Dyspnea Experience and Dyspnea Management in Patients With Chronic

Obstructive Pulmonary Disease in Bangladesh

Shahanaz Parveen

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Nursing Science (International Program)

Prince of Songkla University

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I hereby certify that this work has not been accepted in substance for any degree, and is not being currently submitted in candidature for any degree.

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ABSTRACT

Dyspnea is the most common and devastating symptom in patients with chronic obstructive pulmonary disease (COPD) and requires proper management. This study aims to describe the dyspnea experience and dyspnea management in patients with COPD in Bangladesh. A descriptive cross-sectional study was conducted at the outpatient department (OPD) at the National Institute of Diseases of the Chest and Hospital, Dhaka, Bangladesh. One hundred and forty patients with COPD were selected using the purposive sampling method. Data were collected using self-report questionnaires. The set of questionnaires consisted of three parts: 1) demographic characteristics, 2) the dyspnea numeric rating scale (DNRS), and 3) the dyspnea intervention scale (DIS). The content was validated by three experts. The reliability of the DNRS was tested by using test-retest reliability and yielded a coefficient of .73 for dyspnea difficulty within the past 24 hours; 1.00 for dyspnea difficulty within the past seven days; and 1.00 for dyspnea frequency within the past 24 hours and within the past seven days. The reliability of the DIS was assessed and yielded a Cronbach's alpha coefficient of .75. Data were analyzed using descriptive statistics.

The results showed that patients with COPD experienced dyspnea difficulty within the past 24 hours and within the past seven days at a moderate level ($M = 5.01$, $SD = 2.13$, and $M = 4.65$, $SD = 1.93$, respectively). The patients in this study used both pharmacological and non-pharmacological dyspnea management methods to reduce their dyspnea. The most useful dyspnea management methods were using bronchodilators, leaning forward position, and keeping still.

The research findings could guide nurses to give better advice regarding the reduction of dyspnea in patients with COPD in Bangladesh. Thus the patients with COPD in Bangladesh will have a higher quality of life.

Key words: COPD, dyspnea experience, dyspnea management

ACKNOWLEDGEMENTS

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CHAPTER 1

INTRODUCTION

Background and Significance of the Problem

Chronic Obstructive Pulmonary Disease (COPD) is a major public

health problem worldwide. It is the major cause of chronic morbidity and mortality

(Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2013).

Approximately 210 million people suffer from COPD and 3 million people die every

year because of COPD, which will become the third leading cause of death in the

world by 2030 (World Health Organization [WHO], 2008). In Bangladesh formal

reports on the prevalence of COPD are very few. The prevalence of COPD in

Bangladesh among patients attending at the outpatient department (OPD) was 0.7%

and the inpatient department (IPD) was about 5.9% (Ilias et al., 2009). The possibility

for that diagnosis of COPD is due to the fact that patients were over the age of 40

(GOLD, 2013). In fact, 3% of the general population and 6% of patients admitted to

hospital, whose age was 30 years old or more, had suffered from COPD (Zaman et al.,

as cited in WHO, 2007).

Regarding the signs and symptoms of COPD, dyspnea is the most

important and devastating symptom for patients with the disease. It is generally a

frequent and disabling symptom and a key determinant of physical performance in

COPD patients (Sassi-Dambron, Eakin, Ries, & Kaplan, 1995). Dyspnea is a

subjective experience of breathing discomfort that consists of qualitative, distinct

sensations that vary in both intensity, and relations among multiple physiological,

psychological, social, and environmental factors, which may stimulate secondary

physiological and behavioral responses (Spector, Connolly, & Carlson, 2007). The causes of dyspnea in patients with COPD are various including progressive airway obstruction and pulmonary hyperinflation, hypoxemia, hypercapnia, pulmonary hypertension, pulmonary embolism, and respiratory infection. Anxiety and depression are also causes of dyspnea in patients with COPD (Jantarakupt & Porock, 2005).

The management of COPD is aimed to relieve symptoms, prevent the progression of disease, prevent and treat secondary infections or complications, prevent and treat exacerbation, improve health status, reduce mortality, and increase quality of life (Rabe et al., 2007). To reduce dyspnea in patients with COPD, both pharmacological and non-pharmacological methods are used. Pharmacological management consists of using bronchodilators (short and long acting), morphine, antianxiety drugs, local anesthetics, antibiotics, inhaled glucocorticosteroids, combination therapy, mucolytic agents and oxygen. Bronchodilators such as beta agonist (albuterol), anticholinergics (oxitropium), and methylxanthines (theophylline) are used to relieve dyspnea in patients with COPD. Corticosteroids reduce long-term complications and oxygen is used to reduce hypercapnia (Hunter & King, 2001; Jantarakupt & Porock, 2005). Non-pharmacological management consists of using breathing exercises, positioning, energy conservation, exercise, environmental adjustment, nutritional management, relaxation techniques, education and behavioral approaches. Pursed lip breathing and diaphragmatic breathing decrease functional capacity but increase the function of respiratory muscles during inspiration and expiration, and improve gas exchange to reduce dyspnea (American Thoracic Society [ATS], 1999; Jantarakupt & Porock, 2005).

Nield (2000) conducted a study on dyspnea self-management in African American patients with COPD and sarcoidosis. The study aimed to explore dyspnea self-management methods used by these patients and made use of a semistructured interview. The results revealed dyspnea self-management themes, which consisted of traditional medical care, self-care wisdom, self-care action, and self-care resources. In addition, Christenbery (2005) conducted a survey study involving 79 patients with COPD which aimed to identify the frequency of use of dyspnea self-management strategies, and the patients' perception of self-management strategy effectiveness. The result showed that more than 50% of COPD patients selected to use moving slower, keeping still, using oxygen, performing breathing exercises, decreasing activities, and exposing themselves to more air/ventilation to reduce dyspnea. The most effective methods were moving slower, keeping still, and decreasing activities, while the least effective methods were self-management breathing strategies, except in the cases that patients had been trained to breathe effectively.

The effects of COPD contribute to the deterioration of health status, functional abilities and quality of life. Physically, the effects of COPD are muscle wasting, reducing fat free mass, osteopenia (low mineral density in bone), chronic infections, airway reactivity, abnormal cellular repair, and development of complications or comorbid diseases. Physical destruction gradually affects daily activities that create economic, social and personal impact for patients and their families (Gonzalez-Moro et al., 2009; Mannino & Buist, 2007). Physical weakness leads to psychological distress, such as anxiety, depression, panic and also dependence on bronchodilators. In patients with COPD, the major emotional

consequence is fear which has been related with increase dyspnea, dependency, respiratory crises, as well as with death. Physical inactivity leads to psychological effects such as, a feeling of separation, lack of support, vulnerability, anxiety, hopelessness, powerlessness or loss of freedom, and self-blame (Simpson & Rocker, 2008). Exacerbation of COPD requires an emergency hospital visit, hospital admissions and consequently increases the use of health care resources. The disease of COPD is predicted to increase globally in future decades and the complications will continue to cause suffering and premature death in patients (Gadoury et al., 2005).

There is only one special hospital for treating COPD in Dhaka, Bangladesh, the National Institute of Diseases of the Chest and Hospital (NIDCH). It is one of the tertiary level referral hospitals for the treatment in patients with COPD. The hospital is equipped with both indoor and outdoor facilities to meet the demands of the patients. Until now, COPD is still a major public health problem in Bangladesh. It may be because of the inappropriate treatment facilities, limited hospital beds, shortage of doctors and nurses, and limited supply of medicine.

Even though dyspnea management is crucial for the patients with COPD, little is known about the dyspnea experience and the methods used to relieve dyspnea in patients with COPD in Bangladesh. A symptom management model, as described by Dodd et al. (2001), is suitable to use in this study because it provides the direction to explore symptoms and symptom management. The findings of this study could guide nurses and other health care providers to provide better advice and services for patients with COPD by recognizing dyspnea symptom and proving more effective management.

Objectives

The objectives of this study were as follows:

1. To identify the level of dyspnea experience among patients with COPD in Bangladesh

2. To identify the methods of dyspnea management used by patients with COPD in Bangladesh

Research Questions

The research questions of this study were as follows:

1. What is the level of dyspnea experience among patients with COPD in Bangladesh?

2. What are the methods of dyspnea management used by patients with COPD in Bangladesh?

Conceptual Framework

In this study the researcher applied the symptom management model developed by Dodd et al. (2001) to understand dyspnea experience and the methods of dyspnea management used by patients with COPD. This model composed of three dimensions: 1) symptom experience, 2) symptom management strategies, and 3) symptom outcomes. These dimensions are influenced by three domains, namely: person domain, health and illness domain, and environment domain. Each dimension is described as follows:

Symptom experience

Symptom experience consists of three concepts: perception of symptoms, evaluation of symptoms, and response to symptoms (Dodd et al., 2001). These are further explained below:

Perception of symptoms. Perception of symptoms refers to a patient's personal awareness regarding changes in the way he or she usually feels or behaves. In this study perception of symptoms is used to explore the perception of patients with COPD regarding the occurrence of dyspnea.

Evaluation of symptoms. Evaluation of symptoms is making a decision about the difficulty, cause, treatability and effects of symptoms. Evaluation of symptoms represents the evaluation of difficulty and frequency of dyspnea experienced by patients with COPD.

Response to symptoms. Response to symptom refers to patients' response to the physiological, psychological, socio-cultural and behavioral mechanisms (Dodd et al., 2001).

In this study, the researcher included those patients with COPD who reported that they had dyspnea symptom within the last three months. With this regard the perception of this symptom was already recognized by the patients. However, the perception of dyspnea can be assessed by examining how often (frequency) it occurs during a certain period of time. The evaluation of symptoms and response to symptoms were further conceptualized to be specific for this study. The researcher conceptualized these two dimensions as "dyspnea difficulty" in order to combine both evaluation and response. Dyspnea difficulty denotes a sense of evaluation in which

patients with COPD make a decision about the severity. It also represents a sense of physiological response of how hard they have to encounter with.

Symptom management strategies

Symptom management strategies are defined as the management of symptoms through biomedical, professional, and self-care strategies to manage or prevent the symptoms. The intervention depends on the particular nature of symptoms and individual acceptance of the methods (Dodd et al., 2001). In this study, the following were explored: Which methods were used to decrease dyspnea; the frequency of use; and the effectiveness of each method used by the COPD patients.

Symptom outcomes

Symptom outcomes refer to the outcomes of symptom management strategies as well as symptom experience. Symptom outcomes reflect the effectiveness of symptom management strategies (Dodd et al., 2001).

In this study, the researcher explored only two dimensions, which were dyspnea experience and methods of dyspnea management used by the patients with COPD. The domains that could influence dyspnea experience and dyspnea management were not directly investigated. However, related data were collected to help describe dyspnea experience and its management.

<p align="center">**Definition of Terms**</p>

Dyspnea experience

Dyspnea experience refers to dyspnea difficulty and dyspnea frequency described by patients with COPD. Experiences of dyspnea during the past 24 hours and the past 7 days were measured using the dyspnea numeric rating scale modified

from Christenbery (2005). The frequency of dyspnea experience described by the patients with COPD reported as how often they got breathing difficulty within the past 24 hours and within the past 7 days. The dyspnea experience was measured by patients' self report dyspnea numeric rating scale (DNRS), a 0 to 10 point numeric rating scale which range from 0 (no difficulty at all) to 10 (most difficulty).

Dyspnea management

Dyspnea management refers to methods used to decrease breathing difficulty in patients with COPD, frequency of use, and perceived effectiveness of the methods. Dyspnea management was measured by a dyspnea intervention scale that the researcher modified from Christenbery's study (2005) and literature review.

Scope of the Study

This descriptive research investigated the dyspnea experience and dyspnea management in patients with COPD in Bangladesh. The subjects who were suffering from COPD were recruited from the out-patient department of the National Institute of Diseases of the Chest and Hospital, Mohakhali, Dhaka, Bangladesh. Data were collected from January to March 2013.

Significance of the Study

This study provides information related to dyspnea experience and methods of dyspnea management that the patients used to manage their dyspnea. Furthermore, the finding of this study would be beneficial to assist health education and nursing interventions to promote better management of dyspnea in patients with COPD. Thus, the patients with COPD in Bangladesh will have a higher quality of life.

CHAPTER 2

LITERATURE REVIEW

This chapter focused on literature review relevant to the present study.

The outlines of this review are presented as follows:

1. Overview of COPD

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    1.2 Causes of COPD

    1.3 Signs and symptoms of COPD

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Overview of COPD

Definition of COPD

According to GOLD (2013), COPD is a disease of the lungs. COPD is characterized by constant chronic airflow limitation and does not facilitate fully reversible, as well as pathological changes associated with chronic inflammatory responses in the airways of the lungs. COPD is a preventable and treatable disease with some significant extra pulmonary effects, and characteristics which may contribute to the severity of the disease in individual patients. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to harmful particles or gases (Pauwels, Buist, Calverley, Jenkins, & Hurd, 2001).

