyspnea. As well as, Thomas (2009) studied the effective of dyspnea management strategies (DMS) in elders with end-stage COPD. The finding of the study revealed that all participants preferred to use multiple strategies for effective dyspnea management. Therefore, DMS can assist elders with end-stage COPD during acute exacerbations of dyspnea. Liu et al. (2012) study the effects of Qigong in patients with COPD using health Qigong routines for lung health. The result revealed that the patients who participated in the health Qigong group appeared to have better effect on decreasing the frequency of exacerbation.

Empirical evidence, the studies related to the SMT to guide their interventions or studies to decrease dyspnea have little. Nevertheless, the symptom management model was applied to conduct the intervention or studies for managing target various symptom and diverse populations for instance, Kotta (2004) examined the effect of using self-symptom management program on dyspnea of Buddhist monks with COPD, Buranaruangrote (2006) studied the experience and self-management for fatigue in breast cancer patients received chemotherapy, Punpho (2007) studied pain, pain management, and satisfaction with pain management in total abdominal hysterectomy patients. Spirig et al. (2005) described the symptom management in HIV/AIDS: advancing the conceptualization and Pila (2010) synthesizing research on symptom management of auditory hallucinations in schizophrenia. As above information for COPD patients, there is a little study focus on smokers with COPD.

In Thailand, there are numerous studies in smokers with COPD, Maungtoug (2005) conducted the Tai Chi Qigong exercises to improve pulmonary function and decrease dyspnea among the elderly smokers with COPD. The result revealed that within the experimental group, the dyspnea was significantly lower than that before doing the intervention. In addition to, Apirukworakul (2008) conducted Fawn Jerng Mor Chor exercise expected to reduce dyspnea and improve functional capacity among elders smokers with COPD. The finding exposed that dyspnea scores in the experimental group after this exercise were significantly lower than that of the control group. Furthermore, Kotta (2004) conducted a self-symptom management program based on a symptom management theory to reduce dyspnea perception.

The finding showed that the experimental group reported significantly less dyspnea than they did before receiving the intervention.

The usual nursing care at outpatient department for smokers with COPD is the nurses give general information and suggestion to an individual patients regarding medication taking and medication inhalation, severe symptom or abnormal symptom that patients should concern and follow up with physician, and taking a rest when dyspnea occur. Furthermore, nurses also suggest their patients to stop smoking. However, there is no information about method to stop smoking (Pisalwapee, 2008).
In summary, a review of existing literature found many studies undertake to decrease dyspnea in smokers with COPD, they attempt to develop the various interventions for assisting the smokers with COPD to reduce dyspnea and improve pulmonary function. Most of them used the exercise technique, and pulmonary rehabilitation to conduct the intervention. On the other hand, a few studies mention on the intervention or the program based on the SMM and focused on method of smoking cessation in smokers with COPD.

6. The Symptom Management Program

The symptom management program was the program to decrease dyspnea through the symptom management model integrated with the self-management concept and this program was added with smoking cessation as a one component of the program to reduce dyspnea. The symptom management program was provided to smokers with COPD by the nurse and the symptom management model was used as a theoretical framework in this study.

The activities of this program based on the GOLD guideline for COPD treatment and issue of implementation, global strategy for the diagnosis, management, and preventable of COPD (Global Initiative for Chronic Obstructive Lung Disease; GOLD, 2014; Rabe, 2006b; Rabe et al., 2007), the clinical practice guideline of smoking cessation in COPD (Andreas et al., 2009), and literature review.
The symptom management program was provided to smokers with COPD who visit at chest outpatient department. The total intervention time was 12 weeks by smokers with COPD met the nurse at chest outpatient department and practiced

following program at home. The protocol of the program included: 1) the exploring of dyspnea experience, 2) the motivation building for dyspnea management, 3) the skill training for dyspnea management, and 4) the monitoring the practice of dyspnea management. Additionally, the intervention consisted of the diary record, the manual booklet for smokers with COPD including the information of dyspnea management strategy, and telephone follow up. The protocol of the symptom management program included the dyspnea management strategies to manage and control dyspnea. All session of this study used the group discussion for encouraging smoking with COPD to express dyspnea experience, practice the skill of the dyspnea management strategies, and monitor this strategy effectiveness. The steps of the symptom management program are follows:

6.1 The exploring of dyspnea management aimed to assess perception of dyspnea, evaluate dyspnea, and response to dyspnea occurrence. The activity of this step was the dyspnea experience assessment and dyspnea management at the previous time, and knowledge assessment of COPD, dyspnea, dyspnea management, and smoking cessation among. Later than the participants acknowledged dyspnea experience, set the goal of the program to decrease dyspnea through management and control dyspnea.

6.2 The motivation for dyspnea management development through teaching technique from nurses including dyspnea assessment strategy aims to educate participants to gain the knowledge regarding dyspnea occurrence and dyspnea management, and method to stop smoking. The method of dyspnea management included the education regarding COPD, dyspnea, and management dyspnea technique, progressive muscle relaxation, breathing technique, Qigong exercise, stress management, energy conservation, healthy diet, appropriate drug use, and method to stop smoking. After the participants received the information, nurses demonstrated dyspnea management technique and then encouraged the participants to practice as follows:

6.2.1 Health education regarding COPD and dyspnea and technique to minimize dyspnea by giving the basic information about COPD, dyspnea-function model, progressive muscle relaxation, breathing technique that

composes of purse lip and diaphragmatic breathing, energy conservation, dietary, appropriate drug use, Qigong exercise, stress management and smoking cessation (Gosselink, 2003; Rabe et al., 2007; Shetty et al., 2006). Due to progressive muscle relaxation and breathing techniques are meant to reduce the respiratory rate and increase tidal volume, thus improving breathing efficiency leading to improve pulmonary function and the dyspnea symptom. For energy conservation as reducing need of energy and oxygen for activities when dyspnea occurs, so it can affect the dyspnea symptom. In addition, healthy diet sufficiency had an impact on dyspnea due to nutrients are necessary in the process of breathing and supplying energy for the daily life activities (Ferreira, 2003; Gosselink, 2003).

6.2.2 Qigong exercise was used to decrease dyspnea in COPD patients (Boonruang, 2005; Li et al., 2012; Maungtoug, 2005; Trirattanakul, 2011). For previous studies, Qigong was included in health Qigong program (HQP) as an adjustment of home exercise program that was better maintained the improvement in the functional capacity gained from a pulmonary rehabilitation program among patients with COPD. Qigong is exercise based on the integration of three aspects, namely, postural adjustment, breathing regulation, and calming the mind (Bobby et al., 2011). Therefore, Qigong as exercise training could improvement of respiratory muscle function leading to get better on pulmonary function that indicated high FEV1% predicted (Trirattanakul, 2011).

6.2.3 Stress management as the psychosocial/behavioral performance includes self-talk (using the participants and their family members were encouraged to speak about the difficulties that they faced in coping up regarding dyspnea problem in their day-to-day life), and stress management (discussion about role of stress and emotional factors in dyspnea). So, stress management could improve the sensation of difficulty breathing as the dyspnea symptom (Shetty et al., 2006).

6.2.4 Smoking cessation as a method to stop smoking was the process or intervention of discontinuing the practice of inhaling a smoked substance, and the goal of treatment to help people achieve abstinence from smoking or tobacco use. The most comprehensive of the guidelines on smoking cessation was

Treating Tobacco Use and Dependence of a Clinical Practice Guideline recommend a five-step program (ask, advise, assess, assist, and arrange) for intervention, which provides a strategic framework to encourage health care providers for interested and helping smokers with COPD to stop smoking that related to motivation and counseling by nurse (Andreas et al., 2009; Fiore, 2000; Laniado-Laborín, 2009). Therefore, method to stop smoking could improve pulmonary function that affect to the dyspnea symptom (Andreas et al., 2009).

6.3 The skill training for dyspnea management aimed to encourage smokers with COPD to manage dyspnea using dyspnea management strategies by nurse. Then, the activities for this step consist of the getting education and exercise training each skill. The component of education related to various skills for practicing dyspnea assessment strategy. The activities for practice skill through the demonstrating of each skill and following the return demonstrate of skill after the participants receiving education regarding skills for dyspnea management. They discussed with the other participants and the nurses along with their practice skills. The nurse uses the data from the past experience about the achievement for management dyspnea, or the solving of the problem during practice skill for encourage emotional and verbal motivation regarding dyspnea management to support the participants. Additionally, this step had a monitoring the practice skill through daily record, and the telephone follow-up during being at home.

6.4 The monitoring the practice of dyspnea management aimed to use diary record to monitor the progress of dyspnea management and the smoking cessation, use telephone calls to monitor the progress of the dyspnea management and smoking cessation. Ask the participant to share their dyspnea experiences which occur at home, discuss about the practices for all skills currently performed, give feedback for achieving short-term goals in controlling dyspnea and smoking cessation, review expected progress based on short- term and long-term goals. Use telephone calls by ask the participant about self- report in daily record, reinforce the participant to practice dyspnea management through giving self-reward by them, and focus on progress and give verbal support.

Group discussion was used in every step of the dyspnea management program. In group, someone can gather their knowledge and abilities, give each other feedback and have the way of problem solving. Moreover, members in group will bring emotional and social support which made other reach their goal. The activities and benefits of group discussion including: 1) all members of the group will have a chance to speak, expressing their own ideas and be motivated to commit to their goal 2) all members of the group will listen to others' ideas and feelings 3) group members can safely clarify their own ideas that are not yet completely formed; 4) members in group will get and respond to honest feedback. Group will give the respectfully feedback which could be positive, negative, or merely clarifying or correcting questions or errors; 4) the group member will be discuss in a variety of points of view 5) everyone will be at the same level, the discussion is not dominated by any one person; 6) arguments will be based on the different of ideas and opinions, not by their personalities; and 7) when disagreement occur, group will find the way to solving the problem together (Forsyth, 2006).

7. Smoking cessation intervention for smokers with COPD

7.1 Definition of smoking cessation

Smoking cessation is the process of discontinuing the practice of inhaling a smoked substance (American Cancer Society, 2011). Tobacco contains nicotine, addictive substance which prolongs and makes quitting difficult. Smoking cessation is very important of COPD smokers. Only 16.9% of smoker considered the possibility of smoking cessation or already decided to stop smoking (Haustein & Groneberg, 2010). Smoking cessation was assessed by asking smokers "Have you smoked cigarette in last 7 days?" An answer of "No" indicated that the COPD smokers has not been smoking (Quitter), and an answer "Yes" indicated that the COPD smokers has unsuccessfully smoking cessation as 7 days points prevalence abstinence (Non quitter).

7.2 The measurement of smoking cessation

The measures can be broadly classified as self-report and biochemical testing. (Velicer, Prochaska, Rossi, & Snow, 1992) A number of attempts have been made to

develop a consensus about a single measure that would be employed by all investigators (Hughes et al., 2003) but with little success. The decision about which measure to employ has typically relied on logical arguments rather than any empirical evaluations of the specific measures. Self-report measures can be classified into one of three broad classes of measures (Velicer, Prochaska, Rossi, & Snow, 1992).

7.2.1 Point prevalence abstinence

Point prevalence abstinence is a measure that reflects the proportion of smokers who have quit at a given time point; the length of abstinence is often specified as 24 hours or 7 days.

Point prevalence abstinence has several advantages. For instance, point prevalence abstinence of 24 hours has the potential of biochemical validation. It can include smokers who take delayed action and quit, if measured sometime after an intervention or an event. Therefore, the measure may reflect more accurately than continuous abstinence measures how smokers change in their natural environment.

The immediacy of the measure decreases the potential occurrence of recall bias. It is sensitive to the early effects of interventions, such as short term attempts at quitting which are not sustained reproduced with permission of the copyright owner. Further reproduction prohibited without permission over time (Velicer et al. 2004; Velicer et al. 1992).

Point prevalence abstinence also has several disadvantages. For instance, it can define a very heterogeneous group including subjects who have quit for many years and those who have stopped smoking only for a few days. It is less stable compared to continuous abstinence and prolonged abstinence measures. It may overestimate the long-term smoking cessation rates given the high rates of relapse occurring during the first three months after quitting (U.S. Department of Health and Human Services, 1990).

7.2.2 Continuous abstinence

Continuous abstinence measures have the advantage of being more stable compared to point prevalence. The stability of these measures depends directly on the length of the defined period of abstinence since the probability of relapse

declines with increasing time since the last puff (Velicer et al., 2004; Velicer et al., 1992).

Continuous abstinence measures also have disadvantages. For instance, if they are used alone, they assume a linear process from smoking to nonsmoking, without relapse, which is a pattern of only a minority of smokers, thus making it inappropriate to describe most quitting behaviors. These measures cannot be validated biochemically (Velicer et al. 2004; Velicer et al., 1992).

7.2.3 Prolonged abstinence

Prolonged abstinence measures permit the inclusion of subjects who quit after some delay after an intervention or who make repeated quit attempts. They reflect a combination of point prevalence and continuous abstinence measures. Prolonged abstinence and continuous abstinence measures are actually measures of period prevalence. Similar to continuous abstinence, prolonged abstinence measures have the advantage of being stable over time and more appropriate for evaluating the long-term health benefits of smoking cessation (Velicer et al. 2004; Velicer et al., 1992).

Prolonged abstinence measures have the same disadvantage as continuous abstinence measures; they cannot be validated biochemically except through repeated, random testing throughout an entire study time period. The other disadvantage is that they require lengthy follow-up (Velicer et al. 2004; Velicer et al., 1992).

Comparison among outcome measures: Only one study has compared cessation outcome measures. Velicer and colleague (2004) reproduced with permission of the copyright owner. Further reproduction prohibited without permission. Prochaska (2004) used data collected in three population-based studies to compare four smoking-cessation outcome measures:

(1) 24-hour point prevalence abstinence,

(2) 7-day point prevalence abstinence,

(3) 30-day prolonged abstinence, and

(4) 6-month prolonged abstinence (Velicer et al. 2004).

The first three measures showed correlations coefficients of 0.98 and above with each other. Although lower, the correlation coefficients of these three measures with the 6-month prolonged abstinence were 0.82 and higher. Considering these results the authors concluded that "for practical purposes, the first three measures will result in the same conclusions when used as outcome measures in smoking cessation studies" (Velicer et al., 2004).For example, if someone is continually abstinent for a 6-month period, they should also be counted as abstinent on the other three measures. However, someone could be abstinent for 30 days at the point of assessment and not be abstinent for all 6 months, so the mean for 30 days should be higher than the mean for 6 months. Figure 2.2 illustrates the overlap of the measure. From this perspective, it is logical to expect high correlations. It is also logical to expect that the mean for 24-hour point prevalence will be the highest of the four measures and the means will decrease as the length of time increases.

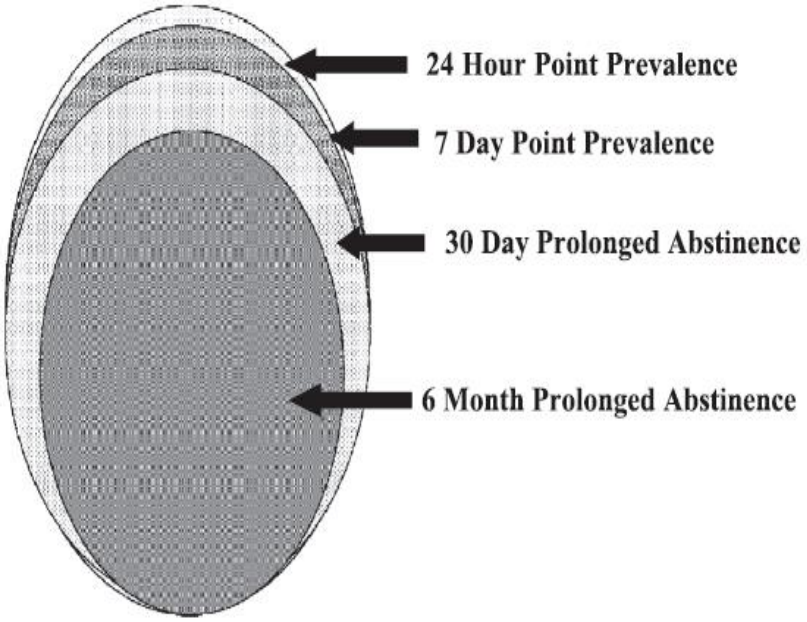

Figure **4** The four outcome measures viewed as overlapping sets within the universe of quitters (Prochaska&Velicer, 2004).

CHAPTER III

RESEARCH METHODOLOGY

This chapter provides a description of the research methodology used in this study including research design, population and sample, sampling procedure, research instruments, protection of the rights of human subjects, intervention procedures, data collection, and data analyses.

Research design

This study was a two-group randomized controlled trial with pretest and posttest design (Shadish, Cook, & Campbell, 2002), which was aimed at examining the effect of the symptom management program on dyspnea in smokers with COPD. The participants of this study were randomly assigned to either the experimental or control group. The participants in the experimental group participated in the symptom management program and received the conventional care, while the participants in the control group received the conventional care only. The research design diagram of this study is shown in Figure 3

Figure 5 Two-group randomized controlled trial with pretest and posttest design

R = Randomized assignment in order to place the participants into either the experimental or the control groups

X = the Symptom Management Program

O1 = Pretest in the experimental group

O2 = Posttest in the experimental group at 12 week after 1st meeting

O3 = Pretest in the control group

O4 = Posttest in the control group at 12 week after 1st meeting

Population and Sample

The target population for this study included both male and female current smokers with COPD.

The study sample consisted of patients who were diagnosed as having COPD, current smokers, and receiving nursing care at Phramongkutklao Hospital, Bangkok Province;

Sample selection

The participants were recruited according to the following inclusion criteria:

Current smokers

COPD with stage 2 and 3 severity

Age of >40 years

Ability to read and write Thai language

The criteria for exclusion of the participants from the study were as follows:

1) Active and severe COPD complications such as Respiratory infection, pneumonia, and mental illness during participation in the program.

Sample size

The sample size was calculated based on the power analysis and effect size determinations. The significance criteria was set at 0.05, with a power of 0.80 based on the accepted power value (Polit & Beck, 2006). Researchers usually establish the risk for a type I error (α) as 0.05, and the conventional standard for 1-β is 0.80 (Polit & Beck, 2006). In addition, effect size should be calculated based on the prior study that included a sample with similar characteristics as those of the subjects in this study. However, the literature review did not find any study

conducted on a similar intervention, population, and theory, and did not measure the same dependent variable as those used in the preset study.

Polit and Beck (2008) suggested that if no prior research has been conducted, a researcher could estimate whether the expected effect is small, medium, or large. The value of effect size in a two-group test of mean differences is estimated at 0.20 for small effects, 0.50 for medium effects, and 0.80 for large effects (Cohen, 1988). Moreover, Wilson Van Voorhis and Morgan (2007) and Cohen (1988) stated that given a medium to large effect size, 30 participants per cell should lead to about 80% for the independent sample t-test. Matched-sample t-test is statistics designed to detect differences between or among groups. For this study, the effect size used was 0.50 for medium effects because most nursing studies cannot expect effect sizes in excess of 0.50 (Polit & Beck, 2008). According to a table of sample sizes (Cohen, 1988), 30 cases in each group would be sufficient for a comparison of differences between the experimental and control groups. This study followed up the participants for 10 weeks after the second meeting. To prevent the effect of withdrawal of the participants, an attrition rate of 10% was assumed (Polit & Beck, 2008) and; three more participants per group were recruited. Therefore, the sample size included 33 participants per group, and the total number of participants was 66 participants.

Setting

This study was implemented at the Phramongkutklao Hospital, Bangkok Province, which is a 1200-bed tertiary care hospital. It provides comprehensive health care to soldiers and their relatives, including civilians and ordinary people with various diseases, including chronic diseases. The intervention was conducted at the chest out-patient department, which provided services on Tuesday and Thursday, from 8.00 a.m. to 12.00 a.m. Each day, approximately 100-200 patients receive services in the department. These services include respiratory treatment and advice regarding COPD and respiratory diseases by specialist physicians or nurses.

Sampling Procedures

Three hundred fifty smokers with COPD were identified from to the review of out-patients medical records through the intranet of the hospital data system.

One hundred ninety-five smokers with COPD who met the inclusion criteria were approached for enrollment process in the study. The researcher randomly selected participants who met the inclusion criteria of this study (66 participants) by using a computer base.

Sixty-six participants who met the inclusion criteria were approached for the recruitment into the study, while 129 participants were excluded because they did not show up during the appointment and did not volunteer to participate in the study. Each participant was approached to participate in this study by two researcher assistants. The participants received a brief overview of the study from the researcher. They were encouraged to ask questions throughout and at the conclusion of the study. After that, the researcher reviewed the consent forms of the participants, who all decided to participate in this study by signing the study consent form (Appendix D).

Random assignment

Block randomization was used to randomly assign the participants into the experimental group and the control groups. Randomization was performed to obtain study groups that were comparable with respect to know and unknown factors, removes researcher bias in the allocation of the participants, and guarantee that the results of statistical tests had valid significance levels. The benefit of using block randomization was the equal number of participants in the experimental and control groups, which enhances the equivalence between the groups. To minimize the risk of predicting the treatment assignment of the next eligible participant, randomization was performed in permuted blocks of four with random order of the blocking number.

The randomization was conducted by placing a piece of paper that contains just “Experimental (E)” or “Control (C)” inside an envelope in six different possible ways (EECC, ECEC, CEEC, CECE, CCEE, and ECCE). On the outside of the envelopes the sequence blocking number (number 1, 2, 3, 4, 5, and 6) was written. By using consecutively numbered, sealed, opaque envelopes prepared by an individual not involved in this study, the researcher and the participant revealed the group allocation by opening the sealed.

The first block was created once the first participant was enrolled in the study. The researcher used the draw technique to randomly select one of the six types of block. After that, the first, second, third, and fourth participants were allocated to either the experimental or control group based on the selected block. For the next blocks, the researcher continually used the draw technique to randomly select one of the six types of block and then created allocations for every four of participant until the last participant was enrolled in the study. The summary of sampling and flow of the participant selection through a randomized clinical trial is shown in Figure 6.

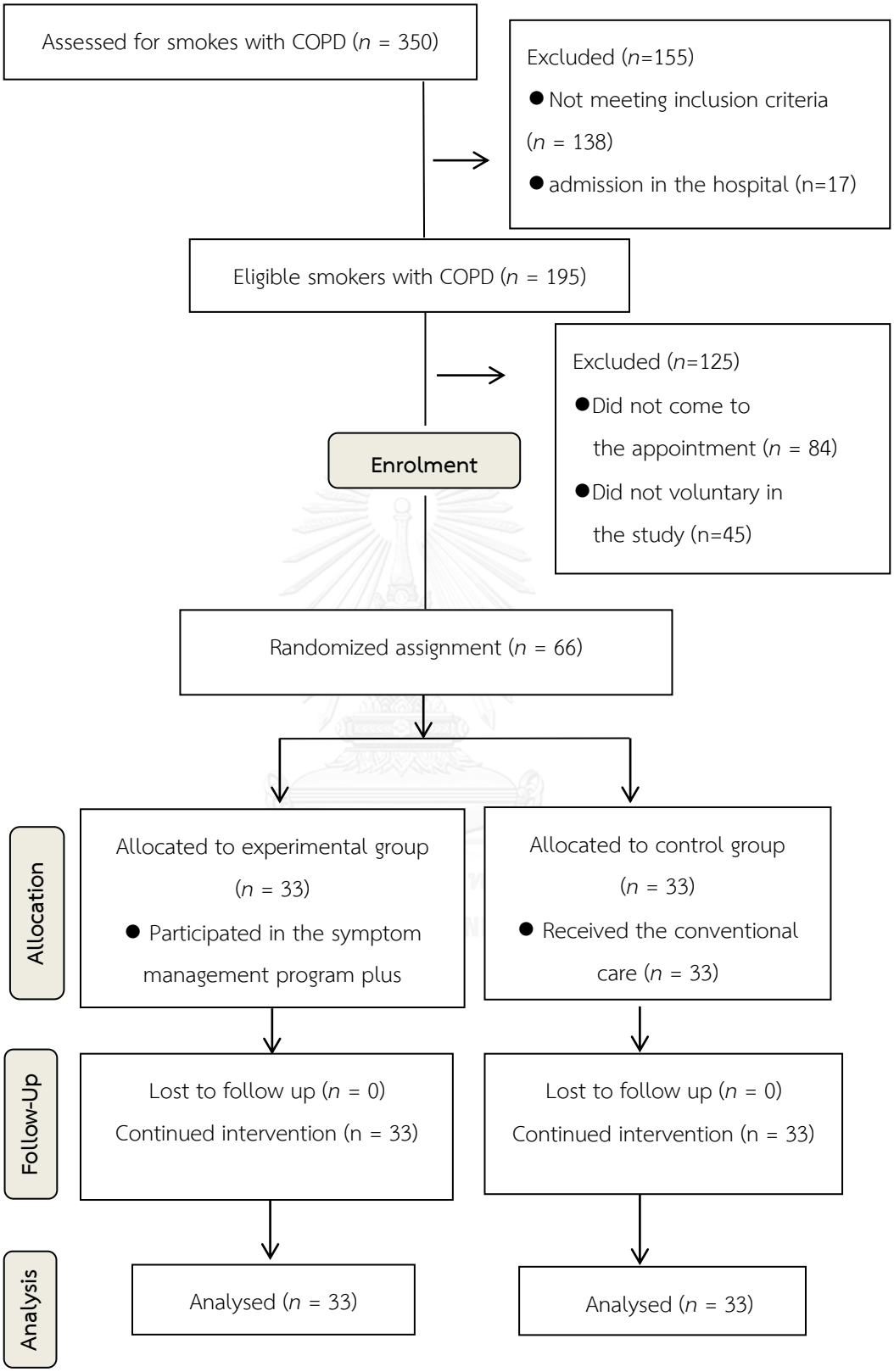

Figure 6 Sampling and flow of participant selections through a randomized clinical trial

Research Instruments

The research instruments used in this study comprised of the following three groups: 1) Data collection instruments, 2) intervention instruments, and 3) experimental validity check instruments. The detail of each instruments are described as follows:

Data collection instruments

The data collection instruments used in this study comprised of the following: (1) demographic and clinical characteristics information sheet, (2) visual analog scale (VAS), (3) KoKo pulmonary function test spirometer, and 4) smoking history data form.

The demographic and clinical characteristics information sheet

The demographic and clinical characteristics information sheet was developed by the researcher and used to collect information on the personal and social background of the participants concerning sex, age, education achievement, material status, occupation, working status, and financial support. In addition, the clinical data of the participants concerning duration of COPD, disease severity, comorbid disease, hospital admission, treatment, smoking history, and exercise were collected.

The VAS

The VAS (Appendix E) was developed by Gift (1989). It is a well-standardized test to measure multiple sensations associated with dyspnea. However, its measurement is single dimensional, which limits its evaluation of outcome in rehabilitation programs to dyspnea in general. It is used to assess various symptoms of dyspnea and other symptoms (e.g., pain) at a speech time point. The scale usually uses a 100-mm line anchored at either end. Two expressions are seen respectively at the beginning, no dyspnea (score = 0), and at the end of the scale, very severe dyspnea (score = 10). For the scale in this study, a vertical line was used, where the value at the bottom of the line indicates no dyspnea (score = 0). The participants were asked to mark a point that indicates that the amount of the sensation is scored by measuring the millimeters from the low end of the scale to the participants' mark. When used to measure dyspnea, these anchors are qualified to read "no

dyspnea" to "maximum dyspnea." Participants are instructed to place a mark on the line indicating their level of dyspnea (Eakin, Resnikoff, Prewitt, Ries, & Kaplan, 1998). This instrument can provide a dimensional measurement of the intensity of dyspnea. The reported psychometric property of the VAS indicated that test-retest correlations were low (VAS, r = 0.54; Borg, r = 0.45). In Thailand, the Thailand Clinical Practice Guideline Committee for COPD (2010) applied this scale to measure dyspnea in Thai COPD patients. In addition, the VAS was applied in the Thai COPD patients by adding the characteristics of dyspnea. The series of cutoff points used to determine the level of the dyspnea in this study are as follows: 0–39 mm (low), 40–69 mm (moderate), and 70–100 mm (high) (Roopanwong, Emasithi, & Janengprasert, 2009).

Ko Ko pulmonary function test Spirometer

FEV1% predicted was measured by using the KoKo pulmonary function test spirometer, which is used to measure pulmonary function level (National Institute for Occupational Safety and Health, 2012). This spirometer can measure and indicate the FEV1, which is the maximum amount of air that can be forcefully exhaled after full inspiration in smokers with COPD, which refers to airflow obstruction experienced when the need for oxygen exceeds the actual or perceived capacity of the lungs to respond and is associated with progressively decreased pulmonary function. The results are usually given in both raw data (liters and liters per second) and percent predicted value-the test result as a percent of the predicted values for patients with similar characteristics (height, age, sex, and sometimes race and weight). The interpretation of the results could diverge depending on the physician and source of the predicted values. Generally, results nearest to 100% predicted value are the most normal, and results >80% are often considered normal. This instrument was calibrated for valid testing every time before using it. The test is composed of at least 3 acceptable maneuvers with consistent (repeatable) results for FEV1. The cutoff points to determine the level of the FEV1% predicted in this study are as follows: FEV1 ≥ 80% predicted (GOLD 1 = mild), FEV1 50–79% predicted (GOLD 2 = moderate), FEV1 30–49% predicted (GOLD 3 = severe), and FEV1 ≤ 30% predicted (GOLD 4 = very severe) (GOLD, 2015).

Intervention instrument: The Symptom management Program

The instruments for intervention were the symptom management program. The symptom management program is a multicomponent nursing intervention designed to manage dyspnea symptoms in smokers with COPD during 12 weeks by addressing the symptom management model integrated with the self-management concept.

Program development

The researcher developed this program based on the symptom management model of Dodd and colleagues (2001), integrated with the self-management concept of Tobin and colleagues (1986) by using self-management coping skills (i.e., self-monitoring, self-instruction, self-induced stimulus change, self-induces response change, relaxation, and decision making), as symptom management strategies for the theoretical framework of this study. The symptom management model was integrated with the use of the self-management concept as strategies to manage and control dyspnea symptoms by using the appropriate method with existing resources. Effective of symptom management, which is viewed as an essential component of nursing practice, has taken precedence in the care of patients with chronic illnesses such as COPD.

Therefore, the symptom management program refer to the subjective experience that reflect changes in the biophysiosocial functioning, sensation, cognition, and behavior of individual efforts to manage dyspnea symptoms that are associated with adherence to dyspnea management strategies. These strategies include receiving health education regarding COPD and dyspnea, and techniques to minimize dyspnea by providing basic information about COPD, dyspnea-function model, breathing techniques composed of pursing of lips and diaphragmatic breathing, energy conservation, stress management, progressive muscle relaxation, Qigong exercise, appropriate drug use, smoking cessation, and dietary and practice skill for breathing technique, Qigong exercise, and smoking cessation. These can be accomplished through processes that include self-monitoring, self-instruction, self-induced stimulus change, self-induced response change, relaxation, and decision making according to Tobin and colleagues (1986), and telephone follow-up.

In the process of program development, the core components of the symptom management model were considered for creating the main content of the program. The structure of the program included four components as follows: (1) expression of dyspnea experience, (2) motivation building for dyspnea management, (3) skill training for dyspnea management, and (4) monitoring the practice of dyspnea management. The summary of the structure of the symptom management program is shown in Table 1.

1) Exploring of dyspnea experience consisted of one 20-min session. The activities for this session included the following: (1) encouragement for the group of participants to express and discuss their perception of dyspnea; (2) encouragement for the group of participants to express and discuss about the frequency and severity of dyspnea, and the distress associated with dyspnea; (3) and encouragement for the group of participants to express and discuss their response to dyspnea, including physical, psychosocial, and behavioral responses.

2) Motivation building for dyspnea management consisted of one 20-min session. The activities for this session included the following: (1) providing the group of participants with health education, including COPD, breathing techniques, energy conservation, stress management, progressive muscle relaxation, Qigong exercise, appropriate drug use, smoking cessation, and healthy diet); (2) encouraging the group of participants to share how to stop smoking and using a role model; and (3) assisting the participants to establish specific short- and long-term goals for achieving effective dyspnea management.

3) Skill training for dyspnea management consisted of two sessions for 30 and 45 min, respectively. The activities in this session included the following: (1) skill training for decision making to solve the problem when dyspnea occurs in their lives; (2) training for the essential skills for breathing techniques, energy conservation, and using a handheld fan to relieve dyspnea; (3) stress management and training for progressive muscle relaxation; (4) training for Qigong exercise to relieve dyspnea; (5) training for skill for daily self-recording; and (6) training for self-reinforcement skill.

4) Monitoring the practice of dyspnea management consisted of telephone calls (once a week for 2 weeks and twice for 3 weeks). The activities for

this session included the following: (1) encouraging the group of participants to use diary recording to monitor the progress of dyspnea management and smoking cessation; (2) encouraging the group of participants to use telephone calls to monitor the progress of dyspnea management and stop smoking by asking the participants to share their dyspnea experiences that occur at home, discuss about the practices for all skills currently performed, give feedback for achieving short-term goals in controlling dyspnea and smoking cessation, and review expected progress based on short- and long-term goals; and (3) using telephone calls to ask the participants about self-reporting in their daily records, reinforce the participants to practice dyspnea management through self-reward, and focus on progress and providing verbal support.

Table 1 Structure of the Symptom management Program

Day/Session	Components	Concepts	Nursing Activities
Day 1 : Session I (20 min)	1. The exploring of dyspnea experience	Symptom experience - Perception of symptom	• Encourage group of the participants to express and discuss about perception of dyspnea.
		- Evaluation of symptom	• Encourage group to express and discuss about frequency and severity of dyspnea, and distress associated with dyspnea
		- Response to symptom	• Encourage group to express and discuss about response to dyspnea including physical, psychosocial, and behavioral aspect
Day 1 : Session II	2. The motivation	Symptom management	

Day/Session	Components	Concepts	Nursing Activities
40 min.	building for dyspnea management	*strategies:* Coping skill - Self-instruction	• Provide group health education including COPD, breathing techniques, energy conservation, stress management: progressive muscle relaxation, Qigong exercise, medication taking, smoking cessation, and healthy eating. • Group sharing how to stop smoking and using role model. • Assist the participants to establish specific short and long term goal in achieving an effectiveness dyspnea management.
Day 2 : Session III 30 min.	3. The skill training for dyspnea management	Symptom management strategies: Coping skill - Decision making	• Train skill for decision making to solve the problem when dyspnea occurs in their life.
		- Self-induced stimulus change	• Train the essential skill for: - Breathing techniques, energy conservation, and using hand-held fan for dyspnea relieving.
		- Relaxation	• Stress management: progressive

Day/Session	Components	Concepts	Nursing Activities
			muscle relaxation.
Day 2 : Session IV 45 min.		- Self-induced stimulus change	• Train Gigong exercise for relieving dyspnea.
		- Self-instruction	• Train skill for self-recording daily. • Train skill for self-reinforcement.
Session V Telephone calls (once a week for 2 weeks and twice for 4 weeks)	4. The monitoring the practice of dyspnea management	Symptom management strategies: Coping skill - Self-monitoring	• Use diary record to monitor the progress of dyspnea management and smoking cessation. • Use telephone calls to monitor the progress of the dyspnea management and stop smoking. - Ask the participants to share their dyspnea experiences which occur at home. - Discuss about the practices for all skills currently performed.
			- Give feedback for achieving short-term goals in controlling dyspnea and smoking cessation. - Review expected progress based on short- and long-term goals.
		- Self-induced	• Use telephone calls

Day/Session	Components	Concepts	Nursing Activities
		response change	- Ask the participants about self- report in daily record. - Reinforce the participants to practice dyspnea management through giving self-reward by them. - Focus on progress and give verbal support.

The symptom management program was used to decrease the incidence of dyspnea through the symptom management model integrated with the self-management concept. It was added with smoking cessation as a component of the program to reduce the risk of dyspnea. The process of integration of self-management coping skill to the symptom management model is shown as a table 2.

Table 2 The process of the symptom management model integrated with the self-management coping skill

Symptom Management Model (SMM) + Self-management Concepts (SMC)	**Symptom Management Program(SMP)**			
	The exploring of dyspnea experience	**The motivation building for dyspnea management**	**The skill for dyspnea management**	**The monitoring the practice of dyspnea management**
1. The symptom experience (SMM)	√			
2. The symptom strategies integrated with the self-management coping scale (SMM)				
2.1 self-monitoring (SMC)		√	√	√
2.2 self-instruction (SMC)			√	
2.3 self-induced stimulus change (SMC)			√	√
2.4 self-induced response change (SMC)			√	
2.5 relaxation (SMC)				
2.6 decision-making (SMC)				
3. Symptom outcome (SMM)	√	√	√	√

The materials for the symptom management program comprised of the following:

1. The program manual used by nurses to conduct the symptom management program (Appendix E). The researcher developed this program manual for nurses to provide information regarding how to implement the symptom management program for smokers with COPD. Information regarding the conceptual framework, step for dyspnea management strategies, and substance knowledge about COPD and dyspnea, which illustrated symptom management behaviors was included in this manual.

2. A booklet for smokers with COPD (Appendix H) was developed by the researcher and used to provide information about COPD and strategies to manage dyspnea for the participants in the experimental group. The booklet covers information on COPD, the dyspnea-function model, the breathing technique composed of pursing of lips and diaphragmatic breathing, energy conservation, stress management, progressive muscle relaxation, Qigong exercise, appropriate drug use, smoking cessation, and healthy diet.

3. Digital Video Disc (DVD) (Appendix F). The DVD transmitted knowledge about COPD and the performance of dyspnea management strategies, and presented the role model who successfully underwent dyspnea management and attained smoking cessation.

4. Data on cigarette smoking for smokers with COPD (Appendix E) were collected by using the question, “During the past 1 month, on the days you smoked cigarettes, how many cigarettes did you consume per day?”

5. The diary record (Appendix G) was developed by the researcher for the participants in the experimental group to use for monitoring and recording when dyspnea occurred while at home and the continuum of practicing skills for dyspnea management.

Validity and reliability of the symptom management program

The program manual, manual booklet, DVD, and diary record were validated for content by seven experts. The experts included a nurse instructor specialist in the symptom management model, a nurse instructor from the respiratory unit, two

respiratory clinical nursing specialists, a physician expert in COPD, pulmonary rehabilitation, and smoking cessation, and two instructors who specialized in the program structure and mass media were asked to validate the structure and content of the program in relation to the theoretical support. The main suggestions from the five experts were as follows: (1) the content of the program should focus on smoking cessation; (2) the activities in the program were too detailed, and the researcher should consider and revise their activities; (3) the content of the manual booklet was too much, and some parts of the contents about health education, the breathing technique, and Qigong exercise in the manual booklet and daily record should be corrected based on the recommendation; (4) the manual booklet should be given to the participants in the control group before termination of the program (after 12 weeks); and (5) the validity-checking instrument of the program. If the participants in the experimental group could not reach the cutoff score for the validity checking instrument (80% from the total score), they should be reactivated to the program and retrained for those parts that they misunderstood.

After revising the content based on the comments and suggestions of the five experts, the researcher gave the program materials to the two experts who specialized on the program structure and mass media. The main suggestion from the two experts indicated the following: (1) The DVD presentation was not exciting and interesting, as it looked more like a PowerPoint presentation than a DVD presentation. (2) The content was too much; thus, the content of the DVD needed to be split into two separate parts as follows: part I should be the knowledge about COPD and smoking cessation, and part II should present the information about the dyspnea management strategies for decreasing dyspnea. The researcher revised the DVD based on these suggestions before taking the DVD to the field for testing of the program.

The structure of the revised symptom management program was recognized to assist as an intervention protocol. The field testing of the program was conducted with five smokers with COPD who met the eligibility criteria for participation to consider the feasibility and complexity of the intervention. The objectives for conducting the field testing were as follows: (1) to determine the feasibility of the

proper study, (2) to identify the problems of the comprehensive symptom management program implementation, and (3) to examine the validity and reliability of the research instrument. Some parts of the information and activities in the program were not clearly understood by the participants. Thus, the result of the trial of the symptom management program indicated that the researcher should combine some related contents because these were too many to follow in some sessions.

Validity check instrument

The validity check instrument used in this study was the Dyspnea Management Behavior Scale (DMBS). The DMBS was developed by the researcher based on symptom management model and literature review. This instrument was used to measure the symptom management behavior as a validity check of the study. The DMBS is a self-reported questionnaire that consists of 17 items assessed with a 5-point Likert scale. It contains two dimensions as follows: (1) management of dyspnea exacerbation and (2) prevention of induced dyspnea. A comprehensive literature review was conducted on dyspnea management in COPD patients, the development of operational definitions, a review of existing instruments, and determination of the dimensions of dyspnea management through the GOLD guideline of 2014. The content validity of the first draft was established by five experts. Results of the analysis and review from a convenience sample of 100 COPD patients were used for constructing the second draft of the scale and tested by using an exploratory factor analysis. Internal consistency was acceptable across all the scales. Factor analysis yielded the presence of two factors, accounting for 48.95% of the variance. The internal consistency of the instrument yielded a Cronbach alpha coefficient of 0.93. The possible range of the sum of the DMB scores is 1–85, with 0 as worst and 85 as best. High scores indicated better dyspnea management behavior.

Protection of the Rights of Human subjects

Ethical approval for this study was obtained from the Research Ethics Committee of Phramongkutklao Hospitals. Informed consent was obtained by all the participants. Smokers with COPD were informed about the proposed study, procedure, potential, risk/benefits, right to confidentiality, and right to withdrawal.

They could ask other information from the researcher to make them better understand the study. They could terminate the program without affecting health care services they were receiving and their relationship with health care providers or their accessibility to health care services.

Intervention Procedures

The intervention procedures were implemented in three phases, including preparation, implementation, and evaluation. The details are as follows:

1. Preparation phase

1.1 Researcher and research assistance preparation

The researcher received the specific training in pulmonary rehabilitation and the Qigong exercise course before conducting the intervention because the participants made sure that the researcher had more knowledge and skill to conduct the intervention based on the guideline for pulmonary rehabilitation and Qigong. In addition, the researcher received specific training for counseling smoking patients. Two research assistants in this study were volunteer registered nurses from the chest outpatient department who had experience in caring for the patients in the said department more than 5 years. The research assistants' role was to obtain pretest and posttest data in both the experimental and control groups.

1.2 Instrument preparation

The instruments and materials used in the program were confirmed for content validity by the expert before collecting the data.

2. Implementation phase

2.1 The control group

The participants in the control group received the usual care during their visit at the chest outpatient department. The participants individually received general information and suggestions regarding COPD, the breathing method, method to stop smoking, medication taking and inhalation, and severe or abnormal symptom, which patients should be concerned and follow-up with their physicians on time. The health information was provided by nurses, physicians, or other health-care providers through pamphlets while smokers with COPD wait to see their physicians at

the chest outpatient department. Then, the researcher asked the participants in the control group to participate in all aspects of the symptom management program at the end of the posttest.

2.2 The experimental group

The participants in the experimental group received the symptom management program plus the usual care through a group discussion. The symptom management program consisted of five sessions completed within 12 weeks. Family members were the caregivers of the smokers with COPD, who helped them make their participation in all activities of the program as convenient as possible. The program was flexible and allocated for individual implementation. The details are described as follows:

Session 1: At the chest outpatient department of the Phramongkutklao Hospital, for 20 min.

Nursing activities: In the first session, the researcher established a relationship and trust with the participants in order to build faith and cooperation. After that, the researcher explained the program and the researcher's role during the 12 weeks of intervention in the consecutive meetings at the chest outpatient department and in telephone follow-up. The participants assessed their dyspnea experience, including their perception, response, and evaluation when dyspnea occurred, and their knowledge by asking pertinent information. This session took about 20 min for the participants to report their dyspnea experience.

Session 2: At the chest outpatient department of the Phramongkutklao Hospital, for 40 min.

Nursing activities: First, the researcher provided group health education, including COPD, breathing techniques, energy conservation, stress management (progressive muscle relaxation), Qigong exercise, appropriate drug use, smoking cessation, and healthy diet. Second, the researcher encouraged group sharing on how to stop smoking and used a role model. Finally, the researcher helped the participants to establish specific short- and long-term goal in achieving an effectiveness dyspnea management. This session took about 40 min for motivation building for dyspnea management.

Session 3: At the chest outpatient department of the Phramongkutklao Hospital, for 30 min.

Nursing activities: In the third session, the researcher trained the participants regarding their decision-making skill to solve the problem of dyspnea when it occurs in their lives. In addition, the researcher trained the participants about the essential skill for breathing techniques, energy conservation, and using a handheld fan to relieve dyspnea, and stress management (progressive muscle relaxation). This session took about 30 min for training in dyspnea management.

Session 4: At the chest outpatient department of Phramongkutklao Hospital, for 45 min.

Nursing activities: In the fourth session, the researcher trained the participants for Qigong exercise to relieve dyspnea. In addition, the researcher trained for skill in daily self-recording and self-reinforcement through encouragement and advised the participants to practice all the skills at home every day and trained them to record the progression of their practice in their diaries**.** This session took 45 min.

Session 5: Telephone call at once a week for 2 weeks and twice for 4 weeks

Nursing activities: The researcher used diary records to monitor the progress of dyspnea management and smoking cessation, and used telephone calls to monitor the progress of dyspnea management and smoking cessation. In addition, the researcher asked the participants to share their dyspnea experiences at home, discussed the practices for all skills currently performed, gave feedback for achieving short-term goals in controlling dyspnea and smoking cessation, and reviewed expected progress based on short- and long-term goals. Moreover, the researcher used telephone calls to ask the participants about themselves reports in their daily records, reinforce the participant to practice dyspnea management through self-reward, and focus on progress and provide verbal support. In this session, the researcher used telephone calls once a week for 2 weeks and twice for 4 weeks to monitor the practice of dyspnea management.

2.3 Evaluation phase

This final phase is the evaluation of the effect of the symptom management program, including outcome evaluation and termination of the program implemented at the 12th week after receiving the information and activities of the program at the chest outpatient department, for about 30 min. This phase conducted during the fifth meeting with the participants. The participants attained the outcome, which is dyspnea, after completing the program. The aims were to evaluate the achievement of the symptom management program, to answer the questions of the participants and support them to provide information to the others, and end the program.

Data Collection

The data collection procedures are as follows:

1. After the study was approved by the research ethics committee of the Phramongkutklao Hospital, the researcher informed the director of nursing and head nurse of the chest outpatient department, and explained the study purpose and procedure, the start date of the study, and the approximate length of the data collection.

2. When the patients who met inclusion criteria visited the chest outpatient department, the researcher approached them and explained to them the study objectives and procedures, and the protection of their human rights as participants. When they decided to participate in the study, they signed the consent form.

3. The researcher randomly assigned the participants to either the experimental or control group by using blocks of four techniques.

4. The participants in the experimental group received the usual care and symptom management program, while the participants in the control group received the usual care only.

5. Data were obtained for the posttest at the 12th week of follow-up at the chest outpatient department.

6. The participants in the control group got the manual booklet for smokers with COPD on the day of assessment for the posttest (the day the program was terminated).

7. The researcher checked for the correctness of the data regarding dyspnea score, FEV15 predicted, and SMB score and cleaned the data before the data analysis.

The instruments used and data collection show in Table 3.

Table 3 The instruments used and data collection in experimental (E) and control (C) group

No	Instrument	Data Collect					
		time I		time II		time III	
		E	C	E	C	E	C
1	Demographic & clinical characteristic form	√	√			√	√
2	Visual analog scale	√	√			√	√
3	KoKo pulmonary function test spirometer	√	√			√	√
4	Evaluation of smoking cessation form	√	√			√	√
5	Dyspnea management behavior scale	√	√	√		√	√
6	Program manual	√					
7	Evaluation form for COPD knowledge	√					
8	Evaluation form for smoking cessation knowledge	√					
9	Evaluation form for demonstration return of breathing technique	√					
10	Evaluation form for demonstration return of Qigong exercise	√					
11	DVD	√					
12	Diary record	√					
13	Manual booklet	√					
14	Guideline tel. F/U	√					

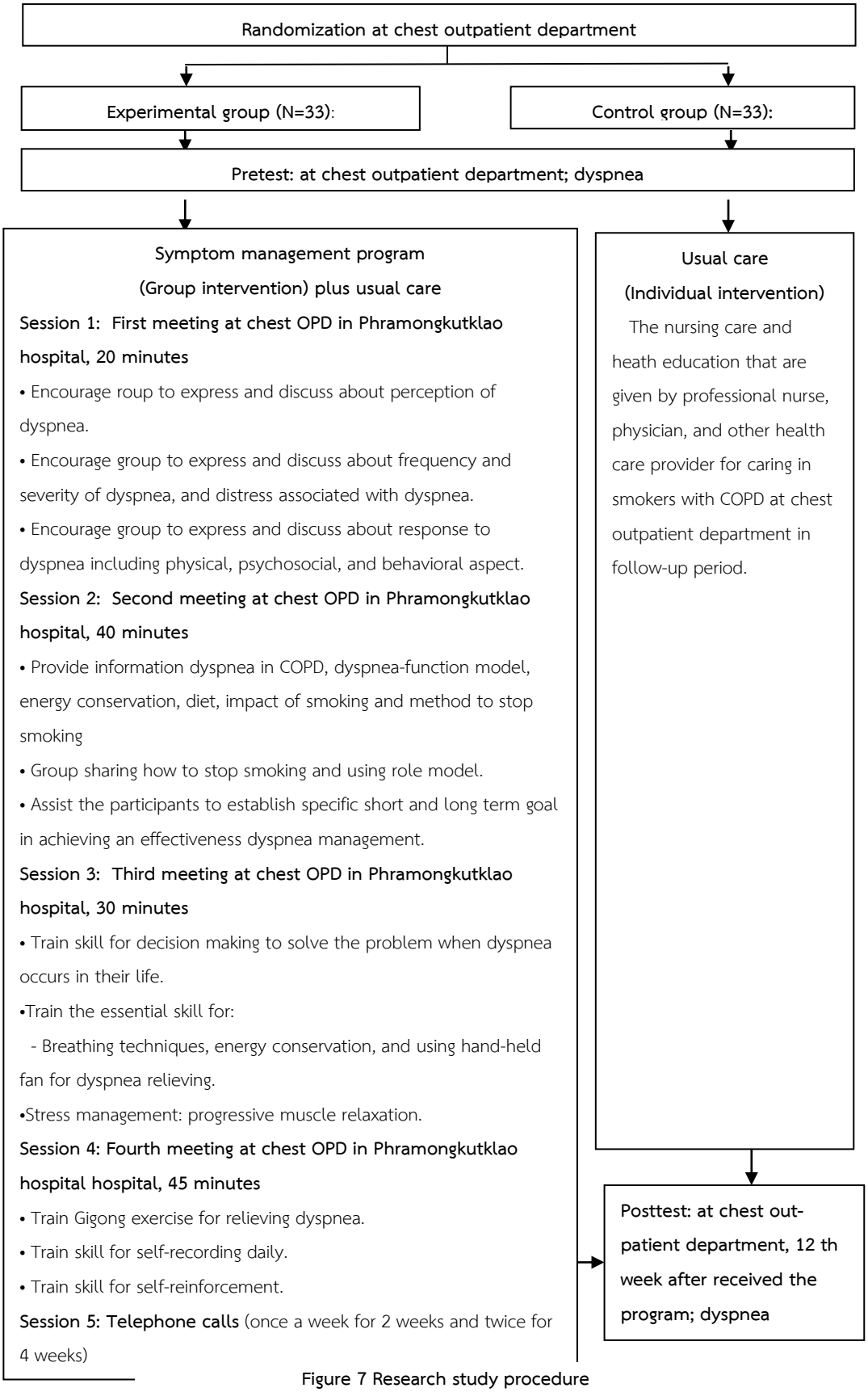

Figure 7 Research study procedure

Data Analyses

Statistical analyses were performed with the Statistical Package for Social Sciences (SPSS) version 17 for Windows, with the significance level set at <0.05, as follows:

1. Descriptive statistics were used to describe the demographic and clinical characteristics of the participants, including frequency, range, mean, standard deviation, and percentage. The chi-square test was used to compare the demographic and clinical characteristics of the participants in the experimental and control groups at baseline.

2. Independent *t* test was performed to determine the differences in dyspnea mean score and FEV1% predicted mean between the experimental and control groups.

3. Paired *t* test was performed to compare the differences in dyspnea mean score and FEV1% predicted mean between the pretest and posttest in each group.

CHAPTER IV

RESEARCH RESULTS

The purpose of this study was to compare the difference of the dyspnea score between before and after participating the program and between the experimental and the control group, and to compare the difference of the FEV1% predicted before and after participating the program and between the experimental and the control group. The research results are described in this chapter. The chapter is consisted of four parts. The first part presents the demographic characteristics of the participants. The second part showed dyspnea at the beginning both group; the experimental group and the control group. The third part was the results of hypothesis testing at the end. The forth part was a description of additional analysis done in this study.

Part I: The demographic characteristics of the participants

Demographic characteristics of the participants

The participants' age ranged from 40 to 79 years, with the average age of 54.82 years (SD = 36.18). The majority of the participants (83.33%) were in the age group of 40-60 years. Most of them were male (92.42 %) and married (77.27%). A large proportion of the participants completed a secondary school (62.12%). Among these participants 68.18% were government officer. Most of them had full-time (74.24%). The majority of the participants received health care service support from the government. The findings were similar both in the participants in the experimental and control groups. The chi-square test showed that the characteristics of the experimental and control groups were not significantly different. The demographic characteristics of the sample are shown in Table 4.

Table 4 Demographic characteristics of the participants

Demographic characteristics	Experimental group (*n* =33)	Control Group (*n* =33)	Total (*N* =66)	χ^2	*p*-value
	n (%)	*n* (%)	*n* (%)		
Gender				0.22	.64
Male	31 (93.94)	30 (90.91)	61 (92.42)		
Female	2 (6.06)	3 (9.09)	5 (7.58)		
Age group (year)				2.73	.10
40-60	30 (90.91)	25 (75.76)	55 (83.33)		
> 60	3 (9.09)	8 (24.24)	11 (16.67)		
	M = 53.39	*M = 56.24*	*M = 54.82*		
	SD = 7.26	*SD* = 9.86	*SD =36.18*		
Education achievement				4.40	.22
Primary school	7 (21.21)	3 (9.09)	10 (15.15)		
Secondary school	20 (60.61)	21 (63.64)	41 (62.12)		
Diploma	5 (15.15)	4 (12.12)	9 (13.64)		
Undergraduate	1 (3.03)	5 (15.15)	6 (9.09)		
Marital status				.85	.84
Single	5 (15.15)	3 (9.09)	8 (12.12)		
Marriage	25 (75.76)	26 (78.79)	51 (77.27)		
Widowed	1 (3.03)	2 (6.06)	3 (4.56)		
Divorced/Separate	2 (6.06)	2 (6.06)	4 (6.05)		
Occupation				1.78	.62
Farmer&Merchant	1 (3.03)	2 (6.06)	3 (4.55)		
Laborer	2 (6.06)	3 (9.09)	5 (7.57)		
Government officer	25 (75.76)	20 (60.60)	45 (68.18)		
Unemployed	5 (15.15)	8 (24.25)	13 (19.70)		
Working status				1.98	.16
Full-time	27 (81.81)	22 (66.67)	49(74.24)		

Demographic characteristics	Experimental group (*n* =33)	Control Group (*n* =33)	Total (*N* =66)	χ^2	*p*-value
	n (%)	*n* (%)	*n* (%)		
Other	6 (18.18)	11 (33.33)	17(25.75)		
Financial supports for health care service				.00	1.00
Government support	30 (90.91)	30 (90.91)	60(90.91)		
Other	3 (9.09)	3 (9.09)	6 (9.09)		

Clinical characteristics of the participants

About three-fourths of the participants were diagnosed with COPD ranged from 1-5 years (74.24%). More than half (60.61%) of the participants had stage 2 of a severity of COPD, while 16.67% had more than two comorbid diseases. Most of the participants had never been admitted in the hospital (81.82%) and about 62.12% received oral and Inhaler medications and oxygen therapy for treatment.

In terms of smoking history, 40.90% smoked 11-20 cigarettes/day, and most of them reported of smoked every day (72.23%). About 97.0% of the participants had previous quit attempt and had relapse. The most cause of smoking relapse was habit (15.15 %) and stress (13.64 %). Only 25.76% of the participants regularly exercise. The similar pattern was found among the participants in the experimental and the control groups. According to the chi-square test, the characteristics of the experimental and the control groups were not significantly different. The clinical characteristics of samples are shown in Table 5.

Table 5 Clinical characteristics of the participants

Clinical characteristics	Experimental group (*n* =33) *n* (%)	Control Group (*n* =33) *n* (%)	Total (*N* =66) *n* (%)	χ^2	*p*-value
Duration of COPD (year)				.08	.78
≤5	24 (72.73)	25 (75.76)	49(74.24)		
>5	9 (27.27)	8 (24.24)	17(25.76)		
	M = 4.16	*M = 4.33*			
	SD = 2.29	*SD* = 2.77			
Severity of disease				.25	.61
Stage 2	21 (63.64)	19 (57.58)	40(60.61)		
Stage 3	12 (36.36)	14 (42.42)	26(39.39)		
Comorbid diseases				1.28	.86
None	20 (60.60)	19 (57.58)	39 (59.09)		
HT	3 (9.09)	5 (15.15)	8 (12.12)		
DM	1 (3.03)	1 (3.03)	2 (3.03)		
Dyslipidemia	4 (12.12)	2 (6.06)	6 (9.09)		
≥ 2 Comorbid diseases	5 (15.16)	6 (18.18)	11 (16.67)		
Hospital admission				.00	1.0
Never	27 (81.82)	27 (81.82)	54 (81.82)		
Ever	6 (18.18)	6 (18.18)	12 (18.18)		
Treatment				.064	.80
Oral medication	13 (39.39)	12 (36.36)	25 (37.88)		
Other	20 (60.61)	21 (63.64)	41 (62.12)		
Number of cigarette per day				5.47	.14
< 5	4 (12.12)	7 (21.21)	11 (16.67)		
5-10	16 (48.48)	7 (21.21)	23 (34.85)		
11-20	11 (33.34)	16 (48.49)	27 (40.90)		
> 20	2 (6.06)	3 (9.09)	5 (7.58)		

Clinical characteristics	Experimental group (*n* =33) *n* (%)	Control Group (*n* =33) *n* (%)	Total (*N* =66) *n* (%)	χ^2	*p*-value
Frequency of smoking				5.75	.22
1 time/month	1 (3.03)	6 (18.18)	7 (10.61)		
2-3 times/month	1 (3.03)	2 (6.06)	3 (4.55)		
1-3 times/ week	3 (9.09)	1 (3.03)	4 (6.06)		
4-6 times/ week	1 (3.03)	2 (6.06)	3 (4.55)		
Every day	27 (81.82)	22 (66.67)	49(72.23)		
Type of cigarette				4.0	.14
Manufacture cigarette	31 (93.94)	31 (93.94)	62 (93.94)		
Hand roll & Manufacture cigarette	2 (6.06)	2(6.06)	4 (6.06)		
Previous quit attempt				2.06	.15
No	2 (6.06)	0 (0)	2 (3.03)		
Yes	31 (93.94)	33 (100)	64 (96.97)		
Exercise				1.46	.48
None	3 (9.09)	6 (18.18)	9 (13.63)		
Occasionally	22 (66.67)	18 (54.55)	40 (60.61)		
Regularly	8 (24.24)	9 (27.27)	17 (25.76)		

Part II: Dyspnea

Dyspnea score was reported on a scale of Visual Analog Scale (VAS). The potential range of the dyspnea score was 0-100 mm. The cut-off points to determine the level of the dyspnea in this study are as follows: 0-39 mm. (low), 40-69 mm. (moderate), and 70-100 mm. (high) (Roopanwong, Emasithi, & Jariengprasert, 2009). In addition, the FEV1% predicted measured by Ko Ko pulmonary function test spirometer. The cut-off points to determine the level of the FEV1 % predicted in this study are as follows: FEV1 ≥ 80% predicted (GOLD 1=mild), FEV1 50-79% predicted (GOLD 2=moderate), FEV1 30-49% predicted (GOLD 3=severe), and FEV1 ≤ 30 % predicted (GOLD 4=very severe) (GOLD, 2014).

The scores of dyspnea in the experimental and the control groups at each point of the measurement are shows in Table 4. At pretest, both groups had similar dyspnea scores at a severe level ($\bar{x}$=49.97, *SD*=16.82, range=18-79; $\bar{x}$=53.73, SD=13.69, range=31-81), respectively. At posttest, in the experimental group, dyspnea score decreased from a severe level to a moderate level ($\bar{x}$=31.21, SD=18.01, range=0-68). While dyspnea score of the control group maintain similar scores at a severe level ($\bar{x}$=58.52, *SD*=11.23, range=32-70).

Table 6 The dyspnea scores of the experimental and the control groups

Group	Dyspnea scores (mm.)					
	Pretest			posttest		
	$\bar{x}$ ±*SD*	Range	Level	$\bar{x}$ ±*SD*	Range	Level
Experimental	49.97±16.82	18-79	severe	31.21±18.01	0-68	moderate
Control	53.73±13.69	31-81	severe	58.52±11.23	32-70	severe

The FEV1 % predicted in the experimental and the control groups at each point of the measurement are shows in Table 5 At pretest, both groups had similar the FEV1 % predicted at a moderate to severe level ($\bar{x}$=61.76, SD=14.19, range=34-77; $\bar{x}$=55.12, SD=15.09, range=34-77), respectively. At posttest, the FEV1 % predicted in the experimental group had similar at a moderate to severe level ($\bar{x}$=63.70,

SD=14.76, range=33-80). While the FEV1 % predicted of the control group had similar at a moderate to severe level ($\bar{x}$ =51.36, SD=2.90, range=30-72).

Table 7 FEV1 % predicted of the experimental and the control groups

Group	FEV1 % predicted (%)					
	Pretest			posttest		
	$\bar{x} \pm SD$	Range	Level	$\bar{x} \pm SD$	Range	Level
Experimental	61.76± 14.19	34-77	moderate to severe	63.70± 14.76	33-80	moderate to severe
Control	55.12± 15.09	34-77	moderate to severe	51.36± 2.90	30-72	moderate to severe

Table 8 shows the independent *t* test results. At pretest, the mean score of dyspnea in the experimental group and the control group were 49.97 (SD = 16.82) and 43.73 (SD = 13.69), respectively. However, there was no statistical difference between the experimental and the control groups (t = 1.26, p = .212). This was because both groups had similar dyspnea level at baseline.

Table 8 Comparisons of mean scores for the dyspnea between the experimental and control groups at pretest

Dyspnea score	Experimental group (n = 33)		Control group (n = 33)		t	df	p-value
	Mean	SD	Mean	SD			
Pretest	49.97	16.82	54.73	13.69	1.26	64	.212

Table 9 shows the independent *t* test results. At pretest, in the experimental group, the FEV1 % predicted mean was 61.76 (SD = 14.19). In the control group, the FEV1 % predicted mean score was 55.12 (SD = 15.09). The statistic showed that there was no statistical difference between the experimental and the control groups

(t = 1.84, p = .07). That meant both groups had similar the FEV1 % predicted mean score at baseline.

Table 9 Comparisons of the FEV1 % predicted mean between the experimental and control groups at pretest

FEV1% predicted	Experimental group (n = 33)		Control group (n = 33)		t	df	p-value
	Mean	SD	Mean	SD			
Pretest	61.76	14.19	55.12	15.09	1.84	64	.07

Part III: The results of the hypothesis testing

Hypothesis 1: After participating in the symptom management program, the participants in the experimental group will have less dyspnea than before participating in the program.

To answer the hypothesis, dyspnea score was rated on the Visual Analog Scale (VAS), whereas, the pulmonary function was reported on the FEV1 % predicted measured by Ko Ko pulmonary function test spirometer. The potential range of the dyspnea score was 0-100 mm. which the lower score indicated less dyspnea symptom. The potential range of the FEV1% predicted was 0-100 percentage, which that the higher score indicated the better lung function. The pair t-test was performed to test the differences of the dyspnea scores between pretest and posttest in each group. The significance level was set at .05 (one-tailed).

Table 8 shows the paired t-test results. In the experimental group, the mean score of dyspnea after the program participation was ($\bar{x}$ =31.12, SD = 18.01) lower than the mean score of dyspnea at pretest ($\bar{x}$ = 49.97, SD = 16.82). The mean score of dyspnea difference was 18.85. The statistic indicated that the mean score of dyspnea at posttest was significantly lower than that at pretest (t = 8.95, p < .05). It indicated that after participating in the symptom management program, the participants in the experimental group had less dyspnea than before participating in the program (p < .05).

In the control group, the mean score of dyspnea at posttest ($\bar{x}$ = 58.52, SD = 11.23) was higher than that at pretest ($\bar{x}$ = 54.73, SD = 13.69). The mean score of dyspnea difference was 3.79. However, the statistic indicated that the mean score of dyspnea at posttest was not significantly different with the mean score of dyspnea at pretest (t = 1.51, p = .14). That is, after receiving the usual care and got the information from pamphlets; the participants in the control group had more dyspnea symptom than before receiving the usual care and got the information from pamphlets.

Table 10 Comparisons in mean scores of dyspnea between pretest and posttest in the experimental and control groups

Dyspnea score	Pretest		Posttest		Mean difference	*t*	df	*p*-value
	Mean	SD	Mean	SD				
Experimental group (*n* = 33)	49.97	16.82	31.12	18.01	18.85	8.95	32	.000
Control Group (*n* = 33)	54.73	13.69	58.52	11.23	3.79	1.51	32	.14

Table 10 shows the paired *t*-test results. In the experimental group, the FEV1 % predicted mean after the program participation was ($\bar{x}$ = 63.70, SD = 14.76) higher than that at pretest ($\bar{x}$ = 61.76, SD = 14.19). The difference of mean FEV1 % predicted was 1.94. It revealed that the FEV1 % predicted mean at posttest was significantly higher than that at pretest (t = 5.57, p < .05). In other words, after participating in the symptom management program, the participants in the experimental group had better lung function than before participating in the program (p < .05).

In the control group, the FEV1 % predicted mean at posttest ($\bar{x}$ =51.36, SD = 12.90) was lower than that at pretest ($\bar{x}$ = 55.12, SD = 15.09). The % FEV1 predicted means difference was 3.76. According to the statistic the FEV1 % predicted mean at posttest was significantly lower than that at pretest (t = 4.34, p < .05). That means after receiving the usual care and a booklet, the participants in the control group had

lower lung function than before receiving the usual care and got the information from pamphlets ($p < .05$).

Table 11 Comparisons of the FEV1 % predicted mean between pretest and posttest in the experimental and control groups

FEV1% predicted	Pretest		Posttest		Mean difference	*t*	df	*p*-value
	Mean	SD	Mean	SD				
Experimental group	61.76	14.19	63.70	14.76	1.94	5.57	32	.000
Control Group	55.12	15.09	51.36	12.90	3.76	4.34	32	.000

Hypothesis 2: Participants in the experimental group will have less dyspnea than participants in the control group.

To answer the hypothesis, dyspnea score was reported on the Visual Analog Scale (VAS). The FEV1 % predicted measured by Ko Ko pulmonary function test spirometer was reported the pulmonary function. The potential range of the dyspnea score was 0-100 mm. which the lower score indicated the lower dyspnea symptom. The potential range of the FEV1 % predicted was 0-100 percent, which the higher score indicated the greater the lung function. The independent *t* test was used to test the differences of the dyspnea scores between both groups (group: experiment vs. control) at pretest and posttest. The significance level was set at .05 (one-tailed). Table 12 shows the independent *t* test results. In term of the posttest score in the experimental group, the dyspnea mean score was 31.12 (SD = 18.01), whereas the dyspnea mean score of the control group was 58.52 (SD = 11.23). The independent *t* test revealed that the experimental group significantly had lower dyspnea mean score than in the control group ($t = 7.42$, $p < .05$). That meant the participants in the experimental group had less dyspnea symptom than those in the control group ($p < .05$).

Table 12 Comparisons of mean scores for the dyspnea between the experimental and control groups at posttest

Dyspnea score	Experimental group (*n* = 33)		Control group (*n* = 33)		*t*	df	*p*-value
	Mean	SD	Mean	SD			
Posttest	31.12	18.01	58.52	11.23	7.42	53.61	.000

Table 13 shows the independent *t* test results. At the posttest, the FEV1 % predicted mean score of the experimental and the control groups were 63.70 (SD = 14.76) and 51.36 (SD = 12.90), respectively. It revealed that the FEV1 % predicted mean score of the experimental group was significantly higher than the control group ($t = 3.62$, $p < .05$). In other words, the participants in the experimental group had better lung function than those in the control group ($p < .05$)

Table 13 Comparisons of the FEV1 % predicted mean between the experimental and control groups at posttest

% predicted FEV1	Experimental group (*n* = 33)		Control group (*n* = 33)		*t*	df	*p*-value
	Mean	SD	Mean	SD			
Posttest	63.70	14.76	51.36	12.90	3.62	64	.001

Part IV: The additional analysis

In this study, additional information was found during the program and after posttest of the program. The participants in the experimental group address about the smoking cessation history, and the dyspnea management behavior are provided as follows:

In the experimental group, there were 20 quitters and 13 smokers after program was provided. All smokers had reduced their cigarettes consumption. Most of quitters were male (90%), had low dyspnea (70%), mild FEV1% predicted (60%), and had stage 2 of severity (75%). On the other hand, most of smokers had

moderate dyspnea (53.8%), severe FEV1% predicted (61.5%) and had stage 3 of severity (53.8%). In control group, there were 2 quitters and 31 smokers. Twenty-three smokers had increased their cigarettes consumption. Most of smokers had moderate dyspnea (61.9%) and moderate FEV1% predicted (43.5%).

Table 14 Number and percent of the participants after receiving program classified by demographic characteristics

Variables	Experimental group		Control group		
	Quitters (n=20)	Smokers (n=13) Reduce (n=13)	Quitters (n=2)	Smokers (n=31) Reduce (n=8)	Increase (n=23)
Dyspnea					
Low	14(70.0%)	4 (30.76%)	0	0	1 (4.34%)
Moderate	5 (25.0%)	7 (53.84%)	0	7 (87.5%)	14(60.86%)
High	0	2 (15.38%)	2(100%)	1 (12.5%)	8 (34.78%)
FEV1					
Mild	12(60.0%)	0	0	0	0
Moderate	5 (25.0%)	5 (38.46%)	0	6 (75.0%)	10(43.48%)
Severe	3 (15.0%)	8 (61.53%)	2(100%)	2(25.0%)	13(56.52%)
Very severe	0	0	0	0	0
Gender					
Male	18(90.0%)	13(100%)	1 (50.0%)	6 (75.0%)	23(100%)
Female	2 (10.0%)	0	1 (50.0%)	2 (25.0%)	0
Age group					
40-60	17(85.0%)	13 (100%)	1 (50.0%)	7 (87.5%)	17 (73.91%)
>60	3 (15.0%)	0	1 (50.0%)	1 (12.5%)	6 (26.08%)
Duration of COPD					
≤1-5	14(65.0%)	10(76.92%)	1 (50.0%)	8 (100%)	16 (69.56%)
6-≥10	6 (30.0%)	3 (23.07%)	1 (50.0%)	0	7 (30.43%)

Variables	Experimental group		Control group		
	Quitters (n=20)	Smokers (n=13) Reduce (n=13)	Quitters (n=2)	Smokers (n=31) Reduce (n=8)	Increase (n=23)
Severity of disease					
Stage 2	15(75.0%)	6 (46.15%)	0	6 (75.0%)	13 (56.52%)
Stage 3	5 (25.0%)	7 (53.84%)	2 (100%)	2 (25.0%)	10 (43.47%)

Most of the participants rated the score dyspnea management behavior scale more than 80% from the total score. Only 15 of the participants (45.45%) rated the score less than 80% from the total score and re-information of the program for past the criteria. The participants gave the important information during they perform the activities of the program at home when dyspnea occurred in their life. An example of the program's benefit was provided by all participants. "I gain more knowledge and understanding about the breathing technique and the appropriate exercise. I feel good to be a part of the program this program could help me to manage the severity of dyspnea in my life. It is a good program".

Table 15 The score of the dyspnea management behavior in the experimental at pretest and four month

Dyspnea management behavior	Pretest		Four month		Mean difference	*t*	df	*p*-value
	$\bar{x}$	SD	$\bar{x}$	SD				
Pretest and four months	66.36	2.47	68.97	1.07	2.61	7.74	32	.000
Pretest and posttest	66.36	2.47	71.52	2.45	5.15	12.47	32	.000

CHAPTER V
DISCUSSION

This chapter presents a summary of the study, including a discussion of the research finding regarding the effect of the symptom management program on dyspnea in smokers with COPD. Then, implication for nursing and recommendations for research are addressed.

Summary of the Study

This study used a two-group randomized controlled trial with pretest and posttest designs. The purpose of this study was to examine the effects of the symptom management program on dyspnea in smokers with COPD. Participants who met the following inclusion criteria: current smokers, had stage 2 and 3 COPD severity as defined by GOLD guideline (Global Initiative for Chronic Obstructive Lung Disease; GOLD, 2014), aged ≥40 years, had good communication skill in Thai. Sixty-six smokers with COPD who visited the chest outpatient department of Phramongkutklao Hospital, Bangkok Province were invited to join in the study. The participants were randomly assigned to either the experimental or control group by using randomization of four blocks. Thirty-three participants were assigned to the experimental group, and the other 33 were assigned to the control group.

The participants in the experimental group received the symptom management program and conventional care. The SMP consists of four components of smoking cessation implemented in five sessions, including two follow-up telephone calls within a period of 12 weeks. Family members cooperated in all of its activities of the program. The program was flexible and allocated activities for individual implementation. Several additional contacts were individualized according to the course of the participant's recovery on an as-needed basis.

The participants in the control group received brief information (i.e., COPD information, breathing technique, medication taking and inhalation, avoiding risk factors, exacerbation, and follow-up with a physician) from a physician and a nurse, and health education.

The outcomes of this study were dyspnea and FEV1 % predicted measured by the visual analog scale and Ko Ko pulmonary function test spirometer. After participating in the program, the participants in the experimental group had lower dyspnea severity and better FEV1% predicted value than those in the control group ($p < .001$). Moreover, dyspnea and the FEV1% predicted in the experimental group significantly improved ($p < .001$).

Discussion

Hypothesis 1: After participating in the symptom management program, the participants in the experimental group will have less dyspnea than before participating in the program.

Hypothesis 2: The participants in the experimental group will have less dyspnea than participants in the control group.

As expected the results of the study supported hypothesis 1 in that after participating in the symptom management program, the participants in the experimental group had less severe dyspnea than before participating in the program ($p < .001$). The results also supported hypothesis 2 in that the participants in the experimental group had less severe dyspnea than the participants in the control group ($p < .001$).

These results were due to the effect of the symptom management program. The symptom management program was designed to decrease the incidence of dyspnea through symptom management and self-management. The symptom management program allowed the smokers with COPD to develop their own perception of a symptom; evaluate the meaning of a symptom by making judgments about its severity, cause, treatability, and the effect of symptoms on their lives; and respond in right and appropriate ways to relieve the symptoms by using symptom management strategies.

Using dyspnea management strategies based on the symptom management model (Dodd et al., 2001) and self-management model (Tobin et al., 1986) were confirmed in this study as the significant strategies for increasing conformance to practices of dyspnea symptom management related to the decrease in dyspnea

severity and improvement in FEV1% predicted. This finding is consistent with the new trends of COPD guidelines, which include risk factor reduction and exacerbation management in COPD patients. These guidelines include the crucial knowledge for patients with COPD to understand the nature of the disease, the risk factors of its progression, and the importance of performing symptom management of dyspnea. How are these strategies effective in improving dyspnea? The participants in the experimental group began by reporting their symptom experience, which included their perception of a symptom, evaluation of the meaning of the symptom, and response to the symptom. Perception of symptoms refers to whether individuals notice a change from the way they usually feel or behave. The patients evaluated their symptoms by making judgments about severity, cause, treatability, and the effect of the symptoms on their lives. Responses to symptoms include physiological, psychological, sociocultural, and behavioral components. Then, the researcher helped to reframe the symptom and explained how these symptoms could be a part of the development of dyspnea.

In addition, smokers with COPD should perform the important activities in dyspnea management as symptom management strategies. The goal of symptom management is to avert or delay a negative outcome through biomedical, professional, and self-care strategies. Management begins with assessment of the symptom experience from the patient's perspective. The intervention strategies may be targeted at one or more components of the individual's symptom experience to achieve one or more desired outcomes. Symptom management is a dynamic process, often requiring changes in strategies over time or in response to acceptance or lack of acceptance of the strategies devised. The last important part in dyspnea management is the symptom outcome. Outcomes emerge from symptom management strategies and the symptom experience. The following eight factors compose the dimension of symptom outcomes in the symptom management model: functional state, emotional state, mortality, morbidity and comorbidity, quality of life, cost, self-care, and symptom status.

Symptom management and self-management strategies were integrated to foster dyspnea management behavior for breathing technique, exercise, and smoking

cessation performance. Symptom experience is the assessment of dyspnea occurrence, which is used to analyze perception of dyspnea, evaluate dyspnea, and respond to a dyspnea occurrence. It encouraged patients to understand which skills and behaviors were necessary for managing dyspnea and helped them to set and achieve realistic short- and long-term goals, or learn through accomplishments based on actual performance and implement problem-solving strategies and control dyspnea. The result of this study revealed that after participating in the symptom management program, the participants in the experimental group had better symptom management behavior than before participating in the program. Moreover, they had less severe dyspnea than the participants in the control group. This finding is consistent with the symptom management model regarding adherence to perform the symptom management strategies. Adherence is a critical factor that affects the outcome of any intervention and is under the control of the patient or family member who is targeted in the intervention (Dodd et al., 2001).

Parveen (2013) found that patients with COPD who participated in dyspnea management programs had reduced dyspnea severity. Correspondingly, Kotta (2004) revealed that the SMP based on the SMM (Dodd et al., 2001) showed that the experimental group reported significantly less severe dyspnea than before receiving the intervention at the end of the program. The posttest mean score for dyspnea in the experimental group was significantly lower than that in the control group. Moreover, Liu et al. (2012) found that the therapeutic effects of Qigong had positive effects on subjective symptoms and functions among COPD patients. Furthermore, Bobby et al. (2011) recommended Qigong as a form of traditional Chinese exercise appropriate for the rehabilitation of patients with COPD. The result of the study shows that Qigong exercise can improve functional capacity.

Previous studies demonstrated that Qigong was an appropriate intervention for smokers with COPD. Adaptation for patients with COPD include the following: (1) focus the mind on perceived exertion, perceived dyspnea, or perceived pain (not over 4.5 on the VAS) in order to control the pace of practice; (2) natural breathing by using movements to guide the breathing pattern and incorporate ‘pursed-lip’ breathing if necessary; (3) movements should be performed at a range within one’s

comfort zone, but a little sense of stretching is required; (4) allow pauses for rest, whenever necessary; and (5) allow choices of routines that the patients feel competent to practice at the start and gradually upgrade to the full set according to individual progress (Bobby, Hector, Alice, & Thromas, 2011).

A possible explanation of the finding in this study is that the usual care that the participants received were focused on the delivery of facts about the health education given by other health-care providers through pamphlets. The participants in the control group played the role of passive recipients of nursing care for pulmonary rehabilitation in the outpatient setting. Moreover, they exhibited few skills, especially in relation to exercise, the technique used to manage dyspnea, and the performance of management and control strategies for dyspnea in daily activities, which could have negatively affected their performance and compliance in these activities, particularly in a non-monitored environment such as at home. The results of this study indicated that the participants in the control group reported increasing dyspnea scores and deceasing FEV1% predicted. These were achieved as a result of being in the control group. This suggests that the traditional health information that the patients received at the chest outpatient department likely lacked the motivational factor for building dyspnea management behavior for dyspnea management and increasing individuals' ability to monitor the severity of their dyspnea when they are at home. Moreover, the results of this study confirmed that the smokers with COPD in the control group performed dyspnea management strategies with little effort and intensity. This led to increasing dyspnea scores and deceasing FEV1% predicted, and a decline in lung function.

Implication for Nursing

Implication for nursing practice

1. The result of this study revealed the effectiveness of the symptom management program on dyspnea in smokers with COPD. Therefore, this program can be added into the usual care as a nursing practice guideline since it can decrease dyspnea and improve lung function.

2. The symptom management program based on the symptom management model integrate with self-management concept, and emphasized on holistic nursing care including physical, psychological, emotional, and spiritual nursing care that proves to be a valuable intervention for smokers with COPD, and would be a useful supplement to respiratory care. Healthcare professionals should help COPD smokers employ dyspnea management behavior and smoking cessation as early as possible to decline dyspnea and improve lung function.

3. Nurses can provide the symptom management program to other areas to manage and improve dyspnea in respiratory disease. Furthermore, the knowledge from this study can be presented as direction for setting policies.

Implication for nursing research

1. The result of this study showed the effectiveness of the symptom management program at chest outpatient department in hospital. Therefore, this program can be used as the evidence based guideline that can apply to research in another health care setting.

2. The result of this study revealed the effectiveness of the symptom management program on dyspnea in smokers with COPD. Therefore, nurses who works at chest outpatient department have to have the competency to conduct the program. Therefore, future research should be developed and tested the nursing competency.

Recommendation for Future Research

The recommendations for future research are as follows.

1. The result of dyspnea was observed at only a one time point (12 weeks). The duration time used in this study for conduct the intervention, which might have been too short. Future studies should observe long term change in the dyspnea scores, to indicate the program's long term effects.

2. The symptom management program consists of the activities to encourage the participants to express dyspnea experience, gain knowledge, practice skill of dyspnea management and enhance dyspnea management behavior as well as improve dyspnea and pulmonary function only in smokers in COPD. Therefore, future

studies should be use the principle of the symptom management program applied to other chronic diseases.

The symptom management program based on the symptom management model integrate with self-management concept proves to be a valuable intervention for smokers with COPD, and would be a useful supplement to respiratory care.

Healthcare professionals should help COPD smokers employ dyspnea management behavior and smoking cessation as early as possible to decline dyspnea and improve lung function.

1. In this study, assessing dyspnea in smokers with COPD after participated in the program was done at only a one time point (12 weeks). Therefore, testing sustainable of the program, future research should be measured the long term change in the dyspnea score more than a onetime point such as 16, 20, or 24 weeks to indicate the program's long term effect.

2. About 92.42% of the participants in this study are adult (40-60 year). To test the effect of the dyspnea management program in other age groups. The future research should be conducted the program among the older smokers with COPD (> 60 year).

3. The setting which was selected to conduct the program is only at chest outpatient department in Phramongkutklao Hospital. Thus, this program should be applied to research in another health care setting.

4. The result of this study showed that the symptom management affected not only dyspnea, but also affects FEV1% predicted. Therefore, future research should be used the program as additional treatment for decreasing dyspnea in smokers with COPD, and test the effect of the program.

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APPENDICES

Appendix A

Approval of Dissertation Proposal

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

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ประธานกรรมการสอบฯ	รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์
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กรรมการสอบฯ	รองศาสตราจารย์ ดร. สิริพรรณ สุวรรณมรรคา
กรรมการสอบฯ	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
ชื่อหัวข้อดุษฎีนิพนธ์	ผลของโปรแกรมความสัมพันธ์ระหว่างบุคคลที่มีต่อความคิดฆ่าตัวตายและการพยายามฆ่าตัวตายในผู้ป่วยโรคจิต EFFECTS OF THE INTERPERSONAL NEED PROGRAM ON SUICIDAL IDEATION AND SUICIDAL ATTEMPT IN MENTALLY ILL PATIENTS
ครั้งที่อนุมัติ	3/2555
ระดับ	ปริญญาเอก

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	5377974736
ชื่อ-นามสกุล	พันตรีหญิง นัยนา วงศ์สายตา
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
ประธานกรรมการสอบฯ	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. อรสา พันธ์ภักดี
กรรมการสอบฯ	รองศาสตราจารย์ ดร. ศิริเดช สุชีวะ
กรรมการสอบฯ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
ชื่อหัวข้อดุษฎีนิพนธ์	ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง THE EFFECT OF THE SYMPTOM MANAGEMENT PROGRAM ON DYSPNEA IN SMOKERS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE
ครั้งที่อนุมัติ	3/2555
ระดับ	ปริญญาเอก

Appendix B

Approval of ethical review committee

ที่ IRB/RTA 1394/2557

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก

317 ถนนราชวิถี เขต ราชเทวี กรุงเทพฯ 10400

รหัสโครงการ: Q016h/57

ชื่อโครงการวิจัย : "ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง" [The Effect of the Symptom Management Program on Dyspnea in Smokers with Chronic Obstructive Pulmonary Disease.]

เลขที่โครงการวิจัย : -

ชื่อผู้วิจัยหลัก: พันตรีหญิง นัยนา วงศ์สายตา

สังกัดหน่วยงาน : คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ทำการวิจัย: โรงพยาบาลพระมงกุฎเกล้า

เอกสารรับรอง :

(1) โครงร่างการวิจัยฉบับภาษาไทย ฉบับที่ 2 วันที่ 14 ตุลาคม 2557
(2) เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย ฉบับที่ 2 วันที่ 14 ตุลาคม 2557
(3) หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย ฉบับที่ 2 วันที่ 14 ตุลาคม 2557
(4) แบบสอบถามข้อมูลส่วนตัวบุคคลสำหรับผู้ป่วย ฉบับที่ 2 วันที่ 14 ตุลาคม 2557
(5) แบบประเมินอาการหายใจลำบากของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(6) แบบบันทึกปริมาณของลมที่เป่าออกได้ใน 1 วินาทีแรกของการหายใจออกอย่างเร็วและแรงเต็มที่ ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(7) แบบประเมินการเลิกบุหรี่ของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(8) แบบประเมินพฤติกรรมการจัดการอาการหายใจลำบากของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(9) ประวัติย่อ พ.ต.หญิง นัยนา วงศ์สายตา ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(9) ประวัติย่อ รศ.ดร.สุรีพร ธนศิลป์ ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557
(9) ประวัติย่อ พ.อ.อนันต์ วัฒนธรรม ฉบับที่ 1 วันที่ 30 กรกฎาคม 2557

ขอรับรองว่าโครงการดังกล่าวข้างต้นได้ผ่านการพิจารณารับรองจากคณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก ว่าสอดคล้องกับปฏิญญาเฮลซิงกิ และแนวปฏิบัติ ICH GCP

วันที่รับรองด้านจริยธรรมของโครงร่างการวิจัย: 22 ตุลาคม 2557

วันสิ้นสุดการรับรอง: 21 ตุลาคม 2558

ความถี่ของการส่งรายงานความก้าวหน้าของการวิจัย: รายงานความก้าวหน้าทุก 1 ปี

.....
พลตรีหญิง เยาวนา ธนะพัฒน์
ประธานคณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

.....
พันเอกสหพล อนันต์นำเจริญ
เลขานุการและอนุกรรมการพิจารณาโครงการวิจัย พบ.

ที่ IRBRTA...032A.../2558

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก

317 ถนนราชวิถี เขต ราชเทวี กรุงเทพฯ 10400

รหัสโครงการ: Q016q/57

ชื่อโครงการวิจัย : ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

[The Effect of the Symptom Management Program on Dyspnea in Smokers with Chronic Obstructive Pulmonary Disease]

ชื่อผู้วิจัยหลัก: พันตรีหญิง นัยนา วงศ์สายตา

สังกัดหน่วยงาน : คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ทำการวิจัย: โรงพยาบาลพระมงกุฎเกล้า

เอกสารที่ทบทวน : **ส่วนแก้ไขเพิ่มเติมโครงร่างการวิจัย**

1. เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย ฉบับที่ 3 วันที่ 22 มิถุนายน 2558
2. หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย ฉบับที่ 3 วันที่ 22 มิถุนายน 2558
3. ชุดเครื่องมือที่ใช้ในการวิจัยฉบับที่ 3 วันที่ 22 มิถุนายน 2558

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก ได้พิจารณาส่วนแก้ไขเพิ่มเติมโครงร่างการวิจัยแล้ว จึงขอตอบรับและรับรองเอกสารดังกล่าว ผู้วิจัยสามารถดำเนินการตามโครงร่างการวิจัยที่แก้ไขเพิ่มเติมได้ตั้งแต่วันที่คณะอนุกรรมการฯ รับรอง

วันที่รับรองส่วนแก้ไขเพิ่มเติมโครงร่างการวิจัย 22 มิถุนายน 2558

พลตรีหญิง.....
(เยาวนา ธนะพัฒน์)
ประธานคณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

พันเอก.....
(อำนาจ ชัยประเสริฐ)
คณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

ที่ IRBRTA.....1446...../2558

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก

317 ถนนราชวิถี เขต ราชเทวี กรุงเทพฯ 10400

รหัสโครงการ: Q016q/57

ชื่อโครงการวิจัย : ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

[The Effect of the Symptom Management Program on Dyspnea in Smokers with Chronic Obstructive Pulmonary Disease]

ชื่อผู้วิจัยหลัก: พันตรีหญิง นัยนา วงศ์สายตา

สังกัดหน่วยงาน : คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ทำการวิจัย: โรงพยาบาลพระมงกุฎเกล้า

เอกสารที่ทบทวน : **โครงร่างการวิจัยฉบับปรับปรุง ฉบับที่ 3 วันที่ 30 กันยายน 2558**

- ขยายระยะเวลาการวิจัย
  เดิม เริ่ม 1 กันยายน 2557 สิ้นสุด 31 มกราคม 2558
  ใหม่ เริ่ม 31 มกราคม 2558 สิ้นสุด 31 ตุลาคม 2559

คณะอนุกรรมการพิจารณาโครงการวิจัย กรมแพทย์ทหารบก ได้พิจารณาส่วนแก้ไขเพิ่มเติมโครงร่างการวิจัยแล้ว จึงขอตอบรับและรับรองเอกสารดังกล่าว ผู้วิจัยสามารถดำเนินการตามโครงร่างการวิจัยที่แก้ไขเพิ่มเติมได้ตั้งแต่วันที่คณะอนุกรรมการฯ รับรอง

วันที่รับรองส่วนแก้ไขเพิ่มเติมโครงร่างการวิจัย 2 ตุลาคม 2558

พลตรีหญิง.....
(เยาวนา ธนะพัฒน์)
ประธานคณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

พันเอก.....
(อำนาจ ชัยประเสริฐ)
คณะอนุกรรมการพิจารณาโครงการวิจัย พบ.

Appendix C

Participant Information Sheet & Informed Consent Form

เอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย

(Research Subject Information sheet)

ชื่อโครงการวิจัย ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

วันที่ชี้แจง.....เดือน.....พ.ศ.....

ชื่อผู้วิจัย พันตรีหญิงนัยนา วงศ์สายตา นิสิตหลักสูตรพยาบาลศาสตร์ดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ชื่อและสถานที่ทำงานของผู้วิจัย วิทยาลัยพยาบาลกองทัพบก 317/6 ถนนราชวิถี แขวงทุ่งพญาไท เขตราชเทวี กรุงเทพมหานคร 10400

ผู้ให้ทุนวิจัย บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย และศูนย์วิจัยและจัดการความรู้เพื่อการควบคุมยาสูบ

ท่านได้รับการเชิญชวนให้เข้าร่วมในโครงการวิจัยฯ แต่ก่อนที่ท่านจะตกลงใจเข้าร่วมหรือไม่ โปรดอ่านข้อความในเอกสารนี้ทั้งหมด เพื่อให้ทราบว่า เหตุใดท่านจึงได้รับเชิญให้เข้าร่วมในโครงการวิจัยฯนี้ โครงการวิจัยฯนี้ทำเพื่ออะไร หากท่านเข้าร่วมโครงการวิจัยฯนี้ท่านจะต้องทำอะไรบ้าง รวมทั้งข้อดีและข้อเสียที่อาจจะเกิดขึ้นในระหว่างการวิจัย

ในเอกสารนี้ อาจมีข้อความที่ท่านอ่านแล้วยังไม่เข้าใจ โปรดสอบถามผู้วิจัยหรือผู้ช่วยผู้วิจัยที่ทำโครงการวิจัยฯนี้เพื่อให้อธิบายจนกว่าท่านจะเข้าใจ ท่านจะได้รับเอกสารนี้ 1 ชุด กลับไปอ่านที่บ้านเพื่อปรึกษาหารือกับญาติพี่น้อง เพื่อน หรือแพทย์ที่ท่านรู้จัก ให้ช่วยตัดสินใจว่าควรจะเข้าร่วมโครงการวิจัยฯนี้หรือไม่ การเข้าร่วมในโครงการวิจัยฯครั้งนี้จะต้องเป็น**ความสมัครใจ**ของท่าน ไม่มีการบังคับหรือชักจูง ถึงแม้ท่านจะไม่เข้าร่วมในโครงการวิจัยฯ ท่านก็จะได้รับการรักษาพยาบาลตามปกติ การไม่เข้าร่วมหรือถอนตัวจากโครงการวิจัยฯนี้ จะไม่มีผลกระทบต่อการได้รับบริการ การรักษาพยาบาลหรือผลประโยชน์ที่พึงจะได้รับของท่านแต่อย่างใด

โปรดอย่าลงลายมือชื่อของท่านในเอกสารนี้จนกว่าท่านจะแน่ใจว่ามีความประสงค์จะเข้าร่วมในโครงการวิจัยฯนี้ คำว่า “ท่าน” ในเอกสารนี้ หมายถึงผู้เข้าร่วมโครงการวิจัยฯในฐานะเป็นอาสาสมัครในโครงการวิจัยฯนี้ หากท่านเป็น**ผู้แทนโดยชอบธรรม**ของผู้ที่จะเข้าร่วมในโครงการวิจัยฯและลงนามแทนในเอกสารนี้ โปรดเข้าใจว่า “ท่าน” ในเอกสารนี้หมายถึงผู้เข้าร่วมในโครงการวิจัยฯเท่านั้น

โครงการวิจัยฯนี้มีที่มาอย่างไร และวัตถุประสงค์ของโครงการวิจัย

โรคปอดอุดกั้นเรื้อรังเป็นโรคเรื้อรังที่กลายเป็นปัญหาสุขภาพที่สำคัญของประชาชนทั่วโลก และมากกว่า
90 % ของผู้ป่วยที่เสียชีวิตเป็นผู้สูบบุหรี่ ผู้ป่วยโรคปอดอุดกั้นเรื้อรังที่สูบบุหรี่จะมีความรุนแรงของอาการหายใจลำบากมากกว่าผู้ป่วยโรคปอดอุดกั้นเรื้อรังที่ไม่สูบบุหรี่ ประมาณร้อยละ 50 ของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังจะกลับมารักษาในโรงพยาบาลด้วยการกำเริบรุนแรงของอาการหายใจลำบาก และผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังเมื่อออกจากโรงพยาบาลแล้วส่วนใหญ่จะมีอาการหายใจลำบากและมีความรุนแรงเมื่อกลับไปอยู่ที่บ้าน จะเห็นได้ว่าอาการหายใจลำบากเป็นอาการสำคัญของผู้ป่วยโรคปอดอุดกั้นเรื้อรัง และส่งผลกระทบต่อผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังทางด้านร่างกาย ด้านจิตใจ รวมทั้งด้านสังคมและเศรษฐกิจ สาเหตุสำคัญที่ทำให้มีอาการหายใจลำบากรุนแรงเพิ่มมากขึ้น คือ การจัดการกับอาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังไม่มีประสิทธิภาพ รวมทั้งมีการปฏิบัติตัวที่ไม่เหมาะสมกับโรคปอดอุดกั้นเรื้อรัง จากการศึกษาที่ผ่านมาทั้งในประเทศและต่างประเทศไทยส่วนมากใช้วิธีการฟื้นฟูสมรรถภาพปอด และการออกกำลังกายชนิดต่างๆเพื่อลดอาการหายใจลำบากที่เกิดขึ้นในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง ไม่ได้มีการมุ่งเน้นให้ผู้ป่วยสามารถที่จัดการกับอาการหายใจลำบากด้วยตนเอง และลดปัจจัยเสี่ยงที่ทำให้อาการหายใจลำบากรุนแรงมากขึ้นจากการสูบบุหรี่ ดังนั้นการส่งเสริมให้ผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังสามารถที่จะจัดการกับอาการหายใจลำบากได้อย่างถูกต้องและเหมาะสม รวมทั้งสามารถเลิกสูบบุหรี่หรือลดปริมาณการสูบบุหรี่ลง จึงเป็นสิ่งจำเป็นในการช่วยบรรเทา ลดอาการหายใจลำบาก ชลอความรุนแรงของโรคปอดอุดกั้นเรื้อรัง และฟื้นฟูสมรรถภาพการทำงานของปอดให้ดีขึ้น การศึกษาวิจัยในครั้งนี้มีวัตถุประสงค์เพื่อทดสอบประสิทธิผลของโปรแกรมการจัดการกับอาการหายใจลำบากในการลดและบรรเทาอาการหายใจลำบาก รวมทั้งช่วยทำให้ประสิทธิภาพการทำงานของปอดดีขึ้นในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังภายหลังจากได้รับโปรแกรมฯ 3 เดือน

ท่านได้รับเชิญให้เข้าร่วมโครงการวิจัยฯนี้เพราะคุณสมบัติที่เหมาะสมดังต่อไปนี้

ท่านได้รับเชิญให้เข้าร่วมการวิจัยในขั้นตอนของการทดลองใช้เครื่องมือประกอบการวิจัยครั้งนี้เนื่องจากท่านเป็นผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นโรคปอดอุดกั้นเรื้อรังและมีความรุนแรงของโรคในระดับ 2 และ 3 มีอายุตั้งแต่ 40 ปีขึ้นไป เป็นผู้ที่ยังคงมีการสูบบุหรี่อยู่ในปัจจุบัน (ยังไม่สามารถเลิกสูบบุหรี่ได้อย่างถาวร) มีสมาชิกในครอบครัว (คู่ครองหรือบุคลใกล้ชิด) เป็นผู้ช่วยดูแล และมีความยินดีที่จะเข้าร่วมโครงการวิจัยฯ

ท่านไม่สามารถเข้าร่วมโครงการวิจัยฯได้หากท่านมีคุณสมบัติดังต่อไปนี้

ท่านจะไม่สามารถเข้าร่วมโครงการวิจัยฯนี้ได้ หากท่านมีภาวะแทรกซ้อนของโรคปอดอุดกั้นเรื้อรังที่รุนแรง เช่น มีการติดเชื้อในระบบทางเดินหายใจที่รุนแรง หรือมีปัญหาสุขภาพทางด้านจิตใจ เช่น มีภาวะซึมเศร้า หรือมีภาวะเครียดระดับรุนแรง เป็นต้น

จะมีการทำโครงการวิจัยฯนี้ที่ใด และมีจำนวนผู้เข้าร่วมโครงการวิจัยฯทั้งสิ้นเท่าไร

การวิจัยในครั้งนี้มีจำนวนผู้เข้าร่วมกิจกรรมในโครงการวิจัยฯ จำนวน 66 คน และมีการจัดกระทำโครงการวิจัยฯที่ห้องตรวจโรคทางเดินหายใจและภูมิแพ้ แผนกผู้ป่วยนอก โรงพยาบาลพระมงกุฎเกล้า

ระยะเวลาที่ท่านจะต้องร่วมโครงการวิจัยฯและจำนวนครั้งที่นัด

ระยะเวลาในการเข้าร่วมโครงการวิจัยฯในครั้งนี้การพบกับผู้ป่วยเป็นกลุ่ม กลุ่มละ 8-10 คน ที่ห้องตรวจโรคทางเดินหายใจและภูมิแพ้ จำนวน 4 ครั้ง โทรศัพท์ติดตามเยี่ยม 4 ครั้ง และมีการประเมินประสิทธิผลของโปรแกรมฯ ในสัปดาห์ที่ 12 ภายหลังจบการดำเนินกิจกรรมในโปรแกรมฯ และสิ้นสุดโปรแกรมฯเมื่อผู้ป่วยมาพบแพทย์ตามนัดในสัปดาห์ที่ 12

หากท่านเข้าร่วมโครงการวิจัยฯ ท่านจะต้องปฏิบัติตามขั้นตอน หรือได้รับการปฏิบัติอย่างไร

ผู้เข้าร่วมโครงการวิจัยฯ จะพบกับผู้วิจัยครั้งที่ 1 เป็นการผู้ป่วยและญาติจะได้รับการชี้แจงรายละเอียดเกี่ยวกับโปรแกรมฯ และการประเมินความพร้อมของร่างกายและจิตใจ หลังจากนั้นให้ผู้ป่วยพูดคุยเกี่ยวกับประสบการณ์ของอาการหายใจลำบากที่เกิดขึ้น และวิธีการจัดการกับอาการหายใจลำบากที่ผ่านมา ประเมินความรู้ของผู้ป่วย วิธีการจัดการกับอาการหายใจลำบาก ความรู้เกี่ยวกับบุหรี่และการเลิกบุหรี่ รวมทั้งมีการกำหนดเป้าหมายระยะสั้นและระยะยาวกับผู้ป่วย และจัดให้ดูวีดีทัศน์เกี่ยวกับโรคปอดอุดกั้นเรื้อรัง และการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากสำหรับผู้ที่เป็นโรคปอดอุดกั้นเรื้อรัง และได้รับแจกคู่มือการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากสำหรับผู้ที่เป็นโรคปอดอุดกั้นเรื้อรังสำหรับศึกษาด้วยตนเอง จากนั้นเป็นกิจกรรมการซักถามทบทวนความรู้ และมีการฝึกทักษะการปฏิบัติตัวในการเลิกบุหรี่เพื่อลดปัจจัยเสี่ยงในการเกิดอาการหายใจลำบาก โดยการจัดให้ชมวีดีทัศน์ การสาธิต และการสาธิตย้อนกลับ และลดความวิตกกังวลในการจัดการตนเอง รวมทั้งมอบแบบบันทึกการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากสำหรับผู้ที่เป็นโรคปอดอุดกั้นเรื้อรัง และวีดีทัศน์ฯให้กับผู้ป่วย

ครั้งที่ 2 เป็นการสอบถามเกี่ยวกับประสบการณ์ในการปฏิบัติตัว ปัญหาและอุปสรรคที่เกิดขึ้นในการปฏิบัติเมื่อนำไปปฏิบัติจริงในชีวิตประจำวันที่บ้าน รวมทั้งทบทวนความรู้ที่ได้รับในเรื่องของการฝึกปฏิบัติในการจัดการกับอาการหายใจลำบากที่เกิดขึ้นฯ รวมทั้งทักษะการปฏิบัติตัวในการเลิกบุหรี่หลังจากการทบทวนความรู้ที่ได้รับแล้ว จัดให้ผู้ป่วยดูวีดีทัศน์เรื่องโรคปอดอุดกั้นเรื้อรัง และการปฏิบัติ

ตัวในการจัดการกับอาการหายใจลำบากสำหรับผู้ที่เป็นโรคปอดอุดกั้นเรื้อรังในหัวข้อที่เกี่ยวข้องกับการออกกำลังกายแบบชี่กงวิถีไทยฯ หลังจากนั้นฝึกปฏิบัติกิจกรรมการออกกำลังกายแบบชี่กงวิถีไทยฯ ประกอบด้วย 2 ขั้นตอนหลัก และ 9 ขั้นตอนย่อย โดยการจัดให้ชมวีดีทัศน์ การสาธิต และการสาธิตย้อนกลับเพื่อพัฒนาทักษะการปฏิบัติตัวในด้านต่างๆ และลดความวิตกกังวลในการจัดการตนเอง รวมทั้งการพูดชมเชย ให้กำลังใจเพื่อเป็นการกระตุ้นและเสริมแรงในการปฏิบัติ

ครั้งที่ 3 เป็นการสอบถามอาการหายใจลำบากและความก้าวหน้าในการจัดการกับอาการ รวมทั้งปัญหาและอุปสรรคที่เกิดขึ้นจากการปฏิบัติ รวมทั้งพูดคุยวิเคราะห์ปัญหา อุปสรรค และกำหนดแนวทางการแก้ไขปัญหาที่เกิดขึ้น หลังจากนั้นทบทวนการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากในเรื่องการปฏิบัติตัวเมื่ออาการหายใจลำบาก การออกกำลังกายแบบชี่กงวิถีไทยเพื่อจัดการกับอาการหายใจลำบาก และทักษะการปฏิบัติตัวในการเลิกบุหรี่ที่ผู้ป่วยได้ฝึกปฏิบัติมาแล้วเป็นเวลา 4 สัปดาห์ หลังจากนั้นทำการประเมินพฤติกรรมการจัดการอาการหายใจลำบากฯ และซักถามข้อมูลเกี่ยวกับการเลิกสูบบุหรี่ของผู้ป่วย ในครั้งที่ 4 เป็นการพบกับผู้ป่วยและญาติเพื่อร่วมกันประเมินผลการบรรลุเป้าหมายที่กำหนดไว้ รวมทั้งประเมินผลของการศึกษาวิจัยโดยการประเมินอาการหายใจลำบาก ประเมินพฤติกรรมการจัดการอาการหายใจลำบากฯ และซักถามข้อมูลเกี่ยวกับการเลิกสูบบุหรี่ของผู้ป่วย และมีการวัดสมรรถภาพปอด รวมทั้งเป็นการสิ้นสุดของโปรแกรมฯในสัปดาห์ที่ 12 เป็นวันที่ผู้ป่วยมาพบแพทย์ตามนัด

สำหรับการติดตามเยี่ยมทางโทรศัพท์ เป็นการโทรศัพท์ติดตามเยี่ยมผู้ป่วยที่บ้าน จำนวน 4 ครั้ง ในช่วง 4 สัปดาห์แรกภายหลังได้รับกิจกรรมจากโปรแกรมฯโทรศัพท์ติดตามเยี่ยมทุก 1 สัปดาห์ หลังจากการประเมินพฤติกรรมการจัดการอาการหายใจลำบากฯ และซักถามข้อมูลเกี่ยวกับการเลิกสูบบุหรี่ของผู้ป่วยหลังจากนั้น โทรศัพท์ติดตามเยี่ยมใน 2 สัปดาห์ถัดไป มีการโทรศัพท์ติดตามเยี่ยมติดต่อกันอย่างต่อเนื่อง เพื่อติดตามความต่อเนื่องในการปฏิบัติตัวของผู้ป่วยที่บ้าน รวมทั้งช่วยหาแนวทางในการแก้ปัญหาที่เกิดขึ้น

ความไม่สุขสบาย หรือความเสี่ยงต่ออันตรายที่อาจจะได้รับจากกรรมวิธีการวิจัยมีอะไรบ้าง และวิธีการป้องกัน/แก้ไขที่ผู้วิจัยเตรียมไว้หากมีเหตุการณ์ดังกล่าวเกิดขึ้น

การวิจัยครั้งนี้เป็นการให้ความรู้ และจัดกระทำให้มีการฝึกปฏิบัติกิจกรรมต่างๆตามรายละเอียดของโปรแกรมฯ ซึ่งเป็นการออกกำลังกายและกิจกรรมที่มีความเหมาะสมกับโรคปอดอุดกั้นเรื้อรัง จึงมีความเสี่ยงต่ำที่ไม่มากไปกว่าความเสี่ยงในชีวิตประจำวัน แต่ในกรณีที่ผู้ป่วยอาจเกิดอาการอ่อนเพลียขณะที่เข้าร่วมในโครงการวิจัยฯ สามารถพักระหว่างที่มีการดำเนินการของกิจกรรมในโปรแกรมฯได้ แต่ถ้าพบว่ามีอาการกำเริบรุนแรงมากของอาการหายใจลำบาก ผู้วิจัยดูแลให้ได้รับการตรวจรักษาจากแพทย์ระบบทางเดินหายใจ

ประโยชน์ที่คาดว่าจะได้รับจากโครงการวิจัยฯ

ผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังที่เข้าร่วมโครงการวิจัยครั้งนี้จะได้รับประโยชน์โดยตรงต่อตนเอง ทำให้มีแนวทางการปฏิบัติตัวในการจัดการและควบคุมอาการหายใจลำบาก เพื่อลดและบรรเทาอาการหายใจลำบากที่เกิดขึ้นในชีวิตประจำวันได้อย่างมีประสิทธิภาพ รวมทั้งผลการศึกษาที่ได้จะนำไปสู่การพัฒนาการเรียนการสอนทางการพยาบาล โดยการนำเนื้อหาของโปรแกรมฯสอดแทรกเข้าไปในหลักสูตรทางการพยาบาล เพื่อเป็นแนวทางในการพัฒนาการเรียนการสอนทางการพยาบาลในการดูแลผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง และพัฒนาแนวทางปฏิบัติทางการพยาบาลเพื่อส่งเสริมให้ผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังสามารถปฏิบัติตัวในการจัดการกับอาการหายใจลำบากได้อย่างมีประสิทธิภาพ อีกทั้งยังส่งเสริมประสิทธิภาพการทำงานของปอดให้ดีขึ้นด้วย นอกจากนี้ผลการศึกษาในครั้งนี้ยังสามารถนำไปใช้ในการกำหนดนโยบาย และมาตรฐานการพยาบาลในการดูแลผู้สูบบุหรี่ที่เป็นโรคปอด อุดกั้นเรื้อรังได้ต่อไปได้ในอนาคต

ค่าใช้จ่ายที่ผู้เข้าร่วมในโครงการวิจัยฯจะต้องรับผิดชอบ (ถ้ามี)

ไม่มีค่าใช้จ่ายใดๆทั้งสิ้น

ค่าตอบแทนที่จะได้รับเมื่อเข้าร่วมโครงการวิจัยฯ (ถ้ามี)

ท่านจะได้รับค่าใช้จ่ายในการเดินทางมาร่วมในโครงการวิจัยฯ ท่านละ 100 บาท รวมทั้งได้รับชุดเครื่องมือในการให้ความรู้ในการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากสำหรับผู้ที่เป็นโรคปอดอุดกั้นเรื้อรัง และวีดีทัศน์เกี่ยวกับโรคปอดอุดกั้นเรื้อรัง และการปฏิบัติตัวในการจัดการกับอาการหายใจลำบากสำหรับ ผู้ที่เป็นโรคปอดอุดกั้นเรื้อรัง

หากเกิดอันตรายที่เกี่ยวข้องกับโครงการวิจัยฯนี้ จะติดต่อกับใครและได้รับการปฏิบัติอย่างไร

พันตรีหญิง นัยนา วงศ์สายตา **ที่อยู่** วิทยาลัยพยาบาลกองทัพบก 317/6 ถนนราชวิถี แขวงทุ่งพญาไท เขตราชเทวี กรุงเทพมหานคร 10400 **โทรศัพท์** 081-8442134 หากเกิดการเจ็บป่วยหรือบาดเจ็บ รวมทั้งกรณีฉุกเฉินที่อาจจะเกิดขึ้นจากโครงการวิจัยฯ ท่านจะได้รับการดูแลในเบื้องต้นอย่างใกล้ชิดจากผู้วิจัย และได้รับการอำนวยความสะดวกในการตรวจรักษาจากแพทย์อย่างทันท่วงที

หากท่านมีคำถามที่เกี่ยวข้องกับโครงการวิจัยฯ จะถามใคร ระบุชื่อผู้วิจัยหรือผู้ร่วมวิจัย

พันตรีหญิง นัยนา วงศ์สายตา **ที่อยู่** วิทยาลัยพยาบาลกองทัพบก 317/6 ถนนราชวิถี แขวงทุ่งพญาไท เขตราชเทวี กรุงเทพมหานคร 10400 **โทรศัพท์** 081-8442134

หากท่านรู้สึกว่าได้รับการปฏิบัติอย่างไม่เป็นธรรมในระหว่างโครงการวิจัยฯนี้ ท่านอาจแจ้งเรื่องได้ที่

สำนักงานพิจารณาโครงการวิจัย กรมแพทย์ทหารบก ชั้น 5 อาคารพระมงกุฎเกล้าเวชวิทยา เบอร์โทร 02-3547600-28 ต่อ 94297

ข้อมูลส่วนตัวของท่านที่ได้จากโครงการวิจัยฯครั้งนี้จะถูกนำไปใช้ดังต่อไปนี้

การนำเสนอข้อมูลที่ได้จากโครงการวิจัยฯ เพื่อประโยชน์ทางวิชาการโดยไม่เปิดเผยชื่อนามสกุล ที่อยู่ของผู้เข้าร่วมในโครงการวิจัยฯเป็นรายบุคคล และมีมาตรการในการเก็บรักษาข้อมูลส่วนตัวและข้อมูลที่ได้จากโครงการวิจัยฯ ข้อมูลทุกอย่างจะถูกเก็บเป็นความลับและเสนอผลการวิจัยในภาพรวม อาจมีข้อมูลบางส่วนของผู้เข้าร่วมโครงการวิจัยฯจะถูกตรวจสอบโดยคณะกรรมการวิจัยในคนหรือผู้กำกับดูแลการวิจัย โดยจะต้องไม่ละเมิดสิทธิตามขอบเขตที่กฎหมายอนุญาต

ท่านจะถอนตัวออกจากโครงการวิจัยฯหลังจากได้ลงนามเข้าร่วมโครงการวิจัยฯแล้วได้หรือไม่

ผู้เข้าร่วมโครงการวิจัยฯสามารถถอนตัวออกจากโครงการวิจัยฯได้ตลอดเวลา <u>โดยจะไม่มีผลเสียใดๆ</u> เกิดขึ้น และผู้เข้าร่วมในโครงการวิจัยฯอาจถูกขอให้ออกจากโครงการวิจัยฯในกรณีที่ท่านมีภาวะแทรกซ้อนของโรคปอดอุดกั้นเรื้อรังที่รุนแรง เช่น มีการติดเชื้อในระบบทางเดินหายใจที่รุนแรง หรือมีปัญหาสุขภาพทางด้านจิตใจ เช่น มีภาวะซึมเศร้า หรือมีภาวะเครียดระดับรุนแรง เป็นต้น

หนังสือแสดงเจตนายินยอมเข้าร่วมการวิจัย (Informed Consent)

ชื่อโครงการวิจัย ผลของโปรแกรมการจัดการกับอาการต่ออาการหายใจลำบากในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

วันที่ลงนาม.....

ก่อนที่จะลงนามในใบยินยอมให้ทำการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัย วิธีการวิจัย อันตราย หรืออาการที่อาจเกิดขึ้นจากการวิจัย หรือจากยาที่ใช้ รวมทั้งประโยชน์ที่คาดว่าจะเกิดขึ้นจากการวิจัยอย่างละเอียด และมีความเข้าใจดีแล้ว

ผู้วิจัยรับรองว่าจะตอบคำถามที่ข้าพเจ้าสงสัยด้วยความเต็มใจ และไม่ปิดบังซ่อนเร้น จนข้าพเจ้าพอใจ

ข้าพเจ้าเข้าร่วมในโครงการวิจัยนี้ด้วยความสมัครใจ โดยปราศจากการบังคับหรือชักจูง

ข้าพเจ้ามีสิทธิที่จะบอกเลิกการเข้าร่วมในโครงการวิจัยเมื่อใดก็ได้ และการบอกเลิกนี้จะไม่มีผลต่อการรักษาพยาบาลที่ข้าพเจ้าจะพึงได้รับในปัจจุบันและในอนาคต

ผู้วิจัยรับรองว่าจะเก็บข้อมูลเกี่ยวกับตัวข้าพเจ้าเป็นความลับ และจะเปิดเผยเฉพาะในรูปของสรุปผลการวิจัยโดยไม่มีการระบุชื่อนามสกุลของข้าพเจ้า การเปิดเผยข้อมูลเกี่ยวกับตัวข้าพเจ้าต่อหน่วยงานต่างๆ ที่เกี่ยวข้อง จะกระทำด้วยเหตุผลทางวิชาการเท่านั้น

ผู้วิจัยรับรองว่าหากเกิดอันตรายใดๆ จากการวิจัย ข้าพเจ้าจะได้รับการรักษาพยาบาล ตามที่ระบุในเอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย

ข้าพเจ้าจะได้รับเอกสารชี้แจงข้อมูลแก่ผู้เข้าร่วมโครงการวิจัย เก็บไว้ 1 ชุด

ข้าพเจ้าได้รับทราบข้อความข้างต้น มีความเข้าใจดี และลงนามในใบยินยอมด้วยความเต็มใจ

ลงชื่อ.....ผู้เข้าร่วมโครงการวิจัย
(.....ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ .....ผู้ดำเนินโครงการวิจัย
(.....ชื่อ-นามสกุล ตัวบรรจง)

ลงชื่อ.....พยาน
(.....ชื่อ -นามสกุล ตัวบรรจง)

ลงชื่อ.....พยาน
(.....ชื่อ -นามสกุล ตัวบรรจง)

Appendix D

Research Instruments

Demographic Data Form (Thai version)

แบบสอบถามข้อมูลส่วนบุคคลสำหรับผู้ป่วย

ส่วนที่ 1 ข้อมูลทั่วไป

คำชี้แจง: โปรดระบุข้อมูลในช่องว่างหรือใส่เครื่องหมาย √ ลงในช่อง ( ) ที่ตรงกับตัวท่านมากที่สุด

เพศ ( ) ชาย ( ) หญิง

อายุ.....ปี

ระดับการศึกษา ( ) ประถมศึกษา ( ) มัธยมศึกษา

( ) อนุปริญญา ( ) ปริญญาตรี

( ) อื่นๆ.....

อาชีพ ( ) เกษตรกรรม ( ) ค้าขาย ( ) รับจ้าง

( ) รับราชการ ( ) พนักงานรัฐวิสาหกิจ/บริษัท

( ) งานบ้าน/ไม่ได้ประกอบอาชีพ ( ) อื่นๆโปรดระบุ.

สถานภาพการทำงาน ( ) ทำงานเต็มเวลา ( ) ทำงานไม่เต็มเวลา

( ) ไม่ได้ทำงาน

การจ่ายค่ารักษาพยาบาล ( ) เบิกจากหน่วยงานต้นสังกัด ( ) สิทธิ 30 บาท

( ) ประกันสังคม ( ) จ่ายเอง

ส่วนที่ 2 ข้อมูลเกี่ยวกับการเจ็บป่วยและการรักษา

คำชี้แจง: โปรดระบุข้อมูลในช่องว่างหรือใส่เครื่องหมาย √ ลงในช่อง ( ) ที่ตรงกับตัวท่าน **มากที่สุด**

ท่านได้รับการวินิจฉัยว่าเป็นโรคปอดอุดกั้นเรื้อรังมานาน ..... ปี

ระดับความรุนแรงของโรคปอดอุดกั้นเรื้อรังตามแนวทาง GOLD (2013)

( ) ระดับที่ 1

( ) ระดับที่ 2

( ) ระดับที่ 3

( ) ระดับที่ 4

โรคประจำตัวอื่น ๆ ( ) ความดันโลหิตสูง ( ) เบาหวาน

( ) ไขมันในเลือดสูง ( ) โรคไตวาย

( ) อื่น ๆ ..... ( ) ปฏิเสธการมีโรคประจำตัว

ในระยะเวลา 1 ปีที่ผ่านมาท่านเข้ารับการรักษาตัวในโรงพยาบาลหรือไม่

( ) ไม่เคย ( ) เคย โปรดระบุจำนวนครั้งในการเข้ารับการรักษา ..... ครั้ง

เข้ารับการรักษาด้วยอาการ โปรดระบุ.....

การรักษาที่ได้รับในปัจจุบัน (ตอบได้มากกว่า 1 ข้อ)

( ) ยารับประทาน ( ) ยาพ่นสูด

( ) การรักษาด้วยออกซิเจนระยะยาว ( ) อื่นๆ โปรดระบุ.....

ประวัติการสูบบุหรี่ของท่าน: ปัจจุบันท่านสูบบุหรี่หรือไม่

( ) สูบ ท่านสูบบุหรี่ตั้งแต่อายุ.....ปี รวมระยะเวลาการสูบบุหรี่.....ปี

( ) เคยสูบ แต่ปัจจุบันเลิกมาแล้ว.....ปี รวมระยะเวลาการสูบบุหรี่.....ปี

จำนวนบุหรี่ที่ท่านสูบ

( ) น้อยกว่า 5 มวน/วัน ( ) 5-10 มวน/วัน

( ) 11-20 มวน/วัน ( ) มากกว่า 20 มวน/วัน

ความบ่อยของการสูบบุหรี่

( ) 1 ครั้ง/เดือน ( ) 2-3 ครั้ง/เดือน

( ) 1-3 ครั้ง/สัปดาห์ ( ) 4-6 ครั้ง/สัปดาห์

( ) ทุกวัน

( ) อื่น ๆ (โปรดระบุ).....

ประเภทของบุหรี่ที่ท่านสูบ

( ) ยาเส้น ( ) บุหรี่ก้นกรอง ( ) อื่นๆ โปรดระบุ.....

สาเหตุที่กลับมาสูบบุหรี่

( ) ความอยากสูบ ( ) ความเครียด วิตกกังวล ( ) ความเคยชิน

( ) ขาดแรงจูงใจ ( ) การเข้าสังคม ( ) อาการของโรคทุเลา

( ) อื่น ๆ (โปรดระบุ).....

การออกกำลังกาย ( ) ไม่เคยออกกำลังกายเลย ( ) ออกกำลังกายเป็นบางครั้ง

( ) ออกกำลังกายอย่างสม่ำเสมอ

แบบประเมินอาการหายใจลำบากของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

คำชี้แจง แบบประเมินอาการหายใจลำบากฉบับนี้ใช้ในการสอบถามระดับความรู้สึกของการมีอาการหายใจลำบาก อาการหายใจไม่สะดวก หรือต้องออกแรงมากขึ้นในการหายใจของท่านในระยะเวลา 4 สัปดาห์ที่ผ่านมา

โปรดทำเครื่องหมายวงกลม (o) ลงบนเส้นตรง ณ จุดที่บ่งบอกถึงอาการหายใจลำบากของท่านที่ตรงกับความรู้สึกที่แท้จริงของท่าน โดยมีลักษณะของเส้นเป็นเส้นตรงมีสเกลตั้งแต่ 0-10 เซนติเมตร และมีความหมายดังนี้

ด้านล่างสุดที่ตำแหน่ง 0 เซ็นติเมตร (คะแนน=0) หมายถึง ท่านไม่มีอาการหายใจลำบากเลย

ด้านบนสุดที่ตำแหน่ง 10 เซ็นติเมตร(คะแนน=10) หมายถึง ท่านมีอาการหายใจลำบากมากที่สุด

100 (มิลลิเมตร) **มีอาการหายใจลำบากมากที่สุด**

0 (มิลลิเมตร) **ไม่มีอาการหายใจลำบากเลย**

แบบบันทึกค่า FEV 1 % predicted (%)

วัน/เดือน/ปี .....

ลำดับ	ช่วงเวลา	FEV 1 % predicted (%)	หมายเหตุ
1	ก่อนการเข้าร่วมในโปรแกรมฯ		
2	หลังการเข้าร่วมในโปรแกรมฯ		

แบบประเมินการเลิกสูบบุหรี่ของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

คำชี้แจง โปรดกรอกข้อมูลและทำเครื่องหมาย √ ลงในช่อง ( ) ที่ตรงกับการปฏิบัติตัวของท่าน **มากที่สุด**

การสูบบุหรี่

( ) ไม่สูบบุหรี่เลย

สาเหตุที่เลิกสูบบุหรี่

( ) มีปัญหาสุขภาพ ( ) กลัวเกิดปัญหาสุขภาพ/ กลัวตาย

( ) ครอบครัวต้องการให้เลิก ( ) สิ้นเปลือง/ บุหรี่ราคาแพง

( ) คิดว่าการสูบบุหรี่ไม่ดี/ เบื่อ/ ไม่อยากสูบ ( ) พื้นที่สูบบุหรี่มีน้อยลง

( ) ผู้บังคับบัญชา/หัวหน้างาน/ครูสั่งให้เลิก ( ) สังคมไม่ยอมรับ

( ) เพื่อนร่วมงานไม่ชอบ ( ) แพทย์/ บุคลากรวิชาชีพทางสุขภาพแนะนำให้เลิก

( ) ยังสูบบุหรี่อยู่

จำนวนบุหรี่ที่ท่านสูบ

( ) น้อยกว่า 5 มวน/วัน

( ) 5-10 มวน/วัน

( ) 11-20 มวน/วัน

( ) มากกว่า 20 มวน/วัน

ความบ่อยของการสูบบุหรี่

( ) 1 ครั้ง/เดือน ( ) 2-3 ครั้ง/เดือน

( ) 1-3 ครั้ง/สัปดาห์ ( ) 4-6 ครั้ง/สัปดาห์

( ) ทุกวัน

( ) อื่น ๆ (โปรดระบุ).....

แบบประเมินพฤติกรรมการจัดการอาการหายใจลำบาก
ของผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

คำชี้แจง แบบประเมินชุดนี้มีวัตถุประสงค์เพื่อต้องการประเมินการปฏิบัติกิจกรรมในการจัดการกับอาการหายใจลำบากที่มีความต่อเนื่องและสม่ำเสมอ มีข้อคำถามจำนวน 17 ข้อ ประกอบด้วย 2 ด้าน ได้แก่ 1) การควบคุมอาการหายใจลำบาก มีจำนวน 7 ข้อ และ 2) การส่งเสริมสุขภาพเพื่อควบคุมอาการหายใจลำบาก ในผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง มีจำนวน 10 ข้อ

กรุณาอ่านข้อความในแต่ละข้อแล้วพิจารณาว่าท่านมีการปฏิบัติกิจกรรมการจัดการอาการหายใจลำบากเหล่านั้นอย่างไร หลังจากนั้นให้ทำเครื่องหมาย √ ลงในช่องที่ตรงกับการปฏิบัติกิจกรรมของท่านให้ตรงกับความเป็นจริงมากที่สุด โดยแต่ละคำตอบจะมีความหมายดังนี้

ปฏิบัติสม่ำเสมอ	หมายถึง	ท่านมีการปฏิบัติกิจกรรมในเรื่องนั้นเป็นประจำ
ปฏิบัติเป็นส่วนมาก	หมายถึง	ท่านมีการปฏิบัติกิจกรรมในเรื่องนั้นเป็นส่วนมาก
ปฏิบัติเป็นบางครั้ง	หมายถึง	ท่านมีการปฏิบัติกิจกรรรมในเรื่องนั้นเป็นบางครั้ง
ปฏิบัตินานๆครั้ง	หมายถึง	ท่านมีการปฏิบัติกิจกรรมในเรื่องนั้นนานๆครั้ง
ไม่ปฏิบัติเลย	หมายถึง	ท่านไม่เคยมีการปฏิบัติกิจกรรมในเรื่องนั้นเลย

กิจกรรมการปฏิบัติตัวเพื่อจัดการอาการหายใจลำบาก	ไม่ปฏิบัติ	ปฏิบัตินานๆครั้ง	ปฏิบัติเป็นบางครั้ง	ปฏิบัติเป็นวนมาก	ปฏิบัติสม่ำเสมอ
1. การควบคุมอาการหายใจลำบาก มีจำนวน 7 ข้อ 1.1 ท่านสังเกตและประเมินความรุนแรงของอาการหายใจลำบากรวมทั้งอาการไอ และการมีเสมหะ					
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1.7 ท่านมีการปรับเปลี่ยนประเภทของกิจกรรมที่ทำ เช่น เปลี่ยนจากกิจกรรมที่ต้องผลักหรือดึงอย่างรวดเร็ว มาเป็นกิจกรรมที่ออกแรงช้าๆและนุ่มนวล					
2. การส่งเสริมให้มีการคงอยู่ของอาการหายใจลำบากไม่ให้กำเริบรุนแรง มีจำนวน 10 ข้อ 2.1 ท่านหลีกเลี่ยงสิ่งกระตุ้นให้เกิดอาการหายใจลำบาก เช่น ควันบุหรี่ ควันพิษ ฝุ่นละออง สถานที่อับชื้น (ร้อนหรือเย็นมาก) สถานที่มีการระบายอากาศไม่ดี และการใกล้ชิดกับผู้ที่มีการติดเชื้อในระบบทางเดินหายใจ เป็นต้น					
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กิจกรรมการปฏิบัติตัวเพื่อจัดการอาการหายใจลำบาก	ไม่ปฏิบัติ	ปฏิบัตินานๆครั้ง	ปฏิบัติเป็นบางครั้ง	ปฏิบัติเป็นวนมาก	ปฏิบัติสม่ำเสมอ
.					
2.10 ท่านผ่อนคลายความเครียดของตนเอง เช่น การฝึกสมาธิ การควบคุมสติ และพูดระบายกับคนใกล้ชิด เป็นต้น					

Appendix E

Program Manual (Thai version)

โปรแกรมการจัดการกับอาการกับอาการหายใจลำบาก สำหรับผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง

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หลักการและความสำคัญ

ลักษณะเด่นของโปรแกรม

องค์ประกอบที่สำคัญของโปรแกรมฯ

ขั้นตอนการปฏิบัติกิจกรรม

เอกสารที่ใช้ประกอบขั้นตอนการปฏิบัติกิจกรรม

: เอกสารชุดที่ 1 แผนการให้ความรู้เกี่ยวกับโรคปอดอุดกั้นเรื้อรัง อาการหายใจลำบาก และการปฏิบัติตัวเพื่อจัดการกับอาการหายใจลำบาก

: เอกสารชุดที่ 2 แผนการให้ความรู้เกี่ยวกับแนวทางในการเลิกบุหรี่

: เอกสารชุดที่ 3 แผนการฝึกทักษะการจัดการกับอาการหายใจลำบากและการเลิกบุหรี่

: เอกสารชุดที่ 4 แนวทางปฏิบัติในการโทรศัพท์ติดตามผู้ป่วยที่บ้าน

: เอกสารชุดที่ 5 แบบประเมินผล

เอกสาร 5.1 แบบประเมินความรู้เรื่องโรคปอดอุดกั้นเรื้อรังฯ

เอกสาร 5.2 แบบประเมินความรู้เรื่องการปฏิบัติตัวในการเลิกบุหรี่

เอกสาร 5.2 แบบประเมินการสาธิตย้อนกลับการฝึกทักษะการปฏิบัติตัวในการจัดการกับอาการหายใจลำบาก ประกอบด้วย การบริหารการหายใจ การออกกำลังกายแบบชี่กง และทักษะการเลิกบุหรี่

Appendix F

Annual Booklet

Appendix G

Script DVD

สคริปท์วีดิทัศน์ ชุดที่ 1

เรื่อง ความรู้เกี่ยวกับโรคปอดอุดกั้นเรื้อรัง และอาการหายใจลำบาก

ลำดับ	ภาพประกอบ	เสียง/คำบรรยาย
1	**ภาพกราฟิก:** กระบวนการหายใจที่มีการอุดกั้นของหลอดลม	**เสียง**: จังหวะของการหายใจแบบสั้นและตื้น
2	**อักษรกราฟิก:** โรคปอดอุดกั้นเรื้อรัง และอาการหายใจลำบาก	**คำบรรยาย:** สวัสดีค่ะเนื้อหาของวีดิทัศน์ชุดนี้เป็นการนำเสนอข้อมูลเกี่ยวกับโรคปอดอุดกั้นเรื้อรังและอาการหายใจลำบาก เพื่อให้ผู้ป่วยและครอบครัวได้มีความรู้ความเข้าใจเกี่ยวกับโรคได้อย่างถูกต้องและเหมาะสม
3	**ภาพเคลื่อนไหว:** ผู้ป่วยชายวัยกลางคนและญาติเดินมาที่ห้องตรวจโรคทางเดินหายใจและภูมิแพ้ ขณะกำลังรอตรวจ มีอาการหายใจเร็ว สั้นและตื้น สีหน้าวิตกกังวล และกำลังสนทนากับพยาบาล	**เสียง:** <u>พยาบาล:</u> “สวัสดีค่ะ คุณคะวันนี้มีอาการยังไงบ้างคะ” <u>ผู้ป่วย:</u> “ผมไอเรื้อรังมานานแล้วครับ ตอนนี้ไอเยาะขึ้น มีเสมหะช่วงเช้ามาหลายเดือน หายใจเข้าออกแต่ละทีลำบากมาก บางครั้งมีเสียงดังวี๊ด และอาการมันก็ดูเหมือนจะมากขึ้นเรื่อยๆ ผมกังวลมากเลยนะครับไม่รู้ว่าเป็นอะไร” <u>พยาบาล:</u> “นั่งพักสักครู่อาการจะทุเลาลงไม่ต้องกังวลนะคะ ตอนนี้ได้เวลาเข้าตรวจกับแพทย์แล้วค่ะ”
4	**ภาพเคลื่อนไหว:** พยาบาลและผู้ป่วยกำลังสนทนากันภายหลังจากการตรวจ	**เสียง:** <u>ผู้ป่วย:</u> “คุณหมอว่าผมมีปัญหาที่ถุงลมในปอดจากการสูบบุหรี่ แต่ตอนนี้ผมยังเลิกสูบบุหรี่ไม่ได้เลยครับ กลัวว่าอาการจะแย่ลง และคุณหมอยังให้ผมไปทดสอบสมรรถภาพปอด เพื่อดูการทำงานของปอดว่าเป็นยังไงบ้างด้วยครับ” <u>พยาบาล:</u> “คุณน่าจะมีความผิดปกติที่ถุงลมในปอดจากการ สูบบุหรี่เป็นระยะเวลานาน และ
4	**ภาพเคลื่อนไหว:** พยาบาลและ	หลังจากทดสอบสมรรถภาพปอดแล้ว กลับมาพบ

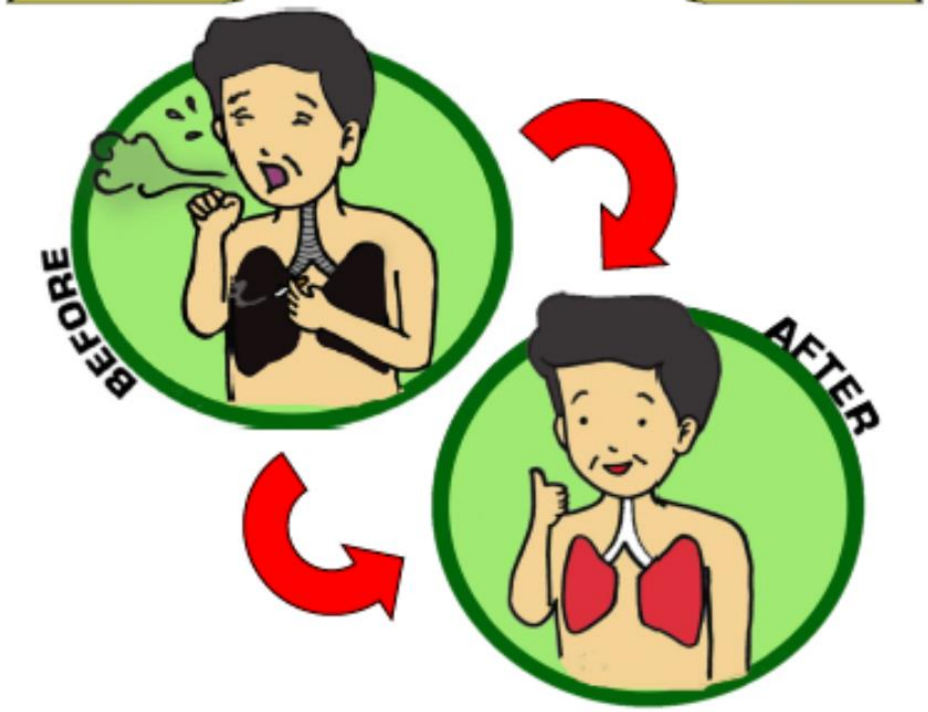
ลำดับ	ภาพประกอบ	เสียง/คำบรรยาย
	ผู้ป่วยกำลังสนทนากันภายหลังจากการตรวจ (ต่อ)	แพทย์จะสามารถบอกได้ว่าคุณเป็นโรคอะไรคะ” (หลังจากทดสอบสมรรถภาพปอด และพบแพทย์แล้ว) ผู้ป่วย: “คุณหมอบอกว่าผมเป็นโรคปอดอุดกั้นเรื้อรัง มันเป็นยังไงเหรอครับโรคนี้ ผมควรจะดูแลตัวเองและรับการรักษายังไงดีครับ” พยาบาล: “ไม่ต้องกังวลนะคะ พยาบาลจะให้ความรู้เกี่ยวกับโรคปอดอุดกั้นเรื้อรัง และอาการหายใจลำบาก ในเบื้องต้นให้คุณและญาติได้เข้าใจได้อย่างถูกต้องและเหมาะสมค่ะ”
5	**ภาพกราฟิก:** ภาพคนหายใจเข้าออก และภาพการทำงานของปอด	**คำบรรยาย:** ปอด มี 2 ข้าง ขวาและซ้าย อยู่ในช่องทรวงอก เปรียบเสมือนเครื่องฟอกอากาศ ทำหน้าที่ในการแลกเปลี่ยนก๊าซนำก๊าซออกซิเจนเข้า นำก๊าซคาร์บอนไดออกไซด์ออกจากร่างกาย

Appendix H

Diary Record

1

แบบบันทึกพฤติกรรมการปฏิบัติตัวเพื่อจัดการกับอาการหายใจลำบาก
สำหรับผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง



วัตถุประสงค์ของการบันทึกพฤติกรรมการปฏิบัติตัว

เพื่อให้ผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรัง(ผู้ป่วย) ได้บันทึกเป้าหมายของการปฏิบัติตัว รายละเอียดของการปฏิบัติ การติดตามการปฏิบัติตัวอย่างต่อเนื่อง และการประเมินผลการปฏิบัติตัว ในการจัดการกับอาการหายใจลำบากภายหลังได้รับความรู้ คำแนะนำ และได้มีการฝึกปฏิบัติตามรายละเอียดของโปรแกรมการจัดการกับอาการหายใจลำบากสำหรับผู้สูบบุหรี่ที่เป็นโรคปอดอุดกั้นเรื้อรังเกี่ยวกับ 1) การบริหารการหายใจด้วยการใช้กล้ามเนื้อหน้าท้องและกระบังลมร่วมกับการบริหารการหายใจด้วยการเป่าปาก 2) การปฏิบัติตัวเพื่อเลิกบุหรี่ และ 3) การออกกำลังกายแบบชี่กงไทเก๊ก

จัดทำโดย พันตรีหญิงนัยนา วงศ์ชำยดา
นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สคริปท์วีดิทัศน์ ชุดที่ 2

เรื่อง การปฏิบัติตัวเพื่อจัดการกับอาการหายใจลำบากสำหรับผู้ป่วยโรคปอดอุดกั้นเรื้อรัง (การควบคุมอาการหายใจลำบากร่วมกับการปฏิบัติตัวเพื่อส่งเสริมจัดการกับอาการหายใจลำบาก และการลดปัจจัยเสี่ยงที่ทำให้เกิดอาการหายใจลำบาก)

ลำดับ	ภาพ	เสียง/คำบรรยาย
1	**ภาพเคลื่อนไหว:** ผู้ป่วยกำลังฝึกปฏิบัติการบริหารการหายใจและมีพยาบาพยาบาลคอยดูแล	**คำบรรยาย:** สวัสดีค่ะสำหรับเนื้อหาของวีดิทัศน์ในชุดนี้เป็นการนำเสนอข้อมูลและขั้นตอนเกี่ยวกับการปฏิบัติตัวเพื่อจัดการกับอาการหายใจลำบากสำหรับผู้ป่วยโรคปอดอุดกั้นเรื้อรัง เพื่อให้ผู้ป่วยได้มีความรู้ ความเข้าใจ และสามารถปฏิบัติได้อย่างถูกต้องและเหมาะสม
2	**อักษรกราฟิก:** การปฏิบัติตัวเพื่อจัดการจัดการกับอาการหายใจลำบากสำหรับผู้ป่วยโรคปอดอุดกั้นเรื้อรัง ประกอบด้วย - การควบคุมอาการหายใจลำบากร่วมกับการปฏิบัติตัวเพื่อส่งเสริมจัดการกับอาการหายใจลำบาก - การลดปัจจัยเสี่ยงที่ทำให้เกิดอาการหายใจลำบาก	**คำบรรยาย:** การปฏิบัติตัวเพื่อจัดการกับอาการหายใจลำบากสำหรับผู้ป่วยโรคปอดอุดกั้นเรื้อรัง ประกอบด้วย การควบคุมอาการหายใจลำบากร่วมกับการปฏิบัติตัวเพื่อส่งเสริมจัดการกับอาการหายใจลำบาก และการลดปัจจัยเสี่ยงที่ทำให้เกิดอาการหายใจลำบาก
3-17	.....	.....
18	**ภาพกราฟิก:** โลโก้จุฬาลงกรณ์มหาวิทยาลัย คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย และ **อักษรกราฟิก:** จัดทำโดย พันตรีหญิงนัยนา วงศ์สายตา นิสิตปริญญาเอก คณะพยาบาลศาสตร์	**คำบรรยาย:** วีดีทัศน์ชุดนี้ได้รับการสนับสนุนจาก “ทุนอุดหนุนวิทยานิพนธ์สำหรับนิสิต”จากบัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย (2/2556) และ “ทุนวิทยานิพนธ์: ดุษฎีนิพนธ์ระดับปริญญาเอกของนักศึกษาระดับบัณฑิตศึกษา สถาบันอุดมศึกษาในประเทศไทย” จากศูนย์วิจัยและจัดการความรู้เพื่อการควบคุมยาสูบ (ศจย.)

Appendix I

Dyspnea Score and Statistical Test

Normality Testing

Experimental group

Descriptives

			Statistic	Std. Error
ScorePreDyspneaVAS		Mean	49.97	2.928
	95% Confidence Interval for Mean	Lower Bound	44.01	
		Upper Bound	55.93	
		5% Trimmed Mean	50.07	
		Median	50.00	
		Variance	282.905	
		Std. Deviation	16.820	
		Minimum	18	
		Maximum	79	
		Range	61	
		Interquartile Range	33	
		Skewness	-.032	.409
		Kurtosis	-1.214	.798
ScorePostDyspneaVAS		Mean	31.12	3.135
	95% Confidence Interval for Mean	Lower Bound	24.74	
		Upper Bound	37.51	
		5% Trimmed Mean	31.06	
		Median	32.00	
		Variance	324.297	
		Std. Deviation	18.008	
		Minimum	0	
		Maximum	70	
		Range	70	
		Interquartile Range	27	
		Skewness	-.177	.409

		Kurtosis	-.574	.798
ScoreDIFVAS				
		Mean	18.8485	2.10659
	95% Confidence Interval for Mean	Lower Bound	14.5575	
		Upper Bound	23.1395	
		5% Trimmed Mean	18.7593	
		Median	19.0000	
		Variance	146.445	
		Std. Deviation	12.10145	
		Minimum	-6.00	
		Maximum	52.00	
		Range	58.00	
		Interquartile Range	17.00	
		Skewness	.126	.409
		Kurtosis	.672	.798
ScoreFEV1 ก่อนการเข้าร่วมในโปรแกรม		Mean	61.76	2.470
	95% Confidence Interval for Mean	Lower Bound	56.73	
		Upper Bound	66.79	
		5% Trimmed Mean	62.45	
		Median	66.00	
		Variance	201.252	
		Std. Deviation	14.186	
		Minimum	34	
		Maximum	77	
		Range	43	
		Interquartile Range	25	
		Skewness	-.745	.409
		Kurtosis	-.843	.798
ScoreFEV1 หลังการเข้าร่วมในโปรแกรม		Mean	63.70	2.570
	95% Confidence Interval for Mean	Lower Bound	58.46	
		Upper Bound	68.93	
		5% Trimmed Mean	64.45	
		Median	70.00	

		Variance	217.905	
		Std. Deviation	14.762	
		Minimum	33	
		Maximum	80	
		Range	47	
		Interquartile Range	26	
		Skewness	-.776	.409
		Kurtosis	-.830	.798
ScoreDIFFEV1		Mean	1.9394	.34799
	95% Confidence Interval for Mean	Lower Bound	1.2306	
		Upper Bound	2.6482	
		5% Trimmed Mean	1.7862	
		Median	2.0000	
		Variance	3.996	
		Std. Deviation	1.99905	
		Minimum	-1.00	
		Maximum	10.00	
		Range	11.00	
		Interquartile Range	2.00	
		Skewness	1.812	.409
		Kurtosis	7.525	.798

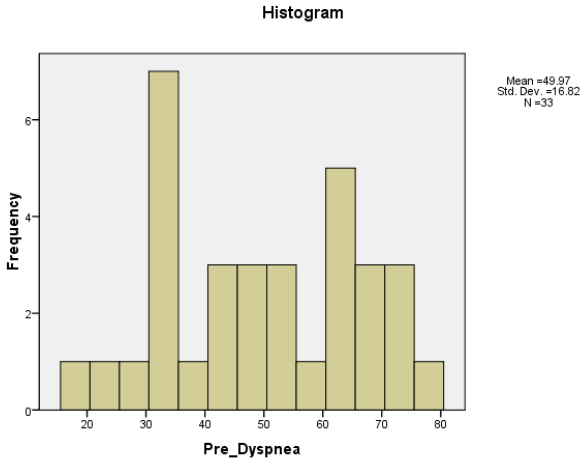
Tests of Normality

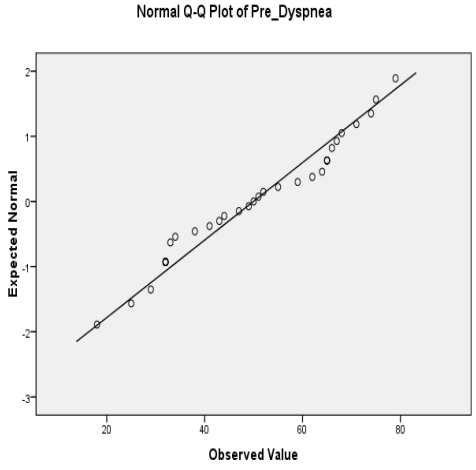
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre_Dyspnea	.132	33	.156	.948	33	.116
Post_Dyspnea	.113	33	.200*	.959	33	.244
DIFVAS	.091	33	.200*	.972	33	.547
FEV1 ก่อนการเข้าร่วมในโปรแกรม	.174	33	.013	.864	33	.001
FEV1 หลังการเข้าร่วมในโปรแกรม	.221	33	.000	.863	33	.001
DIFFEV1	.207	33	.001	.811	33	.000

a. Lilliefors Significance Correction

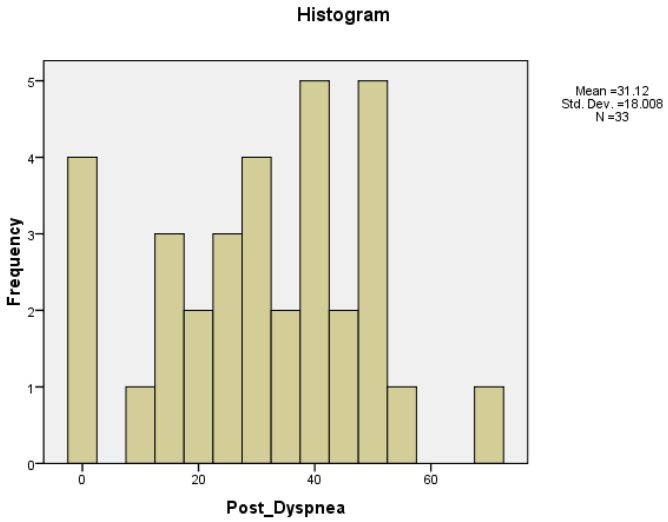
*. This is a lower bound of the true significance.

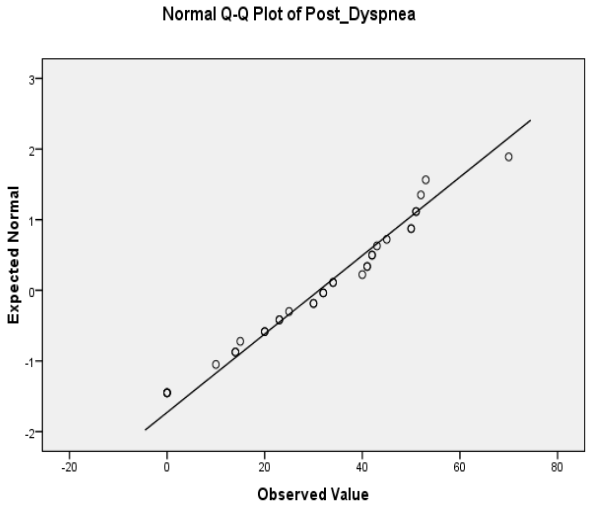
Experimental group: Pretest_Dyspnea VAS



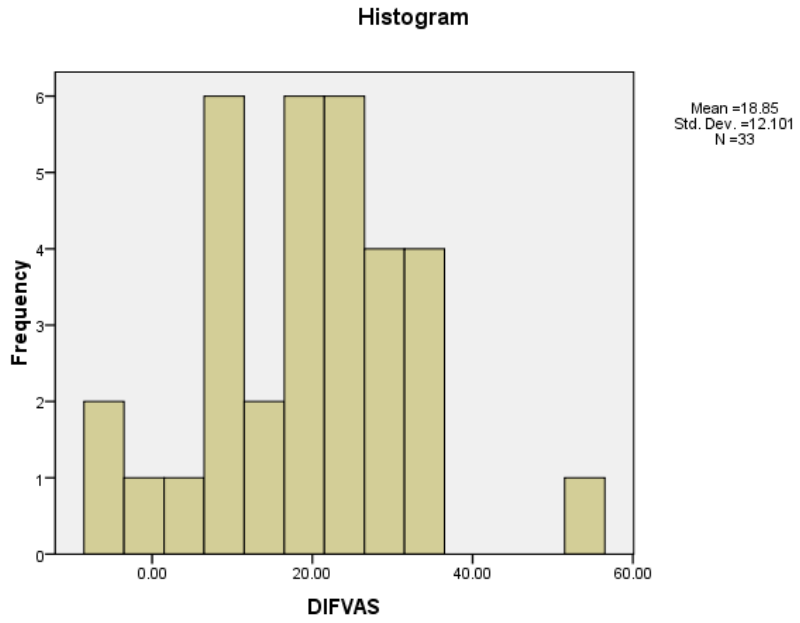


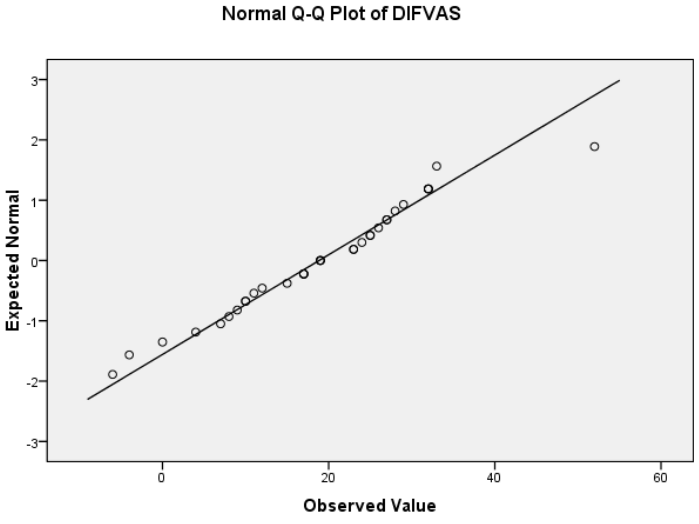
Experimental group: Posttest_Dyspnea VAS



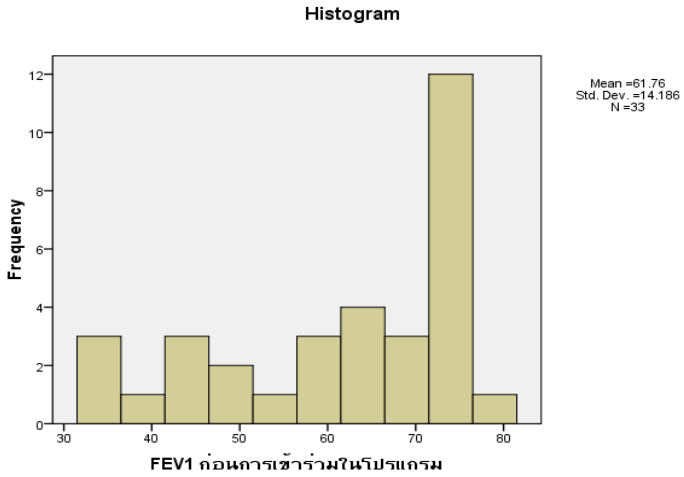


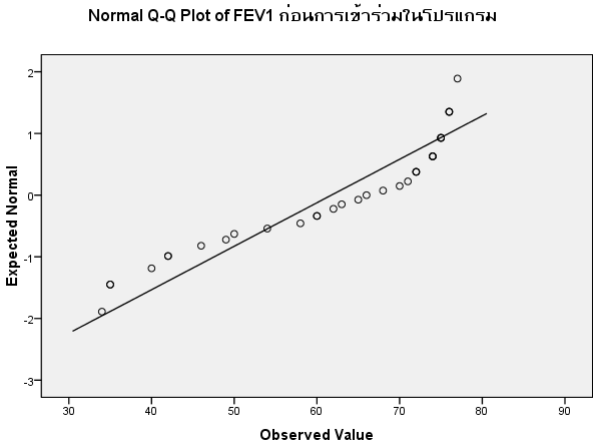
Experimental group: Posttest-Pretest_Dyspnea VAS



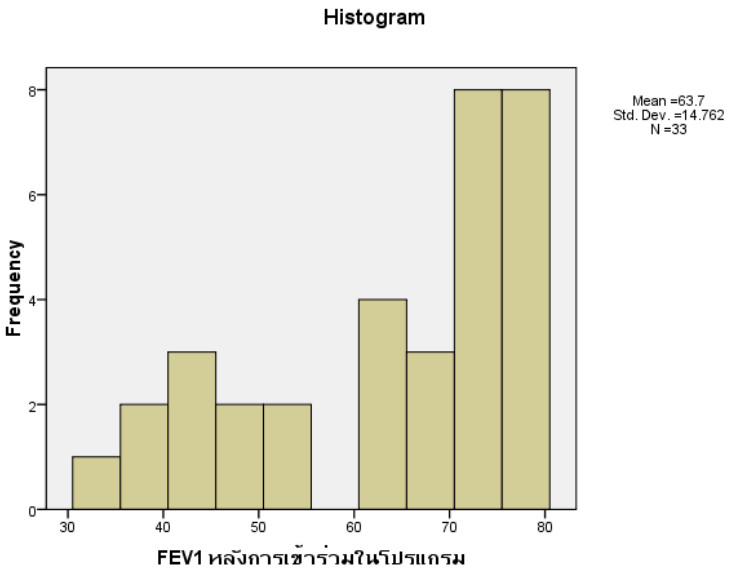


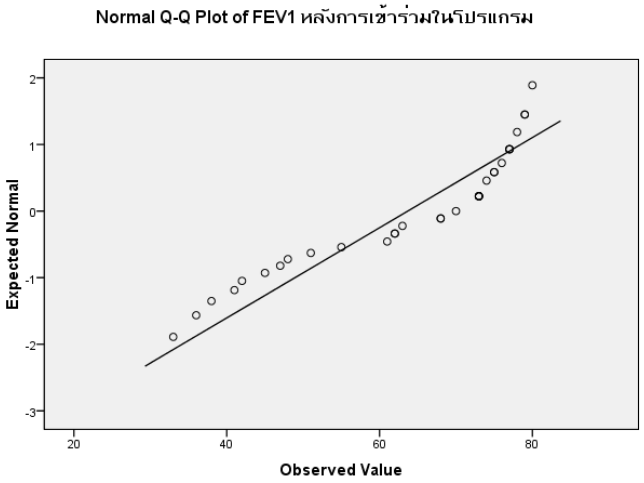
Experimental group: Pretest_FEV1



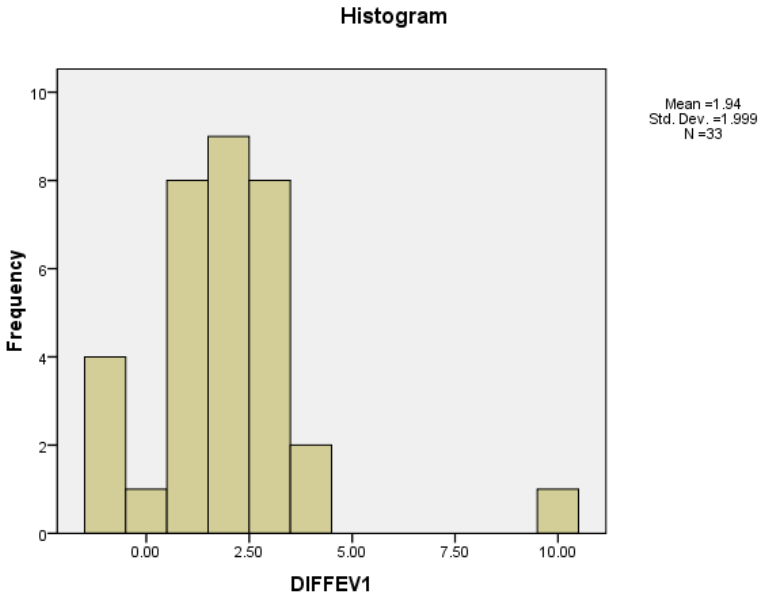


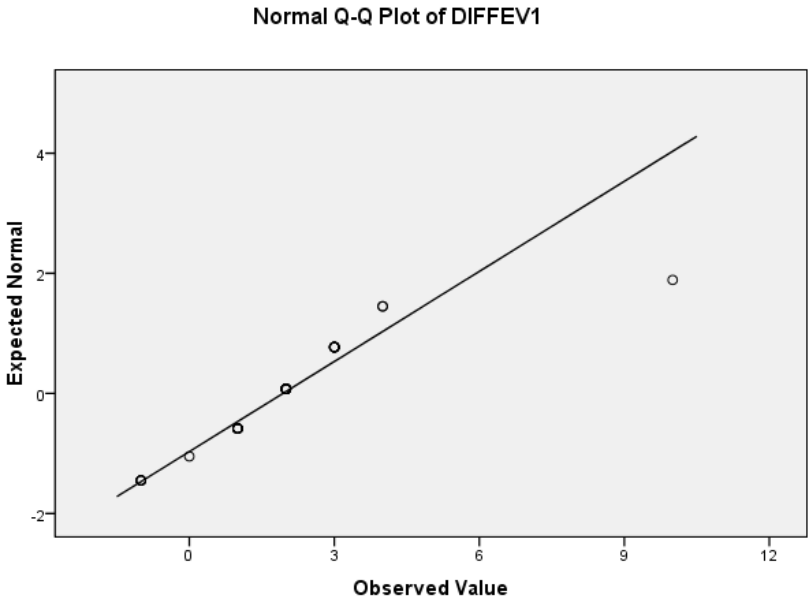
Experimental group: Posttest_FEV1





Experimental group: Posttest-Pretest_FEV1


Histogram
Mean =1.94
Std. Dev. =1.999
N =33
Frequency
DIFFEV1
0
2
4
6
8
10
0.00
2.50
5.00
7.50
10.00


Normal Q-Q Plot of DIFFEV1
Expected Normal
Observed Value
-2
0
2
4
0
3
6
9
12

Control group

Descriptives

			Statistic	Std. Error
Pre_Dyspnea_VAS		Mean	54.73	2.382
	95% Confidence Interval for Mean	Lower Bound	49.87	
		Upper Bound	59.58	
		5% Trimmed Mean	54.52	
		Median	54.00	
		Variance	187.267	
		Std. Deviation	13.685	
		Minimum	31	
		Maximum	81	
		Range	50	
		Interquartile Range	19	
		Skewness	.150	.409
		Kurtosis	-.865	.798
Post_Dyspnea_VAS		Mean	58.52	1.954
	95% Confidence Interval for Mean	Lower Bound	54.53	
		Upper Bound	62.50	
		5% Trimmed Mean	59.18	
		Median	61.00	
		Variance	126.008	
		Std. Deviation	11.225	
		Minimum	32	
		Maximum	70	
		Range	38	
		Interquartile Range	19	
		Skewness	-.770	.409
		Kurtosis	-.532	.798

DIFVAS		Mean	-3.7879	2.50445
	95% Confidence Interval for Mean	Lower Bound	-8.8893	
		Upper Bound	1.3135	
		5% Trimmed Mean	-3.7963	
		Median	-6.0000	
		Variance	206.985	
		Std. Deviation	14.38697	
		Minimum	-32.00	
		Maximum	23.00	
		Range	55.00	
		Interquartile Range	25.50	
		Skewness	.087	.409
		Kurtosis	-.819	.798
FEV1 ก่อนการเข้าร่วมในโปรแกรม		Mean	55.12	2.627
	95% Confidence Interval for Mean	Lower Bound	49.77	
		Upper Bound	60.47	
		5% Trimmed Mean	55.04	
		Median	55.00	
		Variance	227.672	
		Std. Deviation	15.089	
		Minimum	34	
		Maximum	77	
		Range	43	
		Interquartile Range	29	
		Skewness	.105	.409
		Kurtosis	-1.690	.798

FEV1 หลังการเข้าร่วมในโปรแกรม		Mean	51.36	2.245
	95% Confidence Interval for Mean	Lower Bound	46.79	
		Upper Bound	55.94	
		5% Trimmed Mean	51.29	
		Median	49.00	
		Variance	166.301	
		Std. Deviation	12.896	
		Minimum	30	
		Maximum	72	
		Range	42	
		Interquartile Range	23	
		Skewness	.216	.409
		Kurtosis	-1.363	.798
DIFFEV1		Mean	-3.7576	.86496
	95% Confidence Interval for Mean	Lower Bound	-5.5195	
		Upper Bound	-1.9957	
		5% Trimmed Mean	-3.7643	
		Median	-4.0000	
		Variance	24.689	
		Std. Deviation	4.96884	
		Minimum	-13.00	
		Maximum	6.00	
		Range	19.00	
		Interquartile Range	7.50	
		Skewness	.136	.409
		Kurtosis	-.536	.798

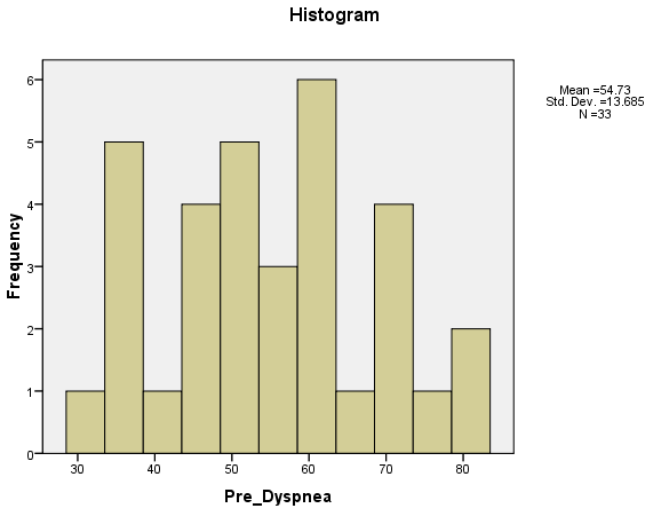
Tests of Normality

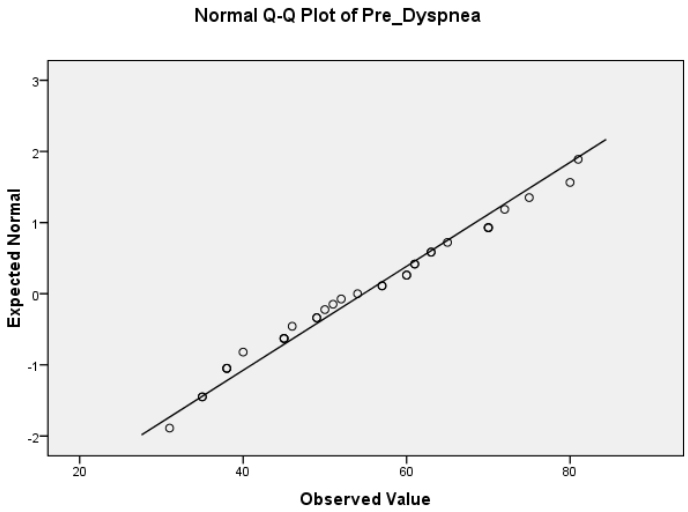
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre_Dyspnea	.080	33	.200*	.970	33	.486
Post_Dyspnea	.219	33	.000	.864	33	.001
DIFVAS	.096	33	.200*	.975	33	.643
FEV1 ก่อนการเข้าร่วมในโปรแกรม	.203	33	.001	.871	33	.001
FEV1 หลังการเข้าร่วมในโปรแกรม	.160	33	.031	.920	33	.019
DIFFEV1	.156	33	.041	.967	33	.404

a. Lilliefors Significance Correction

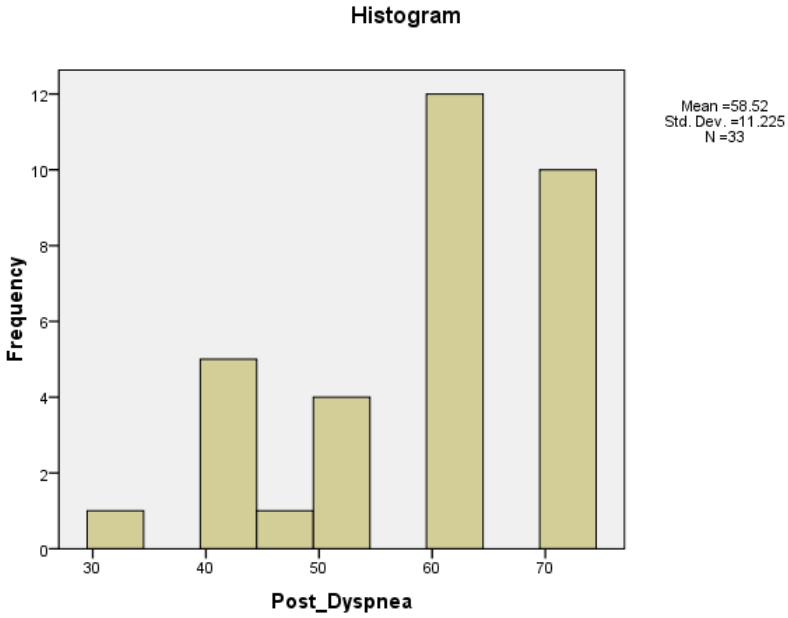
*. This is a lower bound of the true significance.

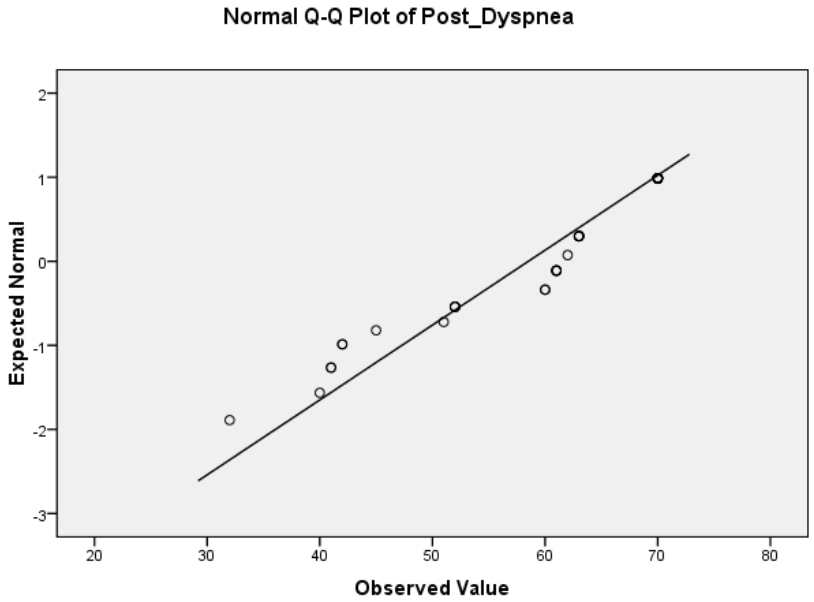
Control group: Pretset_Dyspnea VAS



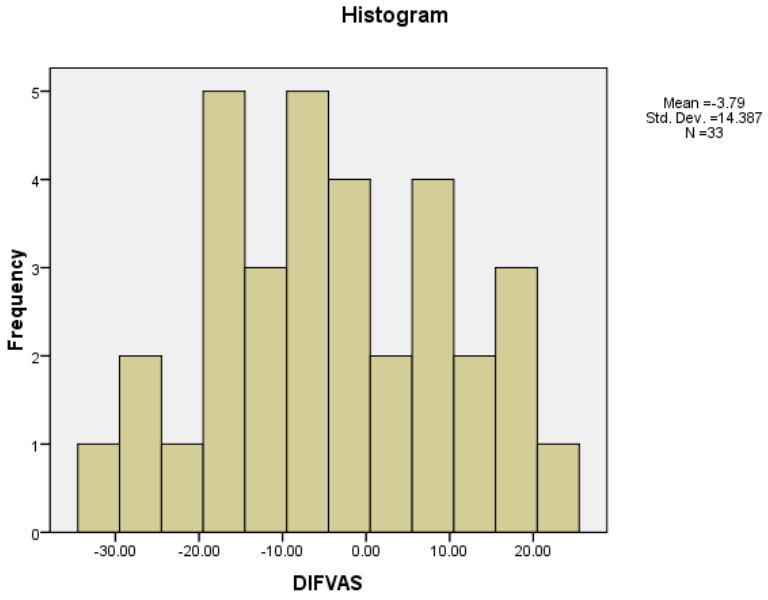


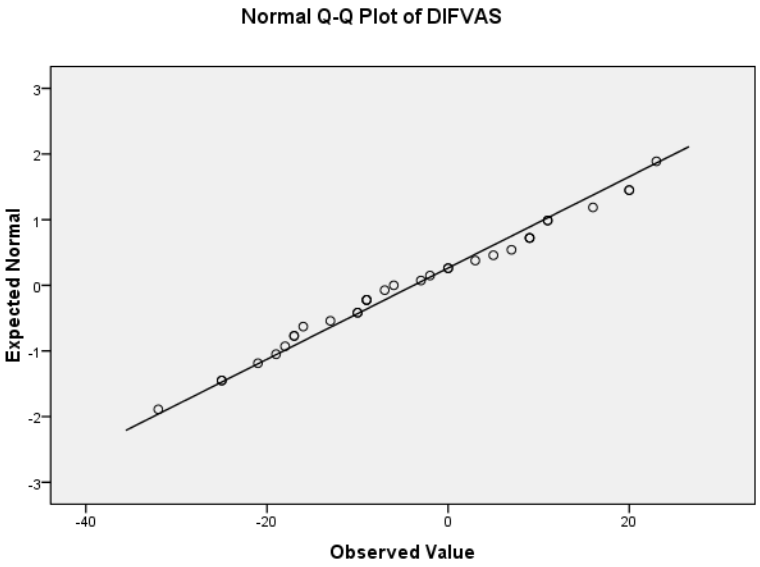
Control group: Posttest_Dyspnea VAS



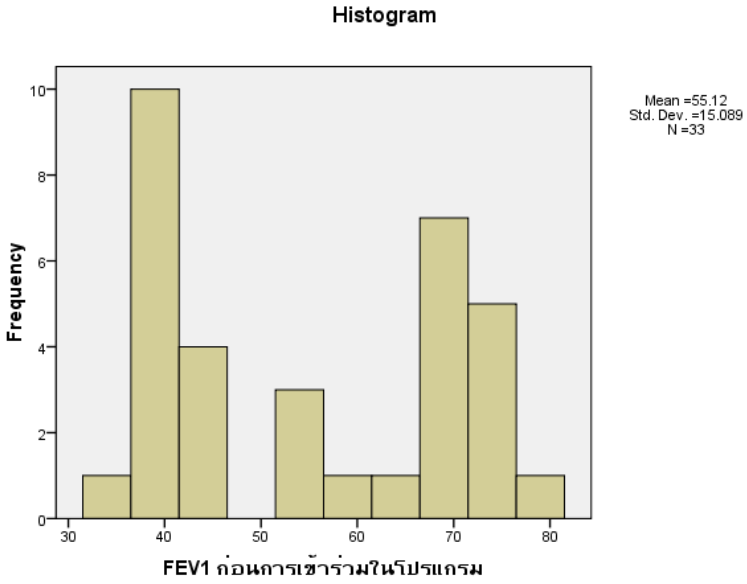


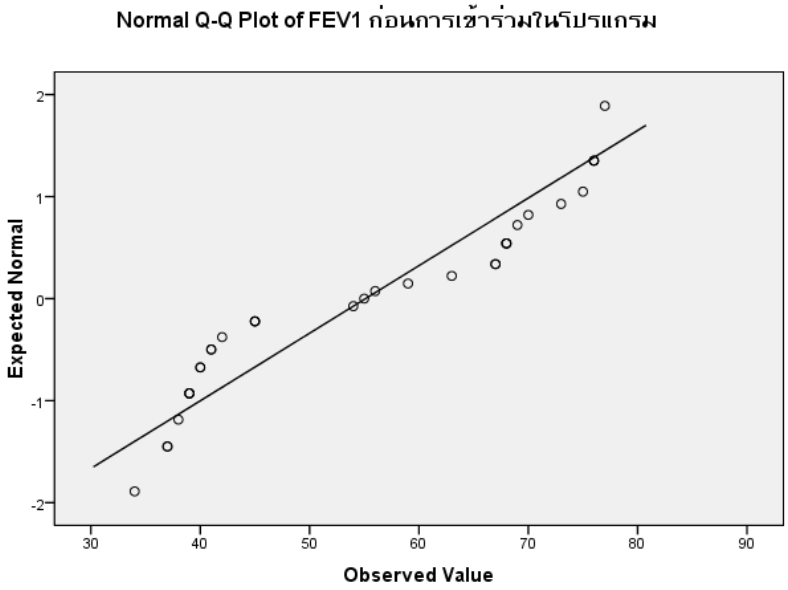
Control group: Posttest-Pretest Dyspnea _VAS



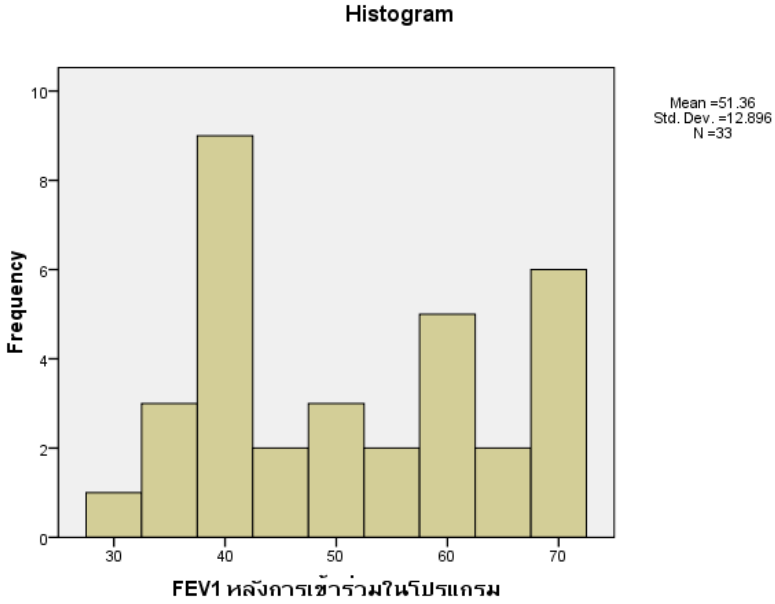


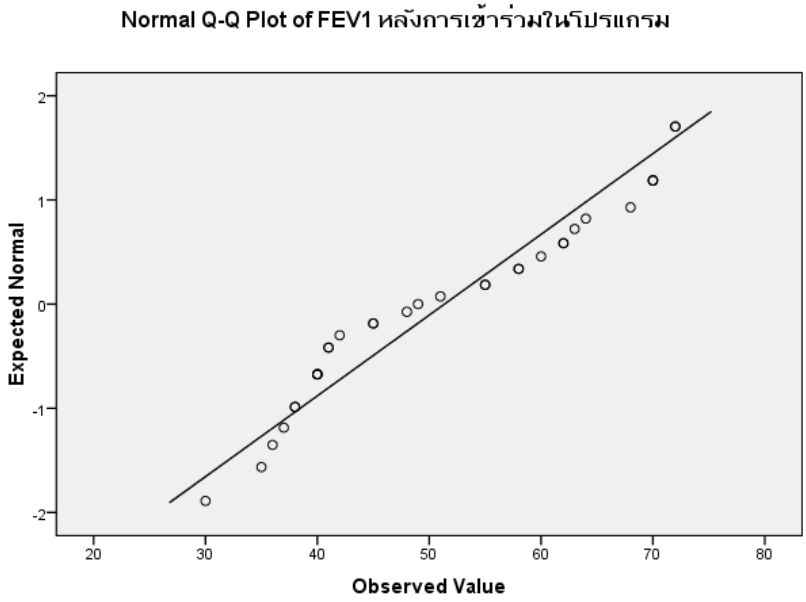
Control group: Pretest_FEV1



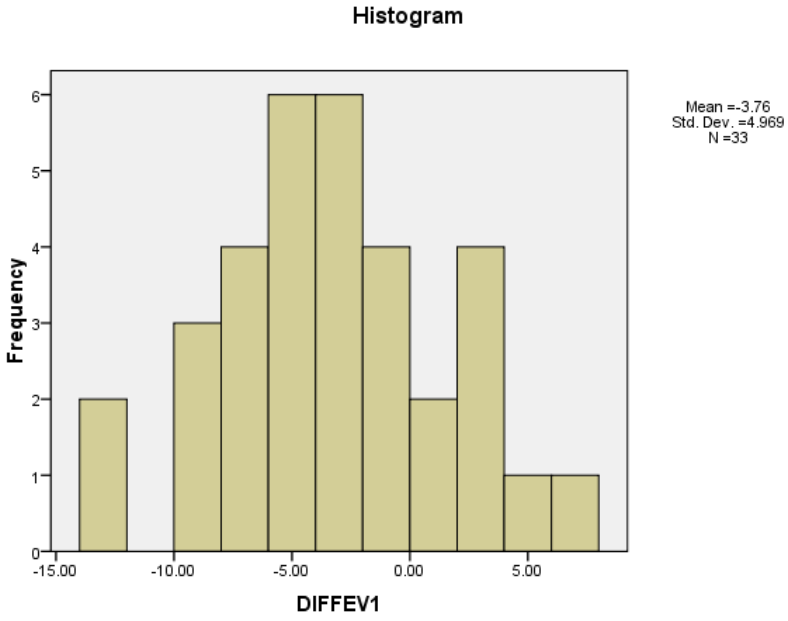


Control group: Posttest_FEV1





Control group: Posttest-Pretest_FEV1



Appendix J

Dyspnea Scores and Statistical Test

Dyspnea Score

Group	Case	Dyspnea scores pretest	Dyspnea scores posttest
Experimental Group	1	18	10
	2	65	50
	3	67	41
	4	75	23
	5	52	25
	6	68	40
	7	32	0
	8	59	42
	9	33	14
	10	74	51
	11	50	23
	12	44	34
	13	79	50
	14	41	34
	15	66	41
	16	32	0
	17	38	14
	18	71	52
	19	32	20
	20	49	53
	21	29	20
	22	62	43
	23	65	32
	24	47	30
	25	55	45
	26	34	30
	27	64	70
	28	65	42
	29	32	0
	30	51	51
	31	25	0
	32	32	15
	33	43	32

Dyspnea scores

Group	Case	Dyspnea scores pretest	Dyspnea scores posttest
Control Group	1	61	70
	2	46	63
	3	50	60
	4	38	70
	5	54	45
	6	81	70
	7	38	63
	8	49	51
	9	40	61
	10	31	40
	11	63	70
	12	57	41
	13	38	63
	14	45	61
	15	57	70
	16	63	52
	17	61	70
	18	52	52
	19	70	61
	20	75	70
	21	35	32
	22	51	70
	23	70	61
	24	45	63
	25	70	70
	26	49	42
	27	35	41
	28	80	60
	29	45	62
	30	65	42
	31	60	70
	32	60	63
	33	72	52

FEV1% Predicted

Group	Case	FEV1% Predicted Pretest (%)	FEV1% Predicted Posttest (%)
Experimental Group	1	63	73
	2	65	68
	3	35	36
	4	76	78
	5	75	77
	6	46	47
	7	75	77
	8	76	79
	9	72	73
	10	42	41
	11	66	68
	12	60	62
	13	49	48
	14	77	80
	15	35	38
	16	70	74
	17	74	75
	18	40	42
	19	76	77
	20	74	76
	21	71	73
	22	34	33
	23	54	55
	24	58	61
	25	62	62
	26	75	79
	27	50	51
	28	42	45
	29	60	63
	30	68	70
	31	72	73
	32	72	75
	33	74	73

FEV1% Predicted

Group	Case	FEV1% Predicted Pretest	FEV1% Predicted Posttest
Control Group	1	34	30
	2	63	58
	3	76	68
	4	54	48
	5	68	58
	6	45	40
	7	59	55
	8	67	70
	9	68	55
	10	67	70
	11	37	35
	12	42	45
	13	76	70
	14	77	72
	15	76	72
	16	45	51
	17	41	40
	18	75	62
	19	73	63
	20	39	40
	21	55	45
	22	40	38
	23	39	40
	24	69	64
	25	39	38
	26	45	41
	27	41	37
	28	40	36
	29	68	60
	30	37	42
	31	70	62
	32	56	49
	33	38	41

Independent t-test

Group Statistics

	กลุ่มตัวอย่าง	N	Mean	Std. Deviation	Std. Error Mean
Pre_Dyspnea	กลุ่มทดลอง	33	49.97	16.820	2.928
	กลุ่มควบคุม	33	54.73	13.685	2.382
Post_Dyspnea	กลุ่มทดลอง	33	31.12	18.008	3.135
	กลุ่มควบคุม	33	58.52	11.225	1.954

Independent Samples Test_Dyspnea VAS

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Pre_Dyspnea	Equal variances assumed	2.464	.121	-1.260	64
	Equal variances not assumed			-1.260	61.457
Post_Dyspnea	Equal variances assumed	7.005	.010	-7.416	64
	Equal variances not assumed			-7.416	53.606

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pre_Dyspnea	Equal variances assumed	.212	-4.758	3.775
	Equal variances not assumed	.212	-4.758	3.775
Post_Dyspnea	Equal variances assumed	.000	-27.394	3.694

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pre_Dyspnea	Equal variances assumed	.212	-4.758	3.775
	Equal variances not assumed	.212	-4.758	3.775
Post_Dyspnea	Equal variances assumed	.000	-27.394	3.694
	Equal variances not assumed	.000	-27.394	3.694

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pre_Dyspnea	Equal variances assumed	-12.298	2.783
	Equal variances not assumed	-12.304	2.789
Post_Dyspnea	Equal variances assumed	-34.774	-20.014
	Equal variances not assumed	-34.801	-19.987

Independent t-test

Group Statistics

	กลุ่มตัวอย่าง	N	Mean	Std. Deviation	Std. Error Mean
FEV1 ก่อนการเข้าร่วมในโปรแกรม	กลุ่มทดลอง	33	61.76	14.186	2.470
	กลุ่มควบคุม	33	55.12	15.089	2.627
FEV1 หลังการเข้าร่วมในโปรแกรม	กลุ่มทดลอง	33	63.70	14.762	2.570
	กลุ่มควบคุม	33	51.36	12.896	2.245

Independent Samples Test_FEV1% pfredicted

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	t
FEV1 ก่อนการเข้าร่วมในโปรแกรม	Equal variances assumed	1.108	.296	1.841
	Equal variances not assumed			1.841
FEV1 หลังการเข้าร่วมในโปรแกรม	Equal variances assumed	.520	.474	3.615
	Equal variances not assumed			3.615

Independent Samples Test

		t-test for Equality of Means		
		df	Sig. (2-tailed)	Mean Difference
FEV1 ก่อนการเข้าร่วมในโปรแกรม	Equal variances assumed	64	.070	6.636
	Equal variances not assumed	63.758	.070	6.636
FEV1 หลังการเข้าร่วมในโปรแกรม	Equal variances assumed	64	.001	12.333
	Equal variances not assumed	62.866	.001	12.333

Independent Samples Test

		t-test for Equality of Means
		Std. Error Difference
FEV1 ก่อนการเข้าร่วมในโปรแกรม	Equal variances assumed	3.605
	Equal variances not assumed	3.605
FEV1 หลังการเข้าร่วมในโปรแกรม	Equal variances assumed	3.412
	Equal variances not assumed	3.412

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
FEV1 ก่อนการเข้าร่วมในโปรแกรม	Equal variances assumed	-.566	13.839
	Equal variances not assumed	-.566	13.839
FEV1 หลังการเข้าร่วมในโปรแกรม	Equal variances assumed	5.517	19.150
	Equal variances not assumed	5.514	19.152

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/MISSING=ANALYSIS.
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Paired t-test

Experimental group_Dyspnea VAS

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre_Dyspnea	49.97	33	16.820	2.928
	Post_Dyspnea	31.12	33	18.008	3.135

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre_Dyspnea & Post_Dyspnea	33	.761	.000

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	Pre_Dyspnea - Post_Dyspnea	18.848	12.101	2.107

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pair 1	Pre_Dyspnea - Post_Dyspnea	14.557	23.139

Paired Samples Test

	t	df	Sig. (2-tailed)

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	Pre_Dyspnea - Post_Dyspnea	8.947	32	.000

Paired t-test

Control group_Dyspnea VAS

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre_Dyspnea	54.73	33	13.685	2.382
	Post_Dyspnea	58.52	33	11.225	1.954

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre_Dyspnea & Post_Dyspnea	33	.346	.049

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	Pre_Dyspnea - Post_Dyspnea	-3.788	14.387	2.504

Paired Samples Test

	Paired Differences	
	95% Confidence Interval of the Difference	
	Lower	Upper

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pair 1	Pre_Dyspnea - Post_Dyspnea	-8.889	1.314

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	Pre_Dyspnea - Post_Dyspnea	-1.512	32	.140

Paired t-test

Experimental group_FEV1% predicted

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม	61.76	33	14.186	2.470
	FEV1 หลังการเข้าร่วมในโปรแกรม	63.70	33	14.762	2.570

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม & FEV1 หลังการเข้าร่วมในโปรแกรม	33	.991	.000

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม	61.76	33	14.186	2.470
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	-1.939	1.999	.348	

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	-2.648	-1.231

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	-5.573	32	.000

Paired t-test

Control group_FEV1% predicted

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม	55.12	33	15.089	2.627
	FEV1 หลังการเข้าร่วมในโปรแกรม	51.36	33	12.896	2.245

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม & FEV1 หลังการเข้าร่วมในโปรแกรม	33	.949	.000

Paired Samples Test

		Paired Differences		
		Mean	Std. Deviation	Std. Error Mean
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	3.758	4.969	.865

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	Upper
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	1.996	5.519

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	FEV1 ก่อนการเข้าร่วมในโปรแกรม - FEV1 หลังการเข้าร่วมในโปรแกรม	4.344	32	.000

Appendix K

List of Expert

1. Assist.Prof. Dr. Suthat Rungruanghiranya

   Division of Pulmonary and Critical Care Medicine

   Department of Medicine, Faculty of Medicine, Srinakharinwirot University Ongkarak
2. Mrs. Krongjit Vathesatogkit,

   Action on Smoking and Health Foundation Thailand
3. Assistance Professor Doungrut WattanakitKrileart,

   Department of Medical Nursing, Faculty of Nursing, Mahidol University
4. Assistance Professor Jaruwan Manasurakan

   Faculty of Nursing, Prince of Songkla University
5. Assistance Professor Jindarat Chaiard

   Department of Medicine, Faculty of Nursing, ChiangMai University
6. Major Wiparat Navarat,

   Phramongkutklao Hospital
7. La-iad Jarusombat,

   BuddhaSothorn Hospital

VITA

Naiyana Wongsaita was born in 1975 in Chainat province. She received a Bachelor of Nursing Science from Changmai University in 1961. She has a nurse instructor at the Royal Thai Army Nursing College, 1986 to present. She had received research grant support from Graduated School, Chulalongkorn University and Tobacco Control Research and Knowledge Management Center. She had studied Philosophy Program in Nursing Science, Faculty of Nursing, Chulalongkorn University science 2011-2016.