

**FACTORS RELATED TO QUALITY OF LIFE AMONG  
PATIENTS WITH ASTHMA**

**LE THU HOAI**

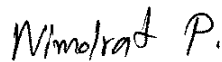
**A THESESES SUBMITTED IN PARTIAL FULFILLMENT  
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Thesis  
entitled  
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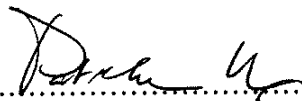
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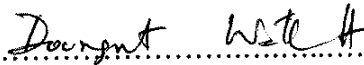
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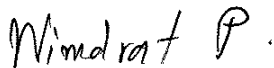
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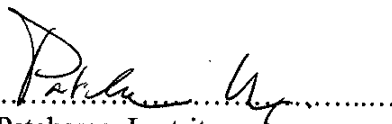
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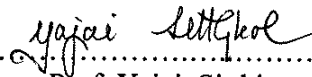
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**FACTORS RELATED TO QUALITY OF LIFE AMONG PATIENTS WITH ASTHMA**

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THESIS ADVISORY COMMITTEE : WIMOLRAT PUWARAWUTTIPANIT, Ph.D.,  
(NEUROSCIENCE), WALLADA CHANRUANGVANICH, D.N.S.,**ABSTRACT**

Asthma is also viewed as the major health problem in the world and in Vietnam. It has effects on quality of life (QOL) of people and economy of the country. In recent years studies have assessed which factors are associated with QOL in patients with asthma.

The aim of the study was to study the relationship between level of dyspnea, FEV1, social support and QOL in patients with asthma. In this study, research used symptom management theory as research framework.

A descriptive correlation research was conducted among 115 patients with asthma in a tertiary care hospital in Hanoi, Vietnam. The sample were ones aged 18 years and above. Data were collected by using patients' hospital record and interview the patients with interviewing forms. Spearman's rho was employed to test the relationship among all variables.

The result showed that the mean QOL was 7.96 (SD=4.10). The group of highly dyspnea accounts for 8.70%. The group of lowest dyspnea accounts for 17.39%. The level of dyspnea is negatively correlated with QOL ( $r = -0.788, p < 0.05$ ). In this study, the mean of FEV1 was 68.20 (SD=22). FEV1 was positively medium correlated with QOL ( $r = 0.674, p < 0.05$ ). Patients who receive social support was reported as had a significant and positive relationship with QOL in asthma patients ( $r = 0.244, p < 0.05$ ).

In conclusion, QOL among patients with asthma is under the influence of many factors, including symptom experience. In order to improve QOL, it is recommended that nurses should assess and manage patients' symptom, control their level of dyspnea and promote their social support. Standard guidelines should be developed and implemented. Moreover, further research should be conducted to test effectiveness of the guidelines.

**KEY WORDS:** QUALITY OF LIFE / ASTHMA / SOCIAL SUPPORT /  
LEVEL OF DYSPNEA / FEV1

95 pages

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## LIST OF ABBREVIATIONS

GINA	Global Initiative for Asthma
QOL	Quality of life
COPD	Chronic Obstructive Pulmonary Disease
WHO	World Health Organization
FEV1	Forced expiratory volume in 1 second
BMI	Body Mass Index
FVC	Forced Vital Capacity
FEF	Forced expiratory flow
AQ20	Airway Questionnaire
MSPSS	Multidimensional Scale of Perceived Social Support
HRQoL	<a href="#"><u>Health-Related Quality of Life</u></a>
SABA	Short-acting beta <sub>2</sub> agonist
MBS	Modified Borg Scale

## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Background and significance of the study**

Bronchial asthma is a chronic lung disease common in all ages and its prevalence is still on the rise in every country. According to reports from GINA (2005), there are approximately 300 million people suffer from asthma and 250,000 people die from asthma annually all around the world. In Vietnam, according to Asthma, Allergens and Immune Association, 4% of the population are patients of asthma. Asthma is defined as a chronic disorder of the airways involving complicated contact of bronchial hyper responsiveness, airflow obstruction, and an underlying inflammation (Bethesda, 2007). The airways, upon an attack of asthma, get inflamed, thus making it difficult for the patient to breathe. These attacks, according to Asthma's Impact on the Nation, (n. d.), may vary in severity, from mild, moderate to serious and even critical to life.