From the definition of COPD above, it can be summarized that COPD is a heterogeneous disorder or an umbrella type of disease that encompasses habitual scientific entities such as emphysema, chronic bronchitis, and chronic airway obstruction, and it fluctuates from person to person (Dewar &Curry, 2006). Some pathophysiological changes, such as parenchymal tissue destruction, disrupt normal defense mechanisms that lead to air tapping and progressive airway limitation of COPD patients (GOLD, 2013).

Causes of COPD

Risk factors that cause COPD are mainly host factors and environmental exposure. Host factors consist of genetic factors, airway hyper responsiveness, and hereditary deficiency of alfa$_1$ antitrypsin and lung growth. Environmental exposures are smoking and exposure to occupational dust and

chemicals substances (vapors, irritants, and fumes), indoor and outdoor air pollution, infections, and socioeconomic status (Pauwels et al., 2001; Rabe et al., 2007).

Genetic factors. Genetic factors are closely associated with the process of developing COPD. Genetic factors influence variation in pulmonary function. Deficiency of the serine protease 1 antitrypsin is hereditary; furthermore low concentration of enzyme arises in 1–3% of patients with COPD. Specific polymorphisms of the genes are: transforming growth factor 1, tumor necrosis factor 1, and microsomal epoxide hydrolase which develop the disease (Mannino & Buist, 2007; Pauwels et al., 2001). Heterozygotes are the predictable risk factors that cause COPD. Genes such as 1-antichymotrypsin, 2macroglobulin, and vitamin D binding protein and blood group antigens are related to the development of COPD (Sandford & Silverman, 2002).

Age and gender. Age is a significant risk factor in the prognosis of COPD. The prevalence of COPD increases with age; lung functions start to decline in the third and fourth decades of life (Mannino & Buist, 2007). People over 65 years old have a significant risk of COPD 12.4 times more than younger people (Esteban et al., 2011). The prevalence of COPD was greater among men than women but was similar in men and women in developed countries. Changing patterns of tobacco smoking is the probable cause of increased COPD (Pauwels et al., 2001).

Environmental factors. Smoking is a major cause of COPD. Tobacco smoking is the major risk factor contributing to 80 to 90 percent of COPD. Even though cigarette smoking is a major risk factor in regard to COPD, only 20 percent of cigarette smokers develop clinically significant COPD (Dewar &Curry, 2006). However, cigarette smoking is the most common risk factor causing a higher

prevalence of respiratory symptoms, lung function abnormality, and decline in the forced expiratory volume in one second (FEV_1), and a higher death rate for COPD suffers. Passive smoking also increases the risk of COPD. Smoking during pregnancy affects the fetus lung and development (Pauwels et al., 2001).

Exposure to biomass fuels such as coal, straw, animal dung, crop residues, and wood used to heat and cool in poorly ventilated homes are also global risk factors in developing COPD. In low and middle income countries, 35% of people develop COPD after exposure to indoor smoke from biomass fuels. Outdoor air pollution also causes development of COPD, 1% in high income countries and 2% in low and middle income countries. In USA, occupational exposure attributed to 19.2% of COPD (Mannino & Buist, 2007). Occupational exposure, for instance exposure to organic and inorganic dust, chemical agents, and fumes, is also responsible for the cause 10 - 20% of COPD (American Thoracic Society as cited in Rabe et al., 2007).

Socioeconomic status. Poverty is also a risk factor with regard to COPD. Socioeconomic status, for example education and income, contributed to the development of COPD. Poor socioeconomic status such as, poor nutritional status, overcrowding, exposure to pollutants, poor access to health care, and early respiratory infections lead to development of COPD in low and middle income countries (Mannino & Buist, 2007).

Signs and symptoms of COPD

Dyspnea, fatigue, and muscle weakness are the most disabling symptoms of COPD patients. Further symptoms are productive and nonproductive cough, chronic sputum production, diminished capacity to breath, increase in carbon-

di-oxide and decreased oxygen intake, ruddy skin color, and cyanosis. In addition, patients may have eating difficulty, weight loss, malnourishment; lung sound shows crackles and wheezing, and chest tightness (Rabe et al., 2007). Other signs and symptoms are activity limitation, loss of appetite, sleeplessness, bad temper, tightness of the chest, pruritus, and thirst (Janssen, Spruit, Uszko-lancer, Schools, & Wouters, 2011).COPD often has comorbid condition, such as diabetes, hypertension, ischemic heart disease, heart failure, malnutrition, normocytic anemia, muscle wasting, cardiovascular disease, pulmonary hypertension, osteoporosis, metabolic and endocrine disorder, depression or anxiety, and chronic infections (GOLD, 2013; Mannino & Buist, 2007).

Diagnosis of COPD

According to GOLD (2013), a clinical diagnosis of COPD depends on the presence of the following characteristics, such as dyspnea, chronic cough or sputum production, and a history of exposure to risk factors. Spirometry test is a test that can assess the condition of COPD. When performing post-bronchodilator spirometry, airflow obstruction is confirmed by calculating the following ratio- forced volume in one second /forced vital capacity (FEV_1/FVC). If the FEV_1/ FVC had a result of 0.7; then it confirms the presence of airflow limitation that is not fully reversible and therefore the presence of COPD. According to GOLD treatment guidelines, diagnosis of severity of COPD is categorized into four stages: mild, moderate, severe, and very severe (Rabe et al., 2007).

Stage 1: mild COPD: In the first stage of COPD, the patients may present with symptoms of chronic cough and sputum production and mild airflow

limitation. In this stage they may unaware of the abnormal function of the lungs. Mild COPD can be classified with $FEV_1/FVC < 0.7$, FEV_1 80% normal.

Stage 2: moderate COPD: The second stage of COPD is characterized by worsening airflow limitation ($FEV_1 / FVC < 0.70$, FEV_1 50 - 79% normal). In moderate stage, patients usually attempt to find medical awareness of their chronic respiratory symptoms or an exacerbation of the disease.

Stage 3: severe COPD: The third stage or severe COPD is characterized by greater shortness of breath, reduced exercise capacity, fatigue, and repeated exacerbations, and increased airflow limitation ($FEV_1/ FVC < 0.70$, FEV_1 30 – 49% normal).

Stage 4: very severe COPD: The fourth stage or very severe COPD is characterized by airflow limitation ($FEV_1/ FVC < 0.70$, $FEV_1 < 30\%$ normal or $FEV_1 < 50\%$ normal with chronic respiratory failure).

COPD can be diagnosed after clinical evaluation and a confirmed spirometry test. Chest radiography and other tests also help to determine the phenotype and physiological characteristics of individual patients with diagnosed COPD. COPD progresses in mid-life, symptoms progress slowly, and is worsened by a long history of smoking (Celli et al., 2004).

Management for patients with COPD

Management for patients with COPD depends on the severity of disease and individual's response to therapy. According to Clini and Ambrasino (2008), and Jantarakupt and Porock (2005), the treatment plan should follow these essential elements:

1. Pharmacological management consists of bronchodilators (short acting and long acting), morphine, antibiotics, inhaled glucocorticosteroids, combination therapy, mucolytic agents, oxygen therapy, and alternative drugs.

2. Nonpharmacological management consists of rehabilitation, long term oxygen therapy, surgery, noninvasive pressure ventilation and supportive nutrition.

Pharmacological management. There are no accessible medications that treat the long term decreasing lung function in patients with COPD. For that reason, pharmacological treatment is used to prevent and control the severity of disease, and decrease symptoms and complications of disease. The following medications are used to manage symptoms in patients with COPD:

Bronchodilators. Bronchodilators are fundamental treatment to the symptomatic management of COPD. Bronchodilators are used according to the need of the patient's condition. It increases FEV_1 and reduces dyspnea by reducing dynamic hyperinflation, improving exercise tolerance, decreasing frequency of exacerbation, and reversing airway obstruction, airway smooth muscle contraction, micro-vascular leakage, and mediators that cause bronchoconstriction. The common bronchodilators used in treating COPD are beta$_2$-agonists, and methylxanthines. Bronchodilators are used to reduce the frequency and severity of exacerbations, improve health status, and improve tolerance to symptoms of dyspnea by reducing hyperinflation (Ambrosino & Serradori, 2006; Gibson, 2001; Valk, Monninkhof, Palen, Zielhuis, & Herwaarden, 2004).

Long acting beta-agonists (formoterol, salmeterol) are the drugs that facilitate stimulating of beta$_2$-adrenoreceptors, progressing forced expiratory volume,

increasing cyclic adenosine monophosphate (CAMP) concentrations and which lead

to relaxation of the smooth muscles, thus decreasing dynamic hyperinflation and

dyspnea (Ambrosino & Serradori, 2006; Hunter & King, 2001). Short-acting beta$_2$-

agonists are Fanatical, Sulbutamol, Terbutamol, Ipratropium bromide. These drugs

reduce the bronchoconstriction by blocking acetylcholine on postganglionic

cholinergic nerves.

Anticholinergic oxitropium bromide (short acting bronchodilators)

decreases breathlessness and progresses walking distance separately from changes in

forced expiratory volume in one second (FEV$_1$). Nonselective anticholinergics such as

ipratropium bromide and placebo could lead to large improvements in low peak and

mean FEV$_1$. Another anticholinergic (tiotropium) is a long acting drug that improves

lung function, reduces dyspnea, and exacerbations, and leads to the inhibition of the

resting bronchomotor pitch reducing hyperinflation of the lungs (Ambrosino &

Serradori, 2006; Gibson, 2001).

Theophylline (long acting bronchodilators) increases the tolerance to

exercise, reduces thoracic gas volume, and improves muscle performance.

Bronchodilators are a cornerstone in management and treatment in COPD patients.

Bronchodilators such as salemetrol and ipratropium reduce the frequency of

exacerbation and improve lung function and dyspnea and increases exercise capacity.

Bronchodilators are an effective and safe drug for the treatment of COPD, easy to

administer with less side effects (Ilias et al., 2009).

Corticosteroids. Corticosteroids had a beneficial effect on COPD by

improving the clinical outcomes, reducing hospital stay, and increasing FEV1.

Corticosteroids reduce the adverse effects of COPD, such as hyperglycemia,

secondary infection, and behavioral changes. Corticosteroids exaggerate response by inhibiting neutrophil apoptosis. The use of inhaled corticosteroids improves lung functions. The common corticosteroid used is methylprednisolone sodium succinate (Hunter & King, 2001). Inhaled corticosteroids were used to reduce respiratory symptoms, decrease the frequency or severity of exacerbations, and improve health-related quality of life. N-acetylcysteine (NAC) is used to reduce the risk of recurrent exacerbations. Corticosteroids were used to reduce recovery time of exacerbation, improve lung function and arterial hypoxemia, and reduce the risk of early relapse, treatment failure and length of hospital stay (GOLD, 2013).

Antibiotics. The management of COPD by using antibiotics has shown an important effect. Antibiotics are used to treat impaired airways resistance in patients with COPD against streptococcus pneumoniae, Haemophilus influenzae and moraxella catarrhalis. In the outpatient department, doxycycline, trimethoprim-sulfamethoxazole, and amoxicillin-clavulanate are the antibiotics used in the management of COPD. In hospitalized COPD patients, antibiotics are given intravenously, such as penicillin, cephalosporin, marcrolide etc. Antibiotics are used to reduce the duration of illness (Hunter & King, 2001). Antibiotics should be used against the bacterial resistance pattern and the symptoms of COPD (GOLD, 2013). Antibiotics such as doxycycline, trimethoprim-sulfamethoxazole, penicillin, and cephalosporin are used to reduce exacerbation of COPD.

Mucolytics. Mucolytics (ambroxol, erdosterine, carbocysteine, iodinated glycerol) are medications of aiding expectoration. Mucolytics expectorate the viscosity of sputum and improve expectoration. Carbocisteine and mecysteine

hydrochloride reduce mucus hypersecretion and disability during exacerbations (GOLD, 2013).

   Anxiolytics. Anxiolytics are used to discourage hypoxic or hypersonic ventilatory responses by varying the emotional response to dyspnea (ATS, 1999). Anxiolytics are used to relieve anxiety or panic attacks associated dyspnea (Spector et al., 2007). Anxiolytics such as benzodiazepines and phenothiazines reduce distress associated dyspnea with its sedative action (Jantarakupt & Porock, 2005).

   Opioids. Opioids are slow-release preparations. Opioids decrease dyspnea perception and lower the ventilatory power. Opioids increase exercise tolerance and decrease exercise induced dyspnea (Spector et al., 2007). Opioids such as morphine may reduce the response of the central chemoreceptor's to hypercapnia and decrease the response of peripheral chemoreceptor's to hypoxemia and decrease the perception of dyspnea (Jantarakupt & Porock, 2005).

   Nonpharmacological management. Nonpharmacological management such as breathing techniques and positioning are useful to reduce dyspnea in patients with COPD (Jantarakupt & Porock, 2005). Pulmonary rehabilitation, long term oxygen therapy, surgery, noninvasive pressure ventilation, and supportive nutrition are also used to manage symptoms for COPD patients (Clini & Ambrasino, 2008).

   Breathing techniques. Breathing techniques such as pursed-lip and diaphragmatic breathing reduce respiratory rate and control dyspnea. Pursed-lip and diaphragmatic breathing increases of the effectiveness respiratory muscle, reduces the work of the diaphragm, increases tidal volume and alveolar ventilation, decreases

functional residual capacity. Controlled breathing decreases oxygen consumption, decreases carbon dioxide production and lowers the respiratory rate, and thus decrease dyspnea (Jantarakupt & Porock, 2005).

Positioning. Positioning can help reduce dyspnea in patients with COPD. Leaning forward sitting position provides more space for lung expansion and gas exchange that help the patients to get more oxygen (Jantarakupt & Porock, 2005).

Traditional medicine. In Bangladesh 70 -75% of people use traditional medicine for the management of their health problems. Complementary and alternative medicine such as herbal remedies, homeopathy, religious and magical methods are practiced in Bangladesh. Traditional medicine such as liquids (infusions, decoctions, elixirs and tinctures), semi-solids (pastes, creams and ointments), solids (whole or powdered plant parts, pills and tablets), and gases (incense, fumigants and inhalants) are used in various dosage forms. It is used less in the treatment of respiratory diseases (Islam & Farah, 2008).

Oxygen. Oxygen therapy is used to increase the arterial oxygen saturation and preserves organ function by ensuring adequate oxygen supply (saturation at least 90%). Use of long-term oxygen prolongs survival, improves functional activity in hypoxemic COPD patients. In addition, the long term use of oxygen reduces hypoxia, as well as the effects of hypoxia in patients with COPD. Oxygen therapy is given on the basis of individual patient needs (Pauwels et al., 2001; Uronis, Currow, & Abernethy, 2006).

Cessation of smoking. As smoking is a major cause of COPD, cessation of smoking is paramount to managing COPD. Cessation of smoking reduces the decline in pulmonary function, improves the prognosis of disease, and enhances

quality of life. Structured counseling is needed to reach cessation success of long term

addicted patients by a variety of smoking cessation programs, pharmacological and/or

behavioral rudiments (Valk et al., 2004). Investigation of smoking habits and the

assessment of the intention to stop smoking are essential. Components of smoking

cessation programs are medical advice, behavioral management, nicotine replacement

therapy and administering bupropion (Gibson, 2001).

Physical activity. Physical activity modification, such as keeping still,

moving slower, and decreasing activity was used to control dyspnea. Kept still makes

a balance when performing activity in patients with COPD and helps to reduce

dyspnea (Christenbery, 2005). Dyspnea leads to inactivity, physical reconditioning,

and a vicious circle that result in disturbing responses. Physical exercise improves the

exercise intolerance in patients with COPD (Valk et al., 2004).

Nutritional management. Nutritional supplementation improves the

negative effect of muscle weakness and weight loss in patients with COPD.

Supplemental nutrition improves the survival of COPD patients by increasing body

weight and muscle mass strength. Nutritional reduction is a negative impact on

respiratory and peripheral muscle functions (Uronis et al., 2006). Promoting optimal

nutritional status is one aspect of COPD management that may help to prevent further

progression of the disease. It is beneficial for patients with COPD to have several

small, energy-dense, fortified meals and snacks throughout the day. Some tips to

achieve maximal food intake are: at meal time, maintain an upright position (during

and after meal) take a rest before the meal if possible, ensure the food is soft and easy

to chew, eat slowly and avoid swallowing air, avoid food that causes gas or bloating, a

limited intake amount of salt, avoid fluids before the meal, drink fluids after a meal (Shepherd, 2010).

For the management of COPD, the patients can use both pharmacological and nonpharmacological management to reduce their dyspnea. In addition, patients can use problem-focused and emotion-focused strategies to manage dyspnea. Problem-focused strategies are the strategies used to alleviate or eliminate the problem (Moosa, & Munal, 2012). In cases of patients with COPD, problem-focused strategies consisted of positioning and motion, breathing strategies to avoid irritating factors, and use of oxygen or medications. Emotion-focused strategies consisted of self isolation and reduce tension through relaxation, prayer, and soothing approaches (Nield, 2000).

Impacts of COPD on the patients

COPD can affect on a patient's life in many ways, and can be classified as physical, psychological, financial, and social impact.

Physical impact on the patients. COPD is insidious condition and progresses asymptomatically with the exception of some cough and sputum production. This is followed by a period of time when the most common symptom of increased breathlessness during exertion can be ignored or misinterpreted as a natural process of aging. Over the course of the disease breathlessness on exertion progressively deteriorates to the point where physical activity and further deterioration in breathlessness and reduces exercise capacity as well as quality of life (Mannino & Buist, 2007). COPD is a systemic disease that has an effect on beyond

pulmonary malfunctioning and the effects of abnormal systemic inflammation, nutritional abnormalities and skeletal muscle dysfunction.

Psychological impact on the patients. Not only the physical aspect but also the psychological aspect of the patients is affected by COPD. Impaired oxygen exchange affects neurological and cognitive functioning in the patients with COPD. The psychological effects of COPD are apparent in patients' concept of themselves and that has a serious consequence on their self-esteem, accompanied by feeling of loss and distress, a feeling of self-blame and the sense of being a burden of others. Anxiety, panic, strong dependence on release bronchodilators, physical limitations and impulsiveness also leads to substantial psychological distress. The major emotional effect of COPD is fear, and that has been linked with increasing dyspnea, dependency, respiratory crises. Fear arises from a sense of more generalized susceptibility due to increasing dependency (Simpson & Rocker, 2008). The patients may be uncomfortable to be in public for a variety of reasons. For example, they may be unwilling to accept the loss of autonomy and the subsequent need for help and they maybe frustrated. Finally, they may become angry and increasingly isolated from friends or families (Mannino & Buist, 2007).

The financial impact of COPD. The financial impact of COPD results from both direct and indirect expenditure on health care resources. Direct cost is the charge on health care resources for diagnosis, investigation, and therapeutic management. Indirect cost is the consequence of disability, missed work, premature mortality, and caregiver or family cost resulting from the illness. Fletcher et al. (2011) conducted a cross-country study including 6 countries (Brazil, Chaina, Germany, Turkey, US, and UK), to investigate the personal, economic and social burden on

COPD patients of working age. The results of their study varied from one country to another. In developing countries, COPD exacerbation was responsible for the major drain on the health care system. For people who are prematurely retired due to COPD, the loss of earning in an average life time was $316,000 per person. Over one third of the respondents (37%) reported that their income had decreased as the consequences of COPD. Eighty percent of the respondents reported the consequences of COPD had a negative effect on their life (Fletcher et al., 2011).In the European Union, 6% of finances are spent on respiratory diseases. Fifty six percent of the total health care finances (38.6 billion Euros) was used in COPD. The direct cost, in the United States in 2002, was $18 billion and indirect costs were $14.1 billion which were used toward COPD. The expenditure depends on individual countries' health care finance, and varies from country to country (GOLD, 2013; Rabe et al., 2007).

    Social impact of COPD. The social impact for patients with COPD occurs when the patients retire prematurely from full time work. COPD leads to physical inactivity, absenteeism of work, loss of productivity, missed work hours (Fletcher et al., 2011). Social stigma has a significant affect in various aspects. The patients with COPD are stigmatized by their families, friends, and community members. The disease affects his or her self-esteem, and engagement in social activities, as a result having implications toward social support, which may lead to isolation. Sometimes COPD patients receive stigma from their health care personnel that influences them to do a health care inauguration and use of specific treatment. COPD patients feel shame and distress, and are indecisive when seeking care for fear of judgment or negative repercussions associated with having the condition. COPD

patients are rejected by others because of their functional limitations (Johnson,

Campbell, Bowers, & Nichol, 2007).

Dyspnea in Patients With COPD

This section describes the concept of symptom experience and

symptom management based on Dodd et al. (2001)'s model, dyspnea experience and

dyspnea management in patients with COPD, and factors related to dyspnea

experience in patients with COPD.

Concept of symptom experience and symptom management

In this study, the symptom management model developed by Dodd et

al. (2001) was used. This model focuses on the nursing domains that influence

symptom experience, symptom management and symptom outcomes which are

related to the nursing profession.

Dimensions of symptom management model. This model has three

dimensions. Symptom experience, symptom management, and symptom outcomes are

the key components in this model.

Symptom experience. Symptom experience is a dynamic process that

involves the interaction of the patient's perception of symptoms, evaluation and

response of symptoms. Perception of symptoms refers to the change of an individual

regarding the way that the individual's failure to perform or behaves as usual.

Evaluation of symptoms is how individuals judge the character of the severity, cause,

treatability, of the symptoms and the effect on their lives. Response refers to the

change in an individual's functioning including physiological, psychological,

sociological, and behavioral components (Dodd et al., 2001).

Symptom management. The symptom management strategies that use or practice biomedical, professional and self-care ways to prevent or for managing occurrence are dynamic processes, often requiring a change over time depending on response to acceptance or lack of acceptance relative to desired outcome. Symptom management begins with assessment of the symptom experience from the individual's perspective, 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. Symptom management strategy includes the specifications of frequency of uses and effects of interventions (Dodd et al., 2001).

Symptom outcomes. Symptom outcomes refer to the outcome of symptom management strategies as well as symptom experience. Symptom outcomes depend on the need of continuous intervention and response to treatment (Dodd et al., 2001).

Domains of symptom management model. The recognized nursing domains (Dodd et al., 2001) that relate to symptom management model include (1) person, (2) health and illness, and (3) environment. The three domains of nursing science are described:

Person domain. The person domain is a fundamental approach of individual views and reaction to the symptom experience that has variables of demography, psychology, and physiology of a person.

Health and illness domain. Health and illness domain has variables which are exclusive to the state of health or illness of an individual and includes risk

factors, injuries, or disabilities. Symptom experience, management strategies and outcomes have direct and indirect effects on the individual.

     Environmental domain. Environmental domain is a common situation of physical, social, and cultural variables of the patient. The physical environment may consist of home, work, and hospital. The social environment includes social support network, interpersonal relationships, beliefs, values, practices that are distinctive to one's identified ethnic, racial, and religious group.

     In summary, there are three nursing domains that comprise of person domain, health and illness domain, and environment domain. These three domains are contextual variables influencing three dimensions. These dimensions are symptom experience, symptom management strategies, and symptom outcomes.

Dyspnea experience in patients with COPD

     In COPD, dyspnea is a significant and devastating symptom experienced by patients with COPD. Dyspnea affects the performance of daily activities, and reduces daily activity levels, changes happen in individual's overall quality of life (Moore & Berlowitz, 2011). Dyspnea is a subjective experience that can only be measured from the patient's perceptions. Every person has different thresholds for noticing, reporting, and rating the severity of these symptoms. Dyspnea is the most commonly experienced complaint of COPD patients and largely related to a reduction in vital capacity of the lungs (Rabe, 2006).

     In COPD patients it is difficult to assess the intensity or the severity of symptoms. Dyspnea is one of the most distressing symptoms of COPD. Dyspnea drives from patients' own experience or responses. Dyspnea occurs from several

factors of varying extent, and contributes to the clinical presentation of patients (Rabe, 2006). Dyspnea occurs in COPD patients when various pathological changes occur, such as progressive airway obstruction and hyperinflation of the lung as a result of hypoxemia, hypercapnia, pulmonary hypertension, pulmonary embolism, respiratory infection. Anxiety and depression also cause dyspnea in patients with COPD (Jantarakupt & Porock, 2005).

       Measurement of dyspnea. Various measurement tools are used to measure dyspnea in patients with COPD. The common unidimensional tools are (1) numeric rating scales (NRSs), (2) visual analogue scale (VASs), and (3) the modified Borg scale. The dyspnea numeric rating scale (DNRS) is a valid measurement tool to measure dyspnea. Gift and Narsavage (1998) conducted a study with 188 patients with COPD. The purpose of their study was to establish the validity of numeric rating scale as a measure of present dyspnea. They used both a visual analog dyspnea scale and dyspnea numeric rating scale to measure present dyspnea and usual dyspnea. The study found that the concurrent validity of the numeric rating scale as evident by a high correlation with the visual analog scale. The researchers concluded that the numeric rating scale was a valid instrument to measure of present dyspnea. The numeric rating scale is a categorical scale to measure dyspnea intensity (Spector et al., 2007).The VAS is a horizontal or vertical line that is 0-100 mm and use to measure dyspnea in a specific time point and where patients mark the grade of their breathlessness. The point 0 means no breathlessness and 100 means the worst possible breathlessness. The VAS is used to measure dyspnea severity in the same person on different days (Spector et al., 2007). The modified Borg scale is a categorical scale but uses descriptive terms such as severe, moderately severe, extremely severe etc. It

is used to measure symptom severity within the period (before, during, and after) of exercise (Bausewein, Booth, & Higginson, 2008).

In this study the researcher used 0 to the 10 point DNRS; because the DNRS is easy to use as a clinical measure of dyspnea both severity and distress in an outpatient setting and home care. Christenbery (2005) used the DNRS to measure the dyspnea intensity and dyspnea distress over the past 24 hours as perceived by the patients with COPD.

Dyspnea management in patients with COPD

There were several methods that can be used to manage dyspnea, such as progressive muscle relaxation, breathing techniques, pacing and energy-saving techniques, self-talk and panic control, and stress management (Sassi-Dambron et al., 1995). According to Weiner, Magadle, Berar-Yanay, Davidovich and Weiner (2000), bronchodilator therapy, exercise, and inspiratory muscle training improved the perception of dyspnea in COPD patients. A total of thirty patients with COPD were recruited in their study. They were assessed the perception of dyspnea before and after using a long acting bronchodilator, a long acting bronchodilator plus exercise, and a long acting bronchodilator plus exercise plus inspiratory muscle training three times in 6 week period. The results of this study showed that bronchodilator therapy and the long acting bronchodilator plus exercise did not significantly increase the perception of dyspnea. Long acting bronchodilator therapy plus inspiratory muscle training statistically significant decrease the perception of dyspnea (Weiner et al., 2000).

Nield (2000) conducted a semistructured interview to explore dyspnea self-management in patients with COPD and sarcoidosis. The content analysis

revealed that dyspnea self-management themes such as traditional medical care, self-care wisdom, self-care action (breathing exercise), and self-care resources (spiritual and social support) could reduce dyspnea in patients with chronic lung diseases. Traditional medical care such as formal health care institutions, professional health care staff, and prescribed medication are used to reduce dyspnea. Self-care wisdom shows insight into the effect of dyspnea in patients' quality of life. Self-care action is a planned action for daily activities such as dressing, bathing. Self-care resources are both internal and external resources, such as control breathing exercise, relaxation, and prayer.

In addition, Christenbery's study focused on dyspnea self-management strategies used and effectiveness as reported by the patients with COPD. The survey study was conducted with 79 patients with COPD. The aim of the study was to identify the frequency of use of dyspnea self management strategies and their effectiveness. Christenbery's study found that most of the patients used activity modification strategies, such as moving slower (91.1%), keeping still (86.1%), and decreasing their activity (54.4%) to control their dyspnea. Most of the patients (72.91%) used moving slower. The least used interventions were changing in dressing and grooming, changing eating habits, and using assistive devices such as canes or walkers to reduce dyspnea (Christenbery, 2005). This study explained that using activity modification might help the patients to plan their days of doing things and helping them to balance the amount of their activities and inactivities to control their dyspnea and preserve quality of life. Breathing exercises (pursed lip breathing) and use of cool air (fan or air conditioner) were also effective in managing dyspnea. Use

of inhaler medication by the prescribed amount and changing dressing and grooming habits were also an effective way to manage dyspnea (Christenbery, 2005).

Measurement of dyspnea management

The dyspnea intervention scale (DIS) was developed by Carrieri-Kohiman and Janson-Bjerkie to explore self-management strategies in patients with COPD to decrease dyspnea (Carrieri-Kohiman & Janson-Bjerkie, 1986as cited in Christenbery, 2005).The DIS is a self-report intervention scale that consists of 11 items (problem-focused strategies) used to reduce dyspnea in patients with COPD. A pilot study was conducted among 6 patients with chronic lung disease for supporting the content validity of the DIS which covered the self-management strategies, easy to understand, and simple to use.

Christenbery (2005) used the DIS to assess the frequency of dyspnea self management strategies, and the perceived effectiveness of each strategy. The frequency scale consists of five responses ranging from "did not use" to "used almost constantly" (1 to 4), and the effectiveness scale consists of five responses ranging from "not at all" to "very much effective" (1 to 5). Higher scores reflect the greater frequency of use and greater effectiveness of intervention (Christenbery, 2005).

Factors related to dyspnea in patients with COPD

There are several factors that relate to dyspnea experience and management in patients with COPD (Moore & Berlowitz, 2011). According to Dodd's concept, the factors of dyspnea experience and dyspnea management in patients with COPD related to (1) the person domain, (2) health and illness domain, and (3) environmental domain (Dodd et al., 2001).

Person domain. Person domain is the approach of an individual views and the response to experience of symptoms (Dodd et al., 2001). In this study, person variables are age, gender, and socioeconomic status.

Age. Age is a more prominent factor that influences dyspnea (Borge, Wahl, & Moun, 2010). Aging gradually decreases the lung function due to increased stiffness of the chest wall and decreased respiratory muscle strength, thus causing dyspnea. More than 30% of people with age over 65 years old reported dyspnea (O'Donnell, 2007).

Gender. With regard to gender differences, women express more dyspnea than men. This may be the reasons of anxiety, depression or different coping mechanisms between women and men. Respiratory factors may play an important role to develop dyspnea in women than men (de Torres, Casanova, de Garcini, Aguirre-Jaime, & Celli, 2007). Guenette et al. (2011) evaluated the pathophysiological basis for sex-differences in exercise- induced dyspnea in patients with mild COPD. They found that women felt a greater degree of dyspnea than men. The pathophysiological abnormalities played an important role to increasing dyspnea in females than male. They also found that ventilatory capacity and mechanical loading were related to the increase of dyspnea in both sexes. Varela et al. (2010) conducted a cross-sectional study, on sex-related differences in COPD in five Latin American cities: the PLATINO study. The result showed that females expressed more severe dyspnea and limited physical activity than males. Sex affected dyspnea perception more than other symptoms of COPD. The reason for a heightened degree of dyspnea perception in females was related to hyper-responsiveness and hormonal effects on airways. There

was a similar perception between both sexes, females who were smoking and were

exposed to cigarette smoking (Varela et al., 2010).

   ***Psychological distress*.** Psychological distress can cause dyspnea in

patients with COPD. Unsupportive family relationship can lead to psychological

distress which is associated with dyspnea in patients with COPD (Holm, Bowler,

Make, & Wamboldt, 2009).

   ***Socioeconomic status*.** Socioeconomic status, such as poor education

and income are risk factors in developing COPD. Prescott, Lange, Vestbo, & the

Copenhagen City Heart Study Group (1999) conducted a study with 219 females and

265 male patients with COPD, aged 20-90 years in Copenhagen City. The aim of their

study was to find the relationship between socioeconomic factors and risk of

admission to hospital in COPD patients. The researchers found that socioeconomic

status was one of the factors influencing the development of COPD in both males and

females. People at lower socioeconomic levels were also at higher risk of developing

COPD. Socioeconomic indexes, such as education, income, and occupation were

factors of early development of COPD (Prescott et al., 1999). Borge et al. (2010)

conducted a study in 154 patients with COPD. They examined the relationships

between demographic and clinical variables and the symptoms of breathlessness,

depression, anxiety, fatigue, sleeping difficulties, and pain for patients with chronic

obstructive pulmonary disease. This study found that a lower educational level was

related to dyspnea.

   Health and illness domain. The health and illness domain is unique to

an individual's health or illness state which includes risk factors, injuries or

disabilities. This domain has a direct and indirect effect on dyspnea experience and dyspnea management.

Smoking. Smoking leads to the damage of sensory nerves and an increased risk of dyspnea. Smoking interacts with genetic susceptibility and respiratory infections and results in the development of expiratory flow limitation by losing elastic recoil and airway inflammation and producing the dyspnea sensation. Smoking is the greatest risk factor for developing dyspnea. Long term smoking leads to depletion of sensory nerve and diminishes the perception of bronchoconstriction of smokers (Rosi & Scano, 2004). Smokers are at higher risk of developing dyspnea two or three times in their life more than nonsmokers (Krzyzanowski & Lebowitz, 1992 as cited in Rosi & Scano, 2004). Secondhand smoking is also the cause of development of COPD. In Bangladesh, 45% of all adults were exposed to secondhand smoking from restaurants, transportation, and workplaces (WHO, 2009).

Comorbidities. COPD may be affected by other comorbid diseases such as, cardiac disease, musculoskeletal disease, osteoporosis, hypertension, diabetes mellitus, muscle dysfunction, adrenal insufficiency, and psychological disorder (Chatila, Thomashow, Minai, Criner, & Make, 2008; Rabe et al., 2007). Anxiety and depression are major comorbidities of COPD that are associated with the development of dyspnea. Anxiety makes an emotional stimulation or panic attacks and makes dyspnea (Borge et al., 2010).

Environmental domain. Environmental domain is an aggregate condition of a symptom occurrence. Environmental domain includes physical, social and cultural variables. Environmental domain comprises of social and family support,

interpersonal relationship, cultural aspects of beliefs, values, and practices (Dodd et al., 2001).

   Social and family support. Supportive family relationships reduce dyspnea. Social support may contribute to improve functional capacity of exhausting COPD patients. Social support increases patient's feelings of self-esteem and control environment. Social support consists of providing information, the use of social norms to encourage adaptive behavior, providing emotional support and providing tangible aid and resources (Marino, Sirey, Raue, & Alexopoulos, 2008).

Health Care System in Bangladesh

   Bangladesh is a vastly populated and developing country in South-East-Asia. The area of Bangladesh is 147,570 square kilometers. The total population of Bangladesh is 142,319000 persons. The density of population is about 964 persons per square kilometer. Three-fourths of Bangladeshi people (74.5%) live in rural areas and 25.5% live in urban areas. The ratio of male to female is 100.3:100. An average life- expectancy is 67.2 years, in males 66.1 years, and in females 68.7 years (Government of the People's Republic of Bangladesh, 2011).

   The Ministry of Health and Family Welfare (MOHFW) under the Government of the People's Republic of Bangladesh is responsible for health care policies. The responsibility of the MOHFW includes national level policy, planning, decision making at a large-scale level, and implementing different executive and regulatory authorities. The administrative and regulatory authorities include the Directorate General of Health Services (DGHS), Directorate General of Family Planning (DGFP), the Directorate General of Drug Administration (DGDA), and the

Directorate of Nursing Services (DNS), the health engineering department, transportation and equipment maintenance organization, and the recovery of primary health care policy or community clinic project. The DGHS operates the health care delivery system for the ministry all over the country extending from the village level and provides technical guidance to the ministry (Government of the People's Republic of Bangladesh, 2011).

The health infrastructure of DGHS composes of different levels, such as national, divisional, district, Upazila, union, ward and village levels. The Bangladesh MOHFW is responsible for developing, coordinating, and implementing the national health care programs. The aim of the government policy in the health care sector are to provide a minimum level of health care services for all, primarily through the construction of health facilities, health care level provided in rural areas, and the training of health care workers. In the Upazila level, there are 433 government hospitals and 30 hospitals in the union level. There are 1275 union sub-centers and 87 union health family welfare centers providing only outdoor services. In Bangladesh the nurse and population ratio is 0.14 per 1000. There are three levels of health care system: primary, secondary, and tertiary. Primary health care level provided in rural areas consists of Thana health complex, union health and family welfare centers (UHFECs), and rural dispensaries. The UHFECs and Thana health complexes provide the first contact between people and the health care system and are nucleus of primary health care delivery. Districts hospitals, some infectious disease and specialized hospitals constitute the second level of referral for health care. The basic curative and preventive services are provided at health complexes and union sub centers.

Complicated cases are referred to districts hospitals, medical college hospitals, and specialized hospitals (Government of the People's Republic of Bangladesh, 2011).

Eighteen government medical college hospitals, forty four private medical colleges, and eight post graduate specialized institutes with attached hospitals constitute the third level of health care. At UHFECs and some Thana health complexes, advanced treatments are provided with medical assistance and family welfare visitors.

In Bangladesh, the primary health care settings are the best place for the treatment of COPD. For the treatment for patients with COPD, Bangladesh physicians follow the National Asthma Guidelines regarding avoidance of smoking, and using Ipratropium, antibiotics, chest physiotherapy, and breathing exercises (Habib, 2002).

Bangladesh is a developing country in which COPD is an ordinary crisis situation. The incidence of COPD is increasing due to unplanned urbanization, unregulated tobacco consumption, air pollution, industrialization and change of profession, and lack of awareness about health behavior. It is seen that COPD is a common clinical problem in Bangladesh (Ilias et al., 2009). The Government hospitals provide both indoor and outdoor services with no cost for all people. People just have to buy a ticket for ten taka to get out-doors treatment and care. The total health care expenditure is 3.2% of the national gross domestic product that cannot meet the increasing demand of health facilities. The private sector provides a large number of health services which are nearly 80% of health care services and take up 70% of health care cost. The private sector and non-governmental organizations meet the increasing demand for health care. The World Health Organization and other

United Nations agencies provide financial and technological support to the government to attain "health for all" in Bangladesh.

Summary

In summary, dyspnea is one of the most disabling conditions in patients with COPD, and consequently causes the most suffering. COPD is the major cause of chronic morbidity and mortality in Bangladesh. This chapter gives an overview of COPD, the definition of COPD, causes, signs and symptoms, diagnosis and management, and how it impacts on the patients with COPD. Furthermore, the concept of symptom experience and symptom management, dyspnea experience and dyspnea management, and factors related to dyspnea in patients with COPD, and health care system in Bangladesh in relation to patients with COPD are described in details.

COPD has major impacts on the patients; physically, psychologically, economical, socially, and as well as on their families. Patients with COPD use both pharmacological and nonpharmacological methods to prevent and control the severity of disease, especially dyspnea difficulty and its complications. Although the healthcare system in Bangladesh covers health care for patients from the primary level to tertiary level as well as treatment facilities for patients with COPD. There is still a low availability of health care facilities in the public sector. Therefore, this study aimed to use the Dodd's symptom management model the concept of symptom experience and symptom management to explore and describe dyspnea experience and dyspnea management in patients with COPD in Bangladesh.

CHAPTER 3

RESEARCH METHODOLOGY

This is a descriptive cross-sectional study which aims to describe the dyspnea experience and dyspnea management in patients with COPD in Bangladesh. This chapter describes the design of the study, as well as population and setting, sample and sampling, instrumentation, protection of human rights, data collection, and data analysis.

Research Design

A descriptive cross-sectional study was used to describe the dyspnea experience and dyspnea management in patients with COPD in Bangladesh.

Population and Setting

The target population in this study was patients with COPD who visited the outpatient department (OPD) at the National Institute of Diseases of the Chest and Hospital (NIDCH), Dhaka, Bangladesh. The NIDCH is the top specialized tertiary level referral hospital for chest diseases in Bangladesh. The hospital was established in 1965. The hospital has two parts: academic and clinical services. On the clinical part, there are five major departments, which are thoracic medicine, thoracic surgery, tuberculosis and multi-drug resistance tuberculosis, directly observed treatment short-course (DOTS), and asthma centre. The NIDCH has 670 beds for inpatient department, and also OPD treatment facilities. A large number of patients came to the hospital to the OPD and DOT's center. At the hospital, OPD patients can

get oxygen and corticosteroid to reduce their dyspnea with free of charge. The DOT's center provides anti-tuberculosis drug. In the hospital, the OPD provides treatment for both medical and surgical patients. The NIDCH is a widen modern specialized hospital which provides medical and surgical treatment for complicated chest diseases and TB patients. The academic part provides postgraduate training for doctors, Diploma in Tuberculosis and Chest diseases (DTCD), Doctor of Medicine (MD, Chest), FCPS, MS, and also undergraduate teaching regarding tuberculosis for the students of different medical colleges. In 2010, a total of 1310 COPD patients was treated at this hospital (Government of the People's Republic of Bangladesh, 2011).

Sample and Sampling

Sample size estimation

The proportion of samples to population size was used to determine the sample size of the study. According to the Ministry of Health Republic Bangladesh (2011), there were 1,310 COPD patients receiving treatment in this hospital in 2010. The sample size was calculated by using a proportional estimation from 1,310 COPD patients. A sample of 10 % of the population size ranging from 1,000- 9,999 is considered suitable for a descriptive study (Rosner, as cited in Halder, 2010). The sample size in this study was estimated by taking 10% of the total 1,310 COPD patients, this size was then rounded up to a minimum of 140 patients.

Sampling method

The purposive sampling method was used for recruiting eligible subjects for the study. The target population of this study was Bangladeshi patients

who had been diagnosed with COPD and visited the NIDCH, Dhaka, Bangladesh during January to March 2013. The samples in this study came from the targeted population who met the following inclusion criteria: (1) age 30 years or over, (2) clinical diagnosis of COPD as defined by the doctor, (3) after diagnosis of COPD > 1 year, (4) having dyspnea symptom within the last three months, and (5) able to communicate in Bengali.

<div align="center">**Instrumentation**</div>

The instruments which were used for collecting data in the study comprised of: (1) the demographic and health-related data form (DHRDF), (2) the dyspnea numeric rating scale (DNRS), and (3) the dyspnea intervention scale (DIS).

Instruments

Part 1. Demographic and health-related data form (DHRDF)

The DHRDF was developed by the researcher. It consists of seventeen items to assess patients demographic data related to age, gender, marital status, religion, educational level, occupation, family income, residential area, number of family members, and health related data consisting of family history of COPD, smoking habits, co-morbid disease, being diagnosed with COPD, getting information regarding dyspnea management, medical payment, and use of medication. These data were obtained from interviews and medical records.

Part 2. Dyspnea numeric rating scale (DNRS)

The DNRS was used to assess dyspnea difficulty and dyspnea frequency within the past 24 hours and within the last 7 days. The DNRS that was

developed by Christenbery (2005) was based on Gift and Narsavage, (1998). There is

different between two versions Gift and Narsavage (1998) measured both present

dyspnea and usual dyspnea (dyspnea at rest) in patients with COPD during the past

week. Christenbery (2005) measured both dyspnea intensity and dyspnea distress over

the past 24 hours. In the present study, the researcher modified the DNRS by adding

frequency of breathing difficulty instead of dyspnea distress, and instructed to assess

within the past seven days. The DNRS was the patients self report and rated from 0 to

10, 0 means no difficulty at all,1 to 3 means mild dyspnea difficulty, 4 to 6 moderate

dyspnea difficulty, 7 to 10 severe dyspnea or most difficulty. The frequency of DNRS

was the patients self report and rated 1 (not at all) to 4 (having breathing difficulty > 4

times) within the past 24 hours, and 1 (not at all) to 5 (having breathing difficulty

every day) within the past 7 days.

Part 3.Dyspnea intervention scale (DIS)

The DIS was used to assess dyspnea management, the methods used to

decrease breathing difficulty, the frequency of use for each method, and the

effectiveness of the method used by the patients with COPD. The DIS was developed

by Christenbery (2005) based on Carrieri-Kohiman and Janson-Bjerklie's study

(1986).The original DIS consisted of 11 intervention items that were used in patients

with COPD to self-manage their dyspnea. The majority of the items were problem-

focused which reflected self-management strategies, such as use of extra oxygen, use

of extra inhaler medicine, exposure self to cool air, practice breathing exercises,

moved slower, kept still, planned a decrease in activity, change dressing /grooming

habits, changed eating habits, used assistive devices (walker, cane), transferred

activities of daily living to others. The researcher modified the DIS by adding three

items: which two items were problem-focused and one item was emotion-focused

consisted of leaning forward/propped up position, avoiding dust contacting /smoke,

trying to relax by praying.

The modified scale in the study consisted of 14 items, with 13

management methods and a single ended question about other methods of dyspnea

management. The frequency scale consisted of five responses ranging from "did not

use" to "used almost constantly" (score 0 to 4) and the effectiveness scale consisted of

five responses ranging from "not at all effective" to "very much effective" (score 0 to

4). Subjects were asked to describe the dyspnea management interventions they used

in terms of frequency and effectiveness to relieve their breathing difficulty. The

higher frequency score meant greater frequency of use and the highest effectiveness

mean score meant greater effectiveness of the method.

Validity and reliability of the instruments

Validity. The content validity of the instruments was judged by three

experts. One expert was expertise in the respiratory care area form Dhaka Nursing

College, Dhaka, Bangladesh. Two experts were nurse expertise either in the area of

respiratory care or symptom management from the Faculty of Nursing, Prince of

Songkla University (Appendix D). The researcher modified the instruments based on

the experts' recommendations.

Reliability. The reliability of the DNRS was tested for stability by

using test-retest reliability. The reliability of the DNRS was tested by 10 COPD

patients who were admitted in the inpatient department with similar characteristics to

the patients in actual study. The researcher asked each patient to answer to the

instrument twice, at morning and in the evening. In the morning, the researcher asked all questions about dyspnea difficulty and frequency within the past 24 hours and within the past 7 days. In the evening the researcher asked again patients with COPD about dyspnea difficulty and dyspnea frequency within the past 24 hours and within the past 7 days. The correlation coefficient of the DNRS was .73 for dyspnea difficulty within the past 24 hours; 1.00 for dyspnea difficulty within the past 7 days; and1.00 for frequency within the past 24 hours and within the past 7 days. For the DIS, its reliability was assessed by examining Chronbach's alpha coefficient. It was tested by 20 COPD patients who had the same characteristics as the study sample from the outpatient department. The reliability of the DIS was .75.

Translation of the instruments

The instruments were translated into the Bengali language by using the back translation technique (Sperber, Devellis, & Boehlecke, 1994). The first translator translated the English version into the Bengali version. The second translator back translated the instrument from the Bengali version into the English version. The third translator clarified and identified the differences in all items of both versions. Then the researcher made final adjustments to establish the same meanings within acceptable limits. The Bengali version of the instrument was used for data collection.

Ethical Consideration

To protect human rights and maintain confidentiality of the patients, the following steps were conducted:

Approval was obtained from the Research Ethics Committee of the Faculty of Nursing, Prince of Songkla University, HatYai, Songkla, Thailand. Permission to conduct this study was obtained from the Director of the NIDCH, Dhaka, Bangladesh. The patients who were willing to participate in this study were asked to sign in the consent form. The patients were assured that they had freedom to reject participation or to withdraw from participation in the study at any time. The identities of all the patients were coded in order to maintain confidentiality and anonymity.

Data Collection

Data were collected after obtaining permission from the Director of NICDH, Dhaka, Bangladesh. Data were collected from January to March 2013. The data collection consisted of two phases: the preparation phase and implementation phase.

Preparation phase

1. The researcher submitted the thesis proposal to the Research Ethics Committee of the Faculty of Nursing, Prince of Songkla University, Thailand for ethical consideration of human rights aspects.

2. After getting approval, the researcher asked permission to collect data from the Director of National Institute of Diseases of the Chest and Hospital, Mohakhali, Dhaka, Bangladesh.

3. The researcher explained the study objectives and data collection processes to the head nurse of the medical OPD and physicians in order to get cooperation from them.

Implementation phase

1. The researcher asked the head nurse of the study setting, to get permission from the patients who were willing to meet the researcher.

2. Then the researcher explained the purpose of the study to the patients, and asked for their agreement to participate in the study.

3. The researcher gave the written consent form to the agreeable patients and gave a commitment to maintain confidentiality and anonymity and that there would be no harm to them from participating in this study (Appendix A).

4. The researcher gave the questions to the patients with an explanation as to how to answer the questions. For subjects who were illiterate, the researcher read the questions for them and they chose the answer by themselves. After they completed the questionnaires, the researcher collected the questionnaires and checked for completeness and thanked them for their participation.

Data Analysis

Data were entered into a computer software program. Descriptive statistics were used to analyze and describe the demographic and health related data, dyspnea experience and dyspnea management were analyzed by using frequency, percentage, mean, and standard deviation. Additional analysis to determine factors related to dyspnea experience was performed by using Kruskal Wallis test. This test was used to differentiate dyspnea difficulty within the past 24 hours and within the past 7 days among the difference of smoking history [never (non-smoker), ex-smoker, and smoker].

CHAPTER 4

RESULTS AND DISCUSSION

The descriptive study was designed to explore dyspnea experience and dyspnea management in patients with COPD in Bangladesh. The subjects in this study consisted of one hundred and forty COPD patients who were attending in the OPD at the NIDCH and met the inclusion criteria. The results and discussion of this study are presented under the following headings:

1. Subjects' demographic and health-related data

2. Level of dyspnea experience in the patients with COPD

3. The methods of dyspnea management used by the patients with COPD

Results

Subjects' demographic characteristics

The demographic and health related characteristics of 140 patients with COPD are presented in Table 1 and 2. The age of the patients ranged from 30 to 80 years with a mean age of 54.76 years (SD = 10.09). The majority of the patients were male (69.3%). Most of them were Muslim (90.00%) and were married (88.6%). Forty one percent of the patients were illiterate. Nearly 34% of the patients had a low levelof family income (Tk. 3000-5000). Approximately twenty eight percent of the patients were farmers, laborers, and or drivers. The majority of the patients had four to seven family members and 41.1% lived in urban areas. Regarding medical expenses, most of the patients (95.7%) had to pay by themselves.

Table 1

Demographic Characteristics of the Subjects (N=140)

Characteristics	n	Percentage (%)
Age (years old) (M = 54.76, SD = 10.09, Min = 30, Max = 80)		
30- 40	17	12.1
41- 50	34	24.3
51- 60	48	34.4
61- 70	38	27.1
71- 80	3	2.1
Gender		
Male	97	69.3
Female	43	30.7
Marital status		
Single	2	1.4
Married	124	88.6
Widowed	14	10.0
Religion		
Muslim	126	90.0
Hindu	11	7.9
Christian	3	2.1
Educational level		
Illiteracy	57	40.7
Primary school	36	25.7
Secondary School	25	17.9
Higher secondary school/ college	20	14.3
University	2	1.4
Occupation		
Service	37	26.4
Farmer/Labor/Driver	39	27.8
Housewife	36	25.7
Business	28	20.1
Family Income (77 Taka = 1 USD)		
Tk. 3000 to 5000	47	33.6
Tk. 5001 to 10,000	36	25.7
Tk. 10,001 to 15,000	28	20.0
Tk. 15,001 to 20,000	15	10.7
Tk. > 20,001	14	10.0

Table 1 (Continued)

Characteristics	n	Percentage (%)
Number of family members		
1 to 3	11	7.8
4 to 7	124	88.6
8 to 10	5	3.6
Residential area		
Rural	49	35.0
Urban	58	41.4
Sub-urban	15	10.7
Slum	18	12.9
Medical payment		
Self support	134	95.7
Others	6	4.3

Subjects' health-related characteristics

The health-related characteristics of the subjects are shown in Table 2. Most of the patients (85.7%) had no family history of COPD. Most of the patients got help from their spouse (from wife 62.1% and from husband 15%). Approximately two-thirds of the patients (64.3%) had a history of smoking. Approximately one-fourth (22.14%) of the patients had co-morbid diseases, such as diabetes mellitus (11.4%), and pulmonary hypertension (2.86%). Nearly two-thirds of patients (59.30%) was diagnosed with COPD in the past one to five years (M = 5.40, SD = 2.98). All patients reported that they received information about dyspnea management and they had learnt from health care personnel. All patients used bronchodilators for relieving their dyspnea.

Table 2

Frequency and Percentage of Subjects' Health Related Characteristics (N=140)

Characteristics	n	Percentage (%)
Family history of COPD		
No	120	85.7
Yes	20	14.3
Parents	14	10.0
Siblings	6	4.3
Having caregiver to help		
Wife	87	62.1
Husband	21	15.0
Son	16	11.5
Daughter	13	9.3
Friends	2	1.4
Mother	1	.7
Smoking Habit		
Ex-smoker	61	43.6
Never (non-smoker)	50	35.7
Smoker	29	20.7
Co-morbid disease		
No	109	77.9
Yes	31	22.1
Pulmonary hypertension	4	2.9
Diabetes Mellitus	16	11.4
Hypertension	10	7.1
Ischemic heart disease (IHD)	1	0.7
Duration of diagnosis of COPD (M = 5.40, SD = 2.98)		
1-5 Years	83	59.3
6 – 10 Years	48	34.3
> 10 Years	9	6.4
Get previous information about dyspnea management		
Yes	140	100.0
Medication used		
Bronchodilators	140	100.0

Dyspnea experience in patients with COPD

Dyspnea experiences including dyspnea difficulty and frequency within the past 24 hours and within the past 7 days were identified in Table 3. The mean score of dyspnea difficulty within the past 24 hours and within the past 7 days were at a moderate level (M = 5.01, SD = 2.13 and M = 4.65, SD = 1.93, respectively).

Table 3

Mean, Standard Deviation of Dyspnea Experience of the Subjects (N=140)

Level of dyspnea experience (Min = 0, Max = 10)	M	SD	Level
Dyspnea difficulty within the past 24 hours	5.01	2.13	Moderate
Dyspnea difficulty within the past 7 days	4.65	1.93	Moderate

The frequency of dyspnea within the past 24 hours and within the past 7 days was evaluated by using DNRS. The data were analyzed and presented in Table 4 and Table 5.

Table 4

Frequency and Percentage of Dyspnea Experience Within the past 24 Hours (N=140)

Dyspnea experience	n	Percentage
Have breathing difficulty 1-2 times	12	8.6
Have breathing difficulty 3-4 times	50	35.7
Have breathing difficulty > 4 times	78	55.7

In Table 4, the data showed that within the 24 hours most of the patients (55.7%) reported having breathing difficulty > 4 times per day; 35.7% of the patients reported having breathing difficulty 3-4 times per day.

Table 5
Frequency and Percentage of Dyspnea Experience Within the past 7 Days (N=140)

Dyspnea experience	n	Percentage
Have breathing difficulty 1-2 times/ day	2	1.4
Have breathing difficulty 3-4 times/ day	4	2.9
Have breathing difficulty > 4 times/ day	25	17.9
Have breathing difficulty every day	109	77.9

In Table 5, the data showed that within 7 days, most of the patients (77.9%) reported of having breathing difficulty every day; 17.9% of the patients reported of having breathing difficulty > 4 times.

Dyspnea management used by the patients with COPD

Dyspnea Management, the methods used to manage dyspnea by the patients with COPD is presented in Table 6. Patients reported that they used several methods to reduce their dyspnea. Most of the patients (97.9%) reported using bronchodilators to relieve dyspnea. The frequency of using bronchodilators was varied: 43.6% of the patients used bronchodilators frequently, 30% used bronchodilators constantly, and 24.3% of the patients used bronchodilators occasionally. The second most frequently used method was leaning forward position, 93.5% of the patients reported that they used the leaning forward position to manage dyspnea. The frequency of using this method varies: 53.6% used it frequently, 25.7% used it constantly, whereas 12.1% used it occasionally. The third most frequently used method used by 88.6% of the patients was keeping still. The frequency of using this method varied: 56.4% used it occasionally, 20% used it frequently, whereas 8.6% used it constantly.

The three least used methods were oxygen therapy, breathing exercises, and others (traditional healer or kabiraj). Around 13% of the patients reported that they used oxygen therapy to relieve dyspnea. The frequency of using oxygen was varied: 10% of the patients used oxygen occasionally, 2.1% used it rarely. Nearly eight percent of the patients used breathing exercises to reduce their dyspnea. There are 4.3% of the patients used other methods (such as traditional healers) for relief of their dyspnea.

Table 6

Percentage and Frequency of Dyspnea Management Used by the Patients with COPD (N= 140)

Dyspnea management interventions	Percentage	Rarely	Occasionally	Frequently	Almost constantly
	n (%)	n (%)	n (%)	n (%)	n (%)
Use of bronchodilators	137 (97.9)	-	34 (24.3)	61(43.6)	42 (30.0)
Leaning forward position	131 (93.5)	3 (2.1)	17 (12.1)	75 (53.6)	36 (25.7)
Kept still	124 (88.6)	5 (3.6)	79 (56.4)	28 (20.0)	12 (8.6)
Transfer activity to others	120 (85.7)	9 (6.4)	90 (64.3)	13 (9.3)	8 (5.7)
Moved slowly	96 (68.5)	7 (5.0)	49 (35.0)	31(22.1)	9 (6.4)
Avoided to contact dust	66 (46.5)	10 (7.1)	46 (32.9)	8 (5.7)	2 (1.4)
Try to relax by praying	53 (37.9)	1 (0.7)	4 (2.9)	40 (28.6)	6 (4.3)
Exposed to open air	37 (26.4)	9 (6.4)	21 (15.0)	3 (2.1)	4 (2.9)
Change eating habit	22 (13.5)	1 (0.7)	8 (5.7)	12 (8.6)	1 (0.7)
Planned decrease in activity	20 (12.1)	1 (0.7)	12 (8.6)	6 (4.3)	1 (0.7)
Used assistive devices	20 (11.4)	-	13 (9.3)	6 (4.3)	1 (0.7)
Used oxygen therapy	18 (12.8)	3 (2.1)	14 (10.0)	1 (0.7)	-
Practice breathing exercise	11 (7.9)	-	4 (2.9)	6 (4.3)	1 (0.7)
Take other interventions (traditional healer/Kabiraj)	6 (4.3)	-	5 (3.6)	1 (0.7)	-

Note: Each patient could answer more than one method.

Dyspnea management interventions and their effectiveness

The effectiveness of each intervention to reduced dyspnea was assessed by the DIS. The effectiveness scales ranged from 0 (not at all) to 4 (very much effective). The patients reported the effectiveness of each intervention was varied. The four most effective interventions used were bronchodilators, leaning forward position, keeping still, and transferring activity to others. Perceived effectiveness of bronchodilators was varied: 53.6% reported somewhat effectiveness while 41.4% reported quite a little bit effectiveness. The effectiveness of using the leaning forward position also varied: around 70% report a little bit effectiveness, 26.4% reported somewhat effectiveness. The effectiveness of using keeping still and transferring activity to other are varied; 76.4% of patients reported a little bit effectiveness, 14.3% reported not at all effective. The least effective interventions as perceived by the patients were used assistive devices, used oxygen therapy, practices breathing exercise, and take other interventions (Table 7 and Table 8).

Table 7

Effectiveness of Dyspnea Management Interventions as Perceived by Patients with COPD (N= 140)

Dyspnea management interventions		Perceived effectiveness				
	n	Not at all n (%)	a little bit n (%)	somewhat n (%)	quite a bit n (%)	very much n (%)
Use of bronchodilators	137	4 (2.9)	3 (2.1)	75 (53.6)	58 (41.4)	-
Leaning forward position	131	7 (5.9)	95 (67.9)	37 (26.4)	1 (.7)	-
Kept still	124	27 (19.3)	107 (76.4)	6 (4.3)	-	-
Transfer activity to others	120	20 (14.3)	107 (76.4)	13 (9.3)	-	-
Moved slowly	96	53 (37.9)	80 (57.1)	7 (5.0)	-	-
Avoided to contact dust	66	75 (53.6)	60 (42.9)	5 (3.6)	-	-
Trying to relax by praying	53	87 (62.1)	49 (35.0)	4 (2.9)	-	-
Exposed to open air	37	107 (76.4)	22 (15.7)	9 (6.4)	2 (1.4)	-
Changing eating habit	22	121 (86.4)	17 (12.1)	2 (1.4)	-	-
Planned decrease in activity	20	123 (87.9)	15 (10.7)	2 (1.4)	-	-
Used assistive devices	20	124 (88.6)	13 (9.3)	2 (1.4)	1 (0.7)	-
Used oxygen therapy	18	122 (87.1)	-	3 (2.1)	15 (10.7)	-
Practice breathing exercise	11	130 (92.9)	6 (4.3)	4 (2.9)	-	-
Taking other interventions (Traditional/Kabiraj)	6	134 (95.7)	1 (0.7)	5 (3.6)	-	-

Table 8

Mean and SD of Effectiveness of Dyspnea Management Interventions as Perceived by Patients With COPD (N= 140)

Dyspnea management interventions	Mean	SD
Use of bronchodilators	2.34	0.66
Leaning forward position	1.23	0.54
Transfer activity to others	0.95	0.46
Kept still	0.85	0.46
Moved slowly	0.67	0.57
Avoided to contact dust	0.50	0.57
Trying to relax by praying	0.41	0.56
Exposed to open air	0.33	0.66
Changing eating habit	0.15	0.37
Planned decrease in activity	0.14	0.38
Used assistive devices	0.14	0.44
Used oxygen therapy	0.36	0.96
Practice breathing exercise	0.10	0.39
Taking other interventions (Kabiraj)	0.08	0.38

0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, 4 = very much

In Table 8 the data showed mean and SD of the effectiveness of dyspnea management interventions as perceived by patients with COPD. The most useful methods were bronchodilators, leaning forward position, and transfer activity to others (M = 2.34, SD = 0.66; M = 1.23, SD = 0.54, and M = 0.95, SD = 0.46, respectively).

Discussion

This study explored the information about dyspnea experience and dyspnea management in patients with COPD in Bangladesh. The discussion of subjects' characteristics, subjects' demographic and health-related data, dyspnea experience and dyspnea management methods used are presented as follows:

Subjects' characteristics

One hundred and forty patients with COPD were included in this study. Most of the patients were male (69.3%) and majority of the patients had a history of smoking (ex-smokers 43.6%, and smokers 20.7%). The possible reason for more male patients may be related to smoking habits. According to WHO (2009), 21.9 million of Bangladeshi people are current smokers (male 21.2 million and female .7 million). Smoking is higher in males (58%) than females (28.7%). Males were exposed more to second hand smoke than females, because males were more engaged in certain occupations and therefore exposed more. Restaurants, transportation, and other places of occupation are places where second hand smoke is common (WHO, 2009). According to the Bangladesh Health and Demographic Survey in 1997, 41.1% male and 4% female smoked cigarette or other forms of tobacco. The majority of the patients' age was between 50 - 60 years and they could be experiencing aging effects on the lung volume. During the third and fourth decade of life, the function of the lungs decreases. The prevalence of COPD increased 15 to 25% among adults age 40 years and older (Mannino & Buist, 2007; Rabe et al., 2007). It was congruent with the report that age 60 years or older is significant risk to COPD (Esteban et al., 2011).

The majority (90%) of the patients were Muslim due to the fact that 89.35% of the total population in Bangladesh is Muslim (Government of the People's Republic of Bangladesh, 2011). The majority (88.6%) of the patients were married and had four to seven family members living together with them, congruent with the family pattern of Bangladesh which reported most were extended families (Uddin, 2009). Thirty three percent of the patients had a monthly income around 3000 to 5000 Taka per month which was considered poor, compared to average per capita income

of 11,480 taka (Government of the People's Republic of Bangladesh, 2011). Low income levels underscored the needs for financial support during the illness. Poverty is a cause of developing COPD (GOLD, 2013). Most of the patients suffered long time and underwent long term treatment. Sometimes patients got help from their relatives or social welfare; sadly support from the government hospital for hospitalized patients is limited. More than one third of the patients (40.7%) were illiterate which was congruent with the national average literacy rate (52.8% in male and 44.5% in female) (WHO, 2007). The majority of females (25.7%) did household work, 26.4% of the patients were employed in different services, and others were farmers, businessman, and day laborers. Forty one percent of the patients came from an urban area. The reason may due to the NIDCH was located in Dhaka and it was the top specialized hospital in Bangladesh for the chest disease. It was also a referral hospital which nearly half of the patients lived near the hospital and another half came from other parts of the country.

Most of the patients had no family history of COPD. Approximately one fourth (22.14%) of the patients had co-morbid diseases, such as diabetes mellitus, pulmonary hypertension, and ischemic heart disease (IHD). These co-morbid diseases were common in patients with COPD (GOLD, 2013). Most of the patients got help from their family members. Every patient had relatives to take care them. Caring is a duty of a family member and is an expected and accepted norm of a family member, especially in Bangladesh (Merrell, Kinsella, Murphy, Philpin, & Ali, 2005). All patients obtained information about using medication for dyspnea management as they were diagnosed with COPD for more than one year (M = 5.49, SD = 2.98). Patients with COPD reported that they got information from various resources such as

health care personnel (doctors, nurses), family members, or relatives about the techniques of using bronchodilators. All of the patients used bronchodilators to reduce their dyspnea.

Dyspnea experience

In this study, most of the patients had a moderate level of dyspnea experience. The patients in this study reported that the experience of dyspnea difficulty within the past 24 hours and within the past 7 days was at the moderate level (M = 5.01, SD = 2.13; M = 4.65, SD = 1.93, respectively). These findings were similar to a previous study which was conducted in the USA, and reported that the dyspnea experience was moderate level over the past 24 hours in patients with COPD (Christenbery, 2005).This result can be explained by using personal, health and illness, and environmental domains that influence dyspnea experience (Dodd et al., 2001).

1). Personal domain-age: One third of the patients (34.4%) were between 51 to 60 years of age. Age is a more pronounced influential factor that increases the perception of dyspnea. Aging affects the lung volumes and causes airflow limitation which causes dyspnea. Age diminishes the lung function and increases the risk of dyspnea in the third or fourth decades of life (Esteban et al., 2011; Mannino & Buist, 2007; Rabe et al., 2007). O'Donnell et al. (2007) found that 10 to 18% of the patients with age younger than 65 years had dyspnea and 30% of the patients with age over 65 years had dyspnea.

In addition, this study revealed that most of the patients were illiterate. Patients with low education will face difficulties in managing their dyspnea properly.

A study found that a lower level of education increased the perception of dyspnea in patients with COPD (Borge et al., 2010). Education increased the patients' confidence and influenced them to manage symptom effectively. Education altered the perception and thus helped tolerance for dyspnea (ATS, 1999).

2).Health and illness domain-Smoking is also the most important cause of an increase in dyspnea. In this study most of the patients were smokers (ex-smoker 43.6% and smoker 20.7%). These findings were congruent with a previous study which reported that smokers were at two or three times higher risk of developing dyspnea in their life time compared to non-smokers (Krzyzanowski & Lebowitz, 1992 as cited in Rosi & Scano, 2004). Smoking leads to a decrease of sensory nerve neurotransmitters and an increased risk of dyspnea (Rosi & Scano, 2004).

In this study most of the patients who had been diagnosed with COPD had suffered between one to five years (59.3%) and six to ten years (34.3%) and this duration might affect the pathophysiology of COPD and resulted in the development of dyspnea. On the other hand, Tel, Bilgic, and Zorlu (2009) found that dyspnea was severe in the patients who had the disease for 12 years or more.

3). Environmental domain-family and social support: Although the patients in this study had moderate dyspnea, it affected their families and their quality of life very much. These patients could not work, resulting in losing income. COPD affects productivity and forces to premature retirement (Fletcher et al., 2011). Psychological distress from chronic disease, poverty, and having the duty to take care other family members also could increase the perception of dyspnea (Holm et al., 2009).

Additional analysis in this study revealed that there were no statistically significant differences with regard to patients' smoking history (smokers; non-smokers, as in never had smoked; and ex-smokers) and dyspnea difficulty within the past 24 hours and within the past 7 days, however, that was not congruent with a previous study which showed that smokers were at two or three times higher risk of developing dyspnea (Krzyzanowski & Lebowitz as cited in Rosi & Scano, 2004). This discrepancy may be due to the exposure to second hand smoke. It was reported that 75.7% of non-smokers were exposed to second hand smoke in the workplace (WHO, 2009). Prolonged exposure to smoke may lead to the depletion of sensory neurotransmitters that affect the mechanical pathways and increase the perception of dypsnea.

Dyspnea management

The management of dyspnea in patients with COPD depends on the individual perception of dyspnea experience. This study presented methods of dyspnea management and its effectiveness as perceived by the patients with COPD. The patients with COPD reported that they used both pharmacological and nonpharmacological methods to reduce their dyspnea. The most used methods were bronchodilators (97.9%), leaning forward position (93.6%), and keeping still (89%).

The reason that patients in this study used bronchodilators the most may be due to COPD patients in Bangladesh perceived bronchodilators as an effective and safe drug, easy to administer, and with minimal side effect in long term use (Ilias, 2009).This finding was similar to another study conducted in Israel which reported bronchodilators therapy, exercise, and inspiratory muscle training could decrease the

perception of dyspnea (Weiner et al., 2000). The findings indicated that 53.6% of those patients perceived the use of inhaled bronchodilators as somewhat effective.

The second most used method was the leaning forward position. The reason that most patients in this study used that position may be attributed to the abdominal wall moving upwards with less transdiaphragmatic pressure, which provides more space for lung expansion and gas exchange (Sharp, Drutz, Moisan, Foster, & Machnach as cited in Jantarakupt & Porock, 2005). This method helps the patients to reduce their dyspnea by reducing hyperinflation of the ribcage, improving gas exchange, and increasing the strength of respiratory muscle (Gosselink, 2003). That position was used by 93.6% of the patients with varied effectiveness. It was reported that the leaning forward position was somewhat effective.

The third most used method was keeping still. The result shows that 88.6% of the patients used this method and among these patients 76.4% perceived its effectiveness was a little bit effective. This finding was similar to a previous study which found that around 50% of the patients used this method (Christenbery, 2005).

The four least used interventions were breathing exercise, use of assistive devices, use of home oxygen, and other interventions (traditional healer/ kabiraj). These findings were consistent with a previous study (Christenbery, 2005) which found that 50% of the patients used breathing exercises and the effectiveness was very low except in those who had attended pulmonary rehabilitation programs. Nearly eight percent of the patients used breathing exercises but possibly lack of knowledge thus causing this result. Breathing exercise was used less because the patients couldn't perform effectively. In Bangladesh, because of the shortage of health care staff and an absence of pulmonary rehabilitation centers for COPD patients,

patients were not taught how to perform breathing exercises effectively. The results of this study found that only 12.8% of the patients used oxygen, whereas a study conducted in the USA, Christenbery (2005) found that 67.1% of the patients reported that they used oxygen to reduce their dyspnea. This difference may be associated with the low educational level and poor socioeconomic status of patients in Bangladesh. This study showed that only 4.3% people used other methods (traditional healers) due to its lack of effectiveness (Islam & Farah, 2008). The results of this study found that the methods of dyspnea management and their perceived effectiveness were varied. This is because although there were several methods of dyspnea management used, the patients found it was difficult to access to medical health services or there was a lack of opportunity to learn how to apply these management techniques effectively. These issues could be seen from the data that more than 87.1 to 95.7% of the patients reported that these management techniques were not at all effective.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

This descriptive study was designed to explore the level of dyspnea experience and dyspnea management in patients with COPD. This study was conducted at NIDCH in Bangladesh. The patients were recruited purposively from outpatient department at NIDCH in Bangladesh. One hundred and forty patients with COPD consented to participate in the study and completed this study. Data were collected from January to March 2013. The patients were asked to give response to the instruments of this study which included three parts: 1) the demographic and health-related data form (DHRDF), 2) the dyspnea numeric rating scale (DNRS), and 3) the dyspnea intervention scale (DIS). These instruments were translated by using back translation technique. Reliability of the DNRS and of the DIS was assessed by using test-retest reliability and Chronbach's alpha coefficient, respectively. The correlation coefficient of the DNRS was .73 for dyspnea difficulty within the 24 hours; 1.00 for dyspnea difficulty within the 7 days; and1.00 for frequency of dyspnea within the past 24 hours and within the past 7 days. For the DIS, its reliability was assessed by examining Chronbach's alpha coefficient. The reliability of the DIS is .75. The data were analyzed by using a computer program to process the descriptive statistics.

Conclusion

The age of the patients was a minimum of 30 and a maximum of 80 years with a mean age of 54.76 years. The majority of the patients were male,

Muslim, illiterate and lived in urban areas. More than half of the patients had history of smoking and were diagnosed of COPD within one to five years. The majority of the patients reported they had no family history of COPD.

The patients with COPD reported their dyspnea level within the past 24 hours and within the last 7 days at the moderate level (M = 5.01, SD = 2.13, and M = 4.66, SD = 1.93, respectively). The frequency of dyspnea was more than four times per day, and it happened every day. The patients with COPD reported that they used both pharmacological and non-pharmacological methods to manage their dyspnea. The most common methods used by the patients were bronchodilators, leaning forward position, and keeping still. The patients also reported the effectiveness of using each intervention varied.

Strengths and Limitations

Strengths

This is the first study in Bangladesh examining dyspnea among patients with COPD which included two variables: dyspnea experience and dyspnea management in patients with COPD in Bangladesh. The strength of this study lies in the findings which would be used as evidence to further study in Bangladesh. The research instruments were translated using the back translation technique. In addition, this study was conducted at tertiary level hospital where patients with COPD came from many areas of the country.

Limitations

The study has some limitations also. Firstly, this study assessed the dyspnea experience and dyspnea management in patients with COPD and asked the patients to measure dyspnea difficulty and frequency of dyspnea at single time but asked the patients to recall two time points over the past 24 hours and 7 days. Secondly, the majority of the subjects in this study had a low educational level. They needed more time to understand each items of the DIS questionnaires. To solve this situation the researcher helped the subjects to clarify some points, such as breathing exercises. This situation might affect on the patients' response related to their experience of using each method and its effectiveness. This would limit the further applicability of using DIS questionnaire. Finally, to test the reliability of the dyspnea numeric rating scale (DNRS), the researcher collected data from only 10 patients. This small sample would affect the reliability.

Implications and Recommendations

The findings of this study provide supporting evidence on the dyspnea perception and evaluation that cover the occurrence and the severity of dyspnea in patients with COPD in Bangladesh. This study also provides the information about dyspnea management methods which the patients used to relieve their dyspnea. The recommendations from the results of the study are as follows:

Nursing practice

The findings could emphasis to the importance of assessment of dyspnea symptom in a clinical setting which provided somewhat effective such as using of inhaled bronchodilators, leaning forward position, and kept still. As well

nurses should teach the patients to practice breathing exercise, relaxation methods and other methods that proved effective. Nurses should encourage the patients and their caregivers to use nonpharmacological methods because of limited access to resources such as medication and home oxygen in Bangladesh.

Nursing education

The research findings could guide nurses in nursing education to have better understanding about dyspnea experience and dyspnea management in patients with COPD. This study also provided some factors, such as person, health and illness, and environment which were contributed to dyspnea experience and dyspnea management. Nurses should be aware of these factors and bring them to their plan to care for patients with COPD.

Nursing research

The findings showed that experience of dyspnea remained moderate while several management strategies were used by patients with COPD. Recommendations related to nursing research are to develop the educational program using strategies of dyspnea management, their measures for the effectiveness and test the interventions and outcomes such as severity of dyspnea and hospitalize admission rate.

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APPENDICES

Appendix A

Informed Consent Form

Dear participant,

      Assalamualikum, my name is Shahanaz Parveen. I am a student of master's level in the Faculty of Nursing Prince of Songkla University, Thailand. I am also a senior staff nurse of this Hospital. I am conducting a study to examine how the patients with COPD like you experience difficulty breathing and how they manage this symptom. I am inviting you to participate in this study because you have experienced this symptom. Your answers regarding dyspnea experience or difficulty breathing and its management will provide essential information to strengthen the management strategies of dyspnea in Bangladesh.

      Your participation regarding this study will be confidential and available only for the purpose of this study. You are free to ask any questions during responding to the questionnaires. You also have a right to withdraw from the study at any time, and there will be no risks involved in the study. If you decide to participate in this study, please answer to the following questionnaires. It will take approximately 20 minutes. Please answer the questions honestly. After completion, please return the questionnaire to me. I greatly appreciate your cooperation.

……………… ……………………….. ………………………

Name of researcher   Signature of researcher   Date

I agree to participate in this study.

…………………… ………………………… ……………….

Name of participant   Signature of participant   Date

APPENDIX B

Instruments

Code………………….

Date………………….

Introduction: This instrument is divided into three parts. Part one is the Demographic and Health-Related Data Form (DHRDF). Part two is the Dyspnea Numeric Rating Scale. Part 3 is the Dyspnea Intervention Scale.

Part 1: Demographic and Health-Related Data Form

Direction: Please mark " " or write in the appropriate sections. There is no right or wrong answer. If you do not understand or are not clear about these questions you can ask the investigator.

1. Age ………………:   years old

2. Gender ………….. :   ☐ 1. Male   ☐   2. Female

3. Marital status…….:   ☐ 1. Single   ☐   2. Married

   ☐ 3. Divorced   ☐   4. Widowed

4. Religion………….:.   ☐ 1. Muslim   ☐   2.   Hindus

   ☐ 3. Christian   ☐   4. Buddhist

5. Educational level…:   ☐ 1. No school   ☐   2. Primary School

   ☐ 3. Secondary   ☐ 4. Higher secondary School/ College

   ☐ 5. University   ☐ 6. Others…

6. Occupation………   ☐ 1. Service   ☐   2. Farmer/ labor/driver

   ☐ 3. Housewife   ☐   4. Business

   ☐ 5. Others

7. Income of family……   Taka/ month

8. Residential area ………   ☐ 1. Rural   ☐ 2. Urban

   ☐ 3. Suburban   ☐ 4. Slum

9. Number of family members: ……………………………..persons

10. Family history of COPD: ☐ 1. No   ☐ 2. Yes
                                              If yes ---identify who
                                              ☐……………………….

11. Do you have anyone to take care/help you when you have dyspnea?
                              ☐ 1. No   ☐ 2. Yes
                                      If yes ---identify who are these persons
                                      …………………………

12. Smoking habits………: ☐ 1. Never (non-smoker)
                              ☐ 2. Ex-smoker
                              ☐ 3. Smokers

13. Co-morbid disease …………☐ 1. No   ☐ 2. Yes
                              If yes   ☐ 2.1 Congestive heart failure
                                       ☐ 2.2 Pulmonary hypertension
                                       ☐ 2.3. Bronchiectasis
                                       ☐ 2.4 Others……….

14. Having diagnosed of COPD…….:   …………………years

15. Medical payment   : ☐ 1. Government support ☐ 2. Self payment

                         ☐ 3. Others……..

16. Have you ever got any information regarding how to manage dyspnea before?
                              ☐ 1. No
                              ☐ 2. Yes, from what resources
                                   ☐ Nurse / Doctor
                                   ☐ Family or relatives
                                   ☐ Book, T.V.
                                   ☐ Others

17. Medication use   : ☐ 1. Bronchodilators
                        ☐ 2. Inhaled glucocorticosteroids
                        ☐ 3. Antibiotic agent
                        ☐ 4. Alternative drugs
                        ☐ 5. Others …………….

Part: 2 Dyspnea Numeric Rating Scale

Instruction: This is a scale that asks you to rate your breathing difficulty. It starts at number 0 where your breathing is causing you "no difficulty at all" and progress through to number 10 where your breathing difficulty is "most difficulty". Please circle the number on a scale from 0 to 10, how much and how often did you feel your breathing difficulty?

1. Within the past 24 hours, how much difficulty you thought your breathing was?

    0   1   2   3   4   5   6   7   8   9   10

    No difficulty   most
      at all   difficulty

2. Within the past 7 days, how much difficulty you thought your breathing was?

    0   1   2   3   4   5   6   7   8   9   10

    no difficulty   most
      at all   difficulty

3. Within the last 24 hours, how often did you have breathing difficulty?
    1. Not at all
    2. Having your breathing difficulty 1-2 times
    3. Having your breathing difficulty 3-4 times
    4. Having your breathing difficulty > 4 times

4. Within the past 7 days how often did you have your breathing difficulty?
    1. Not at all
    2. Having your breathing difficulty 1-2 times / day
    3. Having your breathing difficulty 3-4 times / day
    4. Having your breathing difficulty > 4 times / day
    5. Having your breathing difficulty everyday

Part 3: Dyspnea Intervention Scale

Instruction: I have listed 14 interventions to relieve breathing difficulty. If you did not use the intervention during the past week, please make an "X" in the box marked "Did not use." If you used the intervention, please circle a number that tell us, how often you used the intervention and how much relieve the intervention provided.

S/no	During the past week did you use any of the following interventions to decrease your breathing difficulty?	If yes, how often did you use the intervention?					If yes, how much did it get helped to relieve your breathing difficulty?				
S/no	items of question	Did not use	Rarely	Occasionally	Frequently	Almost constantly	Not at all	A little bit	Somewhat	Quite a bit	Very much
1	Used oxygen therapy	0	1	2	3	4	0	1	2	3	4
2	Took inhaler medicine containing bronchodilators	0	1	2	3	4	0	1	2	3	4
3	Exposed self outside to get more air / ventilation	0	1	2	3	4	0	1	2	3	4
4	Prevailing practiced breathing exercises	0	1	2	3	4	0	1	2	3	4
5	Moved slowly	0	1	2	3	4	0	1	2	3	4
6	Keep myself still	0	1	2	3	4	0	1	2	3	4
7	Leaning forward / propped up position	0	1	2	3	4	0	1	2	3	4
8	Getting planned to decrease in activity	0	1	2	3	4	0	1	2	3	4
9	Avoided to contact dust/ smoke	0	1	2	3	4	0	1	2	3	4
10	Change eating habits to several time small solid meals per day	0	1	2	3	4	0	1	2	3	4
11	Use assistive devices (walker, cane)	0	1	2	3	4	0	1	2	3	4
12	Transfer to others of daily activities	0	1	2	3	4	0	1	2	3	4
13	Trying to relax by praying	0	1	2	3	4	0	1	2	3	4
14	Other interventions? Please describe	0	1	2	3	4	0	1	2	3	4

Appendix C

Additional analysis

To identify the difference in dyspnea difficulty and dyspnea frequency based smoking factor, additional analysis was calculated by using non-parametric statistics (Kruskal Wallis) test as the data were non normal distribution.

Table 9

Comparison of Dyspnea Difficulty (within the past 24 hours and within the past 7 days) Based on Smoking History

Dyspnea Experience		N	Mean Rank	p- value
Dyspnea difficulty within the past 24 hours	Ex-smoker	61	83.18	.014
	Never (non-smoker)	50	61.02	
	Smoker	29	68.57	
Dyspnea difficulty within the past 7 days	Ex-smoker	61	70.14	.435
	Never (non-smoker)	50	66.97	
	Smoker	29	78.55	

In the Table 9, the Kruskal Wallis test was used to examine dyspnea difficulty within the past 24 hours and within the past 7 days among the difference of smoking history [never (non-smoker), ex-smoker, smoker]. The result shows that the mean rank of dyspnea difficulty within the past 24 hours and within the past 7 days among these three groups are not statistically significant difference (p = .014, and p = .435 respectively). That means for dyspnea experience within the past 24 hours and within the past 7 days experienced of dyspnea among difficulty were not significant different.

Table 10

Comparison of Dyspnea Frequency (within the past 24 hours and within the past 7 days) Based on Smoking History

Dyspnea Experience		N	Mean Rank	p- value
Frequency of dyspnea within the past 24 hours	Ex-smoker	61	69.61	.919
	Never (non-smoker)	50	70.20	
	Smoker	29	72.88	
Frequency of dyspnea within the past 7 day	Ex-smoker	61	67.94	.629
	Never (non-smoker)	50	73.16	
	Smoker	29	69.33	

In the Table 10, the Kruskal Wallis test was used to examine dyspnea frequency within the past 24 hours and within the past 7 days among the difference of smoking history [never (non-smoker), ex-smoker, smoker]. The result showed that the mean rank of dyspnea frequency within the past 24 hours and dyspnea frequency within the past 7 days among these three groups are not statistically significant different (p = .919, and .629, respectively).

Additional analysis revealed that there was not statistically significant difference among dyspnea difficulty within the past 24 hours and within the past 7 days, among the difference of smoking history [never (non-smoker), ex-smoker, smoker]. On the other hand there were no statistically significant differences among dyspnea frequency within the past 24 hours and within the past 7 days among the difference of smoking history [never (non-smoker), ex-smoker, smoker].

APPENDIX D

List of Experts of Content Validity

Three experts validated the content of the Dyspnea Numeric Rating Scale and Dyspnea Intervention Scale. These experts were:

1. Assist. Prof. Dr. Wongchan Petpichetchian

   Nursing Lecturer, Faculty of Nursing

   Prince of Songkla University, Hat Yai, Thailand

2. Dr. Charuwan Kritpracha

   Nursing Lecturer, Faculty of Nursing

   Prince of Songkla University, Hat Yai, Thailand

3. Dr. Mohammad Nurul Anowar

   Instructor, Dhaka Nursing College

   Dhaka, Bangladesh

APPENDIX E

List of Translators for Back Translation of the Instrument

Three persons worked on the translation of the instruments:

Demographic and Health-Related Data Form, Dyspnea Numeric Rating Scale, and

Dyspnea Intervention Scale. These translators were:

1. Dr. Mohammad Nurul Anowar

   Instructor, Dhaka Nursing College

   Dhaka, Bangladesh

2. Kazi Monirul Azam (MA)

   Professional translator

   66 Kazi Nazrul Islam Avenue, Farmgate, Dhaka, Bangladesh

3. Dr. Ziaul Karim (MBBS, DTCD, FCPS)

   Assist. Prof. (Chest) Medicine

   NIDCH, Mohakhali, Dhaka, Bangladesh

   hishamibnezia@yahoo.com

APPENDIX F

Permission Letter for DNRS and DIS

asking permission for using

Shahnaz Parveen
<shahnaz.nidch@gmail.com>

to
tom.christenbery.

  Dear Sir (Assist. Prof. Dr. Thomas L. Christenbery)
     Good afternoon. Thank you for viewing my e-mail. This letter is to ask your kind
permission of using the Dyspnea Intervention Scale and Numeric Rating Scale for my
master thesis. I am Shahanaz Parveen, from Bangladesh. Now I study at Prince of
Songkla University in Thailand. Currently I am conducting a research study entitled
"Dyspnea Experience and Dyspnea Management in Patients with Chronic Obstructive
Pulmonary Disease in Bangladesh". I may revise some items of your scale to fit with
situations in Bangladesh as well. I am really greatfull if you can help me and grant me
the permission. I am looking forward to hearing from you. Thank you so much.
  Sincerely
  Shahanaz Parveen
  Masters student
  Prince of Songkla University

Christenbery, Tom
<tom.christenbery@vanderbilt.edu>

to me

Shahnaz,

  Thank you for contacting me. You certainly have my   permission
  to use the scale. I hope it is helpful. Please revise as needed. Please feel free to share
  your findings with me.

Best wishes,

Tom

VITAE

Name   Shahanaz Parveen

Student ID   5410420052

Educational attainment

Degree	Name of institution	Year of graduation
Bachelor of Nursing Science	College of Nursing University of Dhaka, Bangladesh	2007

Scholarship Awards during Enrollment

2011 – 2012 Scholarship for the Degree of Master of Nursing Science (International Program), Faculty of Nursing, Prince of Songkla University, Hat Yai, Thailand, Funded by the Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh

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Senior Staff nurse

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List of Publication and Proceeding

Parveen, S., Thaniwattananon, P., Matchim, Y., (2013). Dyspnea Experience and Dyspnea Management in Patients with Chronic Obstructive Pulmonary Disease in Bangladesh. *Proceedings of the 2013 International Conference on Health, Healing, and Harmony: Nursing Values*, Phuket Orchid Resort and Spa, Thailand, May 1- 3, 2013.