Asthma is featured by a number of symptoms such as wheeze, chest tightness, shortness of breath, and/or cough, and by variable expiratory airflow limitation. Airflow limitation and symptoms are both under the influence of intensity and time (GINA, 2015). Asthma is also viewed as the major health problem in Vietnam and in the world. It has effects on quality of life of people and economy of the countries. Over the past years, the factors that are related to asthma patients' quality of life have been assessed in numerous studies. Some of them have been conducted with a broad, descriptive approach, whilst others selected specific facets to investigate. Asthma may have impacts on sleep (Lewis, 2001; Wijnhoven, 2001), capability of working and job performance, socialization, participation in sports, and many other activities (Juniper, 1997, Legorreta, 2000). People with asthma reported poor life satisfaction, poor health high psychological distress (Ampon, 2005). It is also indicated that patients' psychological health may remain influenced even when the asthmatic symptoms in patients are under control based on standard guidelines

(Nishimura, 2004). Others studies have addressed the impacts of psychosocial factors on quality of life (QOL) and included perceived authorization of the disease (Calfee, 2006). Previous research about QOL of asthma patients, information about patients are valuable source, supplying a great deal of statistics about several aspects of patient's life. It is determinants of health because patients with higher socioeconomic status have more opportunities to get access to high quality care including medications and some advanced treatment including high technology therapeutic equipment. As a result, it is understandable to indicate socio-demographic elements connected to the assessment of patients' QOL.

Despite the limitations in contemporary understanding of factors dictating asthma result, observations in the recent course of time point out that active asthma exert a harmful influence on pulmonary function' longitudinal changes. (Ulrik, 1999). Asthma patients, with high severity in particular, are subject to childhood pulmonary function weakened growth, a lower maximally attained level of pulmonary function and excessive decline in pulmonary function in adulthood, which may lead to life threatening pulmonary function impairment. Information about pulmonary function (Forced Expiratory Volume in 1 second: FEV1) in patients with asthma might help to determine those who need additional care because it may have with respect to QOL.

Dyspnea is the major symptom among chronic respiratory patients and is a broad-spectrum term that describes a subjective breathing sensation of difficulty (American Thoracic Society, 1999). In study of Silva et al. indicated that the QOL is directly influenced by the intensity of dyspnea in patients with Asthma; patients with asthma had a lower dyspnea intensity index and better QOL compared to patients with COPD; and COPD is also a systemic disease, which causes more intense and hence more dyspnea impaired QOL when compared with asthma (Silva et al., 2016). In patients of both COPD and asthma, it has been reported that the higher severity of dyspnea at baseline, the lower HRQoL. Similarly, other studies discovered a solid connection between HRQoL and dyspnea (Curtis, Deyo & Hudson, 1994; Ferrer et al., 1997; Bestall et al., 1999; Hesslink et al., 2006).

By definition, social support is the help, comfort, and confirmation from acquaintances such as family, friends, and coworkers which brings the sufferer the feeling of being cared for, loved, esteemed, and a sense of the society (Cobb, 1976).

There are some categories of the support, for example, instrumental (practical assistance) emotional (e.g., understanding, comfort, and appreciation), and informative support (help with information) (Lakey & Cohen, 2000). Patients of chronic illnesses are usually in demand of specific types of social support, and the support sources need to be particular to the stressor. For example, the illness' basic knowledge and treatment is argued to be supplied in the most effective way by healthcare professionals, meanwhile emotional support should come from family and friends, and it is advisable that knowledge about societal resources and rights be given by association and support groups (Masters, Stillman, & Spielman, 2007; Dakof & Taylor, 1990). In chronic illnesses, such as asthma and allergy, it has been suggested that social support has beneficial effects on coping with them (Cohen, Gottlieb, & Underwood, 2000) and enhancing effects on behaviors of health promoting (Cohen & Wills, 1985). Social support may affect coping based on the main-effect hypothesis, suggesting that the individual with strong perception of social support has a feeling of being cared for and loved, which has a permanent positive effect on the individual's general well-being (Frey & Röthlisberger, 1996). So for increasing well-being and QoL, patients are in need of having a sense of being cared for and love from those in the closest surroundings (Lind, 2015).

In Vietnam, although there are 4% of people suffering from asthma ("Vietnam has million asthma sufferers," 2013). Bronchial asthma in a long run affects the life quality of patients, family and the society. For the past few years, there has been improvement in diagnosis, treatment and there is now more evidences to support that asthma can be well controlled. However, in fact, the number of patients with asthma admitted to hospitals is increasing year by year, as a result of insufficient and inappropriate knowledge and understanding about asthma. The sources of asthma are incomprehensible, and, despite major advances in our understanding of asthma in recent years, many questions remain largely unanswered, specifically those relating to factors that determine asthma outcomes. The scientific study is still limited so that there is inadequate scientific evidence to support the phenomena of people with asthma in particular among patients in Vietnam. Accordingly, the clinical research in this matter is needed. However, in order to manage the negative impacts on their quality of life, the nurses and health providers should clearly about the factors related

to patient's health status. In addition, the researches on factors related to quality of life among patients with asthma were still rare in Vietnam. In particular, in the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, Vietnam, a scarcity of such kind of research exists as well. This study aims to find out the factors related to QOL among patients with asthma. It is expected that this research can be used as a nursing care plan to promote the QOL of patients with asthma by managing those influencing factors. Moreover, the result of this research can be used to improve the quality of care for patients with asthma in the Allergy and Clinical Immunology Centre of Bach Mai Hospital. Thus, identifying some factors such as level of dyspnea, FEV1, social support, related to QOL as well as providing nursing care program will assist Vietnamese people with asthma to be able to improve their life, their quality of function and health. In turn, while their QOL improves they can make contribution to the society and economic system of the country.

## **1.2 Research questions**

- 1.2.1. What is the quality of life in patients with asthma?
- 1.2.2. What are the factors related to QOL among patients with asthma?

## **1.3 Purpose of the study**

To study the relationship among level of dyspnea, FEV1, social support and QOL in patients with asthma.

## **1.4 Hypothesis**

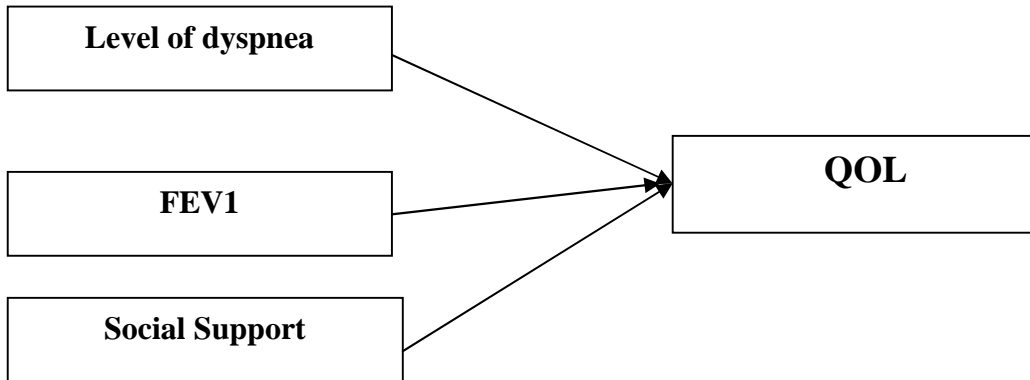
- 1.4.1. Level of dyspnea is negatively correlated with QOL in patients with asthma.
- 1.4.2. FEV1 is positively correlated with QOL in patients with asthma.
- 1.4.3. Social support is positively correlated with QOL in patients with asthma.

## **1.5 Conceptual framework**

Symptom management theory plays an important role in providing a good overview and understanding the researched participants. Dodd and colleague (Dodd et al., 2001) explained that symptom management model is composed of three main concepts; symptom experience, symptom management strategies and symptom outcomes. The symptom experience consists of the perception, evaluation and response to symptoms. The main symptom included in this study was dyspnea. "Perception of symptoms is gathered by the senses in the context of specific environment or situation" and refers to whether the person notices a change usual way of feeling or behaving (Dodd et al., 2001). Besides, the perception of airway narrowing appears to be lessened in subjects with asthma and is likely to be in connection with a rising risk of asthma attack. (Jang & Choi, 2002; Nosedá, 2003). Also inflammatory activity within the airways of asthmatic subjects could explain differences in dyspnea perception (Anderson & Smith, 1991; Pauwels, Joos, & Van der Straeten, 1988). More specifically, the eosinophilia in bronchial biopsies and sputum appears to affect dyspnea perception in severe asthmatics and has been indicated to be a sign of clinical instability. Therefore, patients attempt to search for management strategies according to patients' perception to improve quality of life. Beside management strategies, there are many factors such as FEV1 and social support might have impact on QOL in patient with asthma.

From above reasons, the researcher would like explore the relationship between level of dyspnea, FEV1, social support and QOL in patients with asthma. In this study, research use symptom management theory and life domain as research framework.

The relationship among independent variable and dependent variable is illustrated in the following conceptual framework:

**Personal Factors****Outcome****Indicators**

**Figure 1.1** The conceptual framework of correlation between level of dyspnea, FEV1 and social support with QOL patients with asthma, modified from symptom management theory (Dodd et al., 2001)

## 1.6 Scope of the study

The population of this study included patients, who are nearly discharge from the hospital or visit at outpatient of the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, VietNam. They are both male and female with the age of 18 years and above who have been diagnosis asthma.

## 1.7 Expected outcomes and benefits

1. For nurses, they will have more evidences in taking care patient with asthma. Nurses can use this knowledge to able to promote quality of life of patients with asthma by managing influencing factors. In addition, asthma patient will be confident in his or her own ability to achieve a desired outcome and from there they can improve their QOL because of providing some insights that may lead to better care.

2. Health care teams can evaluate and develop effective clinical nursing intervention for increasing QOL in patients with asthma during the time when patient

admit in the hospital.

3. This knowledge can be used for the researchers in the other areas of asthma disease studies.

## 1.8 Definition of terms

QOL is a complicated and abstract definition of a subjective sense of well-being. The definition is a multidimensional evaluation of different factors of an individual's life circumstances such as physical, psychological, social and spiritual dimensions. QOL must be considered in context to values and cultures of the individual (Haas, 1999). QOL is similar to the definition of health, a multidimensional concept and cannot be given in a distinct definition. QOL as a measurement can be a help for evaluating treatment because it shows clinical changes considering well-being and functioning of the patient (Sullivan & Tunsäter, 2001). In general terms, quality of life denotes what extent an individual's life is good, and, in connection with health, the goodness of those aspects of life influenced by health (Bowling, 2001). Nonetheless, QOL is influenced by many factors apart from health, such as marital status, income, job satisfaction and social opportunities (Janssen, 2001). QOL includes all aspects of life, for instance, health status, environment, financial aspects and human rights. Additionally, it is presumably obvious that the meanings of QOL vary among different individuals and the area of application (Bowling, 2005).

In this study QOL will be measured by AQ20 Questionnaire (Hajiro, Jones et al., 1999). It includes 20 items with "yes" responses counted as 1, and "no" and "not applicable" ones counted as 0. The summary score ranges from 0 (best health) to 20 (worst health). Higher scores indicate poor QOL (Barley, Jones and Quirk, 1998).

**Dyspnea** is the term generally applied to sensations experienced by people who report uncomfortable or unpleasant respiratory sensations. There have been many definitions of dyspnea offered, from "difficult, labored, uncomfortable breathing" (Wright and Branscomb, 1966), an "awareness of respiratory distress" (Wasserman and Cassaburi, 1988), to "the sensation of feeling breathless or experiencing air hunger" (Simon et al., 1989) and "an uncomfortable sensation of breathing". Dyspnea

is addressed as a subjective experience of uncomfortable or difficult breathing stemming from an intricate interaction between physiological and psychological factors, and it is a cardinal symptom of asthma.

In this study dyspnea will be measured by Modified Borg Scale. This instrument consist of 10 items scale; patients are requested to rate words describing increasing degrees of breathlessness by numbers between 0- 10. The items scale examines perceived dyspnea and at 10, “very, very severe (maximal).” Higher score mean that higher dyspnea (Borg,1980).

**Information about pulmonary function (Forced Expiratory Volume in 1 second (FEV1)** in patients with asthma might help to determine those who need additional care because it may have with respect to quality of life they. FEV1 is by far the most frequently used index for assessing airway obstruction, bronchoconstriction or bronchodilation. It is automatically calculated during spirometry or pulmonary function testing.

According GINA (2014), Spirometry is an unchallenging test used to measure the amount of air an individual can breathe out, and the amount of time he or she needs to do so. Spirometry measurements used for asthma diagnosis involve:

(1) FVC (Forced Vital Capacity): maximum volume of air that can be exhaled during a forced maneuver

(2) FEV1 (Forced Expired Volume in one second): volume expired in the first second of maximal expiration after a maximal inspiration. This is a measure of how quickly the lungs can be emptied.

(3) FEV1/FVC: FEV1 expressed as a percentage of the FVC gives a clinically useful index of airflow limitation.

FEV1, impacted by height, age, sex and ethnicity, is best regarded as a percentage of the predicted normal value. Appropriate normal values for the local populations should be used.

With FEV1 predicted  $\geq 80\%$  and FEF variability  $< 20\%$  is mild intermittent; FEV1 predicted  $\geq 80\%$  and FEF variability: 20- 30% is mild persistent; FEV1 predicted: 60- 80% and FEF variability:  $> 30\%$  is moderate persistent; FEV1 predicted:  $< 60\%$  and FEF variability:  $> 30\%$  is severe persistent. FEV1 expressed as a percentage of the vital capacity (VC) is the standard index for assessing and

quantifying airflow limitation. FEV1%VC falls with age and height. FEV1 is the maximum amount of air one person can forcefully exhale in one second. It is then converted to a percentage of normal. FEV1 is a marker for the degree of obstruction with your asthma, anecessary measure of pulmonary function. In this study FEV1 will be measured by the lung function test machine by the physician. The researcher will collect data from the result of the test (GINA, 2014).

**Social support** is the help, comfort, and confirmation from acquaintances such as family, friends, and coworkers which brings the sufferer the feeling of being cared for, loved, esteemed, and a sense of the society. Moreover, the support is considered to decline stressors (Cohen &Wills, 1985) but to be stress-reducing the support needs to suit the stressor (Cutrona& Russell, 1990). Specific needs, particularly in chronic illnesses, should be met by specific types of social support, indicating the support sources need to be stressor-specific. For example, the illness' basic knowledge and treatment is argued to be supplied in the most effective way by healthcare professionals, meanwhile emotional support should come from family and friends, and it is advisable thatknowledge about societal resources and rights be given by association and support groups(Dakof& Taylor, 1990; Masters, Stillman, &Spielmans, 2007). Some studies on depressionindicate that instrumental support protects more against depression in functionally disabled patients (Fitzpatrick et al., 1991).

Social support in this study will be measured by MSPSS (Multidimensional Scale of Perceived Social Support) Questionnaire (Zimet et al., 1988). This questionnaire consist of 12 questions and separate into 3 domains including Family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12) and significant others (items 1, 2, 5, and 10). Each item is scored on a likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree); Total scores of social support vary from 12 to 84 and the higher the score, the more social support (Zimet et al., 1988). MSPSS has proven to be psychometrically sound in diverse samples, and to have good internal and test-retest reliability, and robust factorial validity. Overall alpha coefficient was 0.91 and its sub scale alpha coefficients ranged from 0.90 to 0.95(Atadokht, Hajloo, Karimi, & Narimani,2015)

**Respiratory failure** is a syndrome in which the respiratory system fails in one or both functions of its gas exchange: oxygenation and carbon dioxide elimination. In practice, it may be categorized as either hypoxemic or hypercapnic (“Respiratory Failure”, 2015). Symptom of Respiratory failure:

- . Shortness of breath, rapid breathing, and air hunger
- . Abnormal sounds in the lung
- . Signs of an arrhythmia (irregular heartbeat) in the heart
- . Bluish color on your skin, lips, and fingernails
- . Extreme sleepiness and confusion (“How Is Respiratory Failure Diagnosed?”, 2011)

## **CHAPTER II**

### **LITERATURE REVIEW**

This chapter provides a literature review of relationship between level of dyspnea, FEV1, social support and quality of life (QOL) in patients with asthma. The contents enhance the understanding of phenomena of QOL among patients with asthma based on symptom management theory.

#### 2.1. Problems among patients with asthma

##### 2.1.1 Incidence patients with asthma

##### 2.1.2 Pathophysiology of asthma

##### 2.1.3 Impact of asthma

#### 2.2. QOL among patients with asthma

##### 2.2.1 The concept of QOL

##### 2.2.2 QOL among patients with asthma

##### 2.2.3 Measuring QOL

2.3 Symptom management theory as a conceptual framework to explain quality of life among patients with asthma

##### 2.3.1. Symptom management theory

2.3.2. Symptom management theory as a conceptual framework to explain QOL among patients with asthma

#### 2.4 Factors associated with QOL among patients with asthma

2.3.3. Symptom management and its association with QOL among patients with asthma

2.3.4. Level of dyspnea and its association with QOL among patients with asthma

##### 2.3.5. FEV1 and its association with QOL among patients with asthma

2.5 Social support and its association with QOL among patients with asthma  
Conclusion

Related literatures were reviewed in details under the following topics:

## **2.1. Problems among patients with asthma**

### **2.1.1 Incidence patients with asthma**

Asthma is an important cause of chronic morbidity and a crucial health problem worldwide, with high prevalence rates particularly in many developed countries (Jeebhay & Quirce, 2007). The guidelines from the Global Initiative for Asthma (GINA, n.d.) provides a specific illustration of asthma as follow: "Asthma is an inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing particularly at night or in the early morning. These episodes are usually associated with a widespread, but variable, airflow obstruction within the lung that is often reversible either spontaneously or with treatment" (GINA, n.d., p.3). Although there has been improved recognition and rising prescriptions for anti-asthma therapy, the disease still has increasing rates of prevalence and morbidity (Barnes, 1996).

It is estimated that there are 334 million people contracting asthma globally. This statistics is extracted from the most recent comprehensive analysis the Global Burden of Disease Study (GBD) undertaken in 2008-2010. In another investigation, which took place from 2000 to 2002, the figure million cases, and this is included in the Global Asthma Report. However, these numbers are not accurate, they are proposed based on the best data available, and require more high-quality asthma data to be accumulated ("The Global Asthma Report 2014," 2014). In the U.S. alone, about 25 million people have asthma, which is one out of every 12 people, and nearly 3,500 people die from asthma ("The Impact of Asthma," n.d.).

Approximately 44 million people the East Asia/Pacific region are patients of asthma by 2004. However, the distribution of the disease is not even throughout the region. to the article "Prevalence of Asthma - Especially Severe Asthma - Increasing in East Asia and the Pacific," (2004), Oceania-Australia, and Pacific Islands region has the prevalence of asthma as around 15%, among the highest in the world. On the contrary, in China countries, the current prevalence of asthma is only 2%, but because this is one of the most populous region in the world, the figure is equivalent million people having asthma. Bronchial asthma is an important cause of morbidity and

mortality in the world (Masoli 2004). Mortality due to asthma is also on the rise, according to the guidelines from the Global Initiative for Asthma (GINA) currently 250 people on there are 1 death from asthma, disability life years lost by asthma also tend to be higher than previously estimated 1% of the total, the increase in the incidence of asthma and severe asthma in the community.

Although prevalence of asthma is low in the comparison with Western countries (Leung & Ho, 1994), the impact of asthma on Southeast is remarkable, with report in 2003 showing 3.3% of the population having asthma, among which Indonesia and Vietnam have the lowest rates the Philippines and Singapore have the highest ones (GINA, 2004). Across Southeast Asia, asthma has been exerting a huge burden on patients and society, with 1 in 4 adult patients losing time from the work in 2003 (GINA, 2004). And there is high possibility that will increase further as a result of growing Western lifestyle adoption and increasing urbanization, stated Professor Richard Beasley (Masoli, Fabian Holt, & Beasley, 2004). In VietNam, there were 3.5 million asthma sufferers, accounting for 4 percent of the country's population ("Vietnam has million asthma sufferers," 2013). Asthma is defined as a common airway chronic disorder involving a complicated connection of an underlying inflammation and bronchial hyper responsiveness (Bethesda,2007).

### **2.1.2 Pathophysiology of asthma**

Asthma is a chronic disorder of the airways whose primary feature is reversible airflow obstruction and airway inflammation, persistent airway hyper reactivity, as well as airway remodeling. The inflammation is featured by oedema, infiltration with inflammatory cells particularly eosinophils, hypertrophy of glands and smooth muscle and impaired epithelium (Society, 2012). The inflammation causes the condition of hyper responsiveness in which airways narrow easily to respond to a number of stimuli. This may lead to wheezing, coughing, chest tightness and shortness of breath, which often turn worse in the nighttime. Those are the symptoms of an attack. The airway narrowing is often adjustable. However, in some patients with chronic asthma, the inflammation may result in irreversible airways obstruction. Recent advances have stressed the vital role of genetics in asthma development, especially atopic asthma. Another factor that has been to bear a correlation with the

development of asthma is environment stimuli, especially early childhood infections. The majority of findings these days appear to indicate that those elements motivate the development of a Th-2 lymphocyte– predominant immune response, which is related to atopy and IgE-mediated inflammation (Maddox & Schwartz, 2002).

Expressions of the airway obstruction in asthma are brought about by hyper secretion of mucus, cellular infiltration, bronchoconstriction, mucosal oedema, inflammatory cells and desquamation of epithelial (Larsen, 1992), (Holgate, 1993). Various nonspecific and allergic stimuli, in the presence of hyper reactive airways, imitate the bronchoconstriction and inflammatory response (Esposito & Principi, 2001). These stimuli cover infectious agents, inhaled allergens, such as cigarette smoke, pollens, dust mites, molds, odours, air pollutants, and cockroach, cat or dog allergens; drugs, vegetable proteins, cold air and exercise (Duff, Pomeranz, & Gelber, 1993), (Nelson, Szefer, & Jacobs, 1999), (Rona, Duran-Talaria, & Chinn, 1997). Wheezing, one of the chief signs of asthma, is a nonspecific physical expressions connected with restriction of airflow through narrowed airways, and is considered to be caused by turbulent airflow, which leads to the bronchial wall oscillation (Silverman, 1995).

### **The classification of asthma**

Asthma is clinically categorized according to the frequency of symptoms, forced expiratory volume in one second (FEV1), and peak expiratory flow rate. Asthma may also be categorized as non-atopic (intrinsic) or atopic (extrinsic), based on whether symptoms are precipitated by allergens (atopic) or not (non-atopic). Whereas asthma is categorized according to severity, at the moment there is no clear method for categorizing different subgroups of asthma beyond this system. Finding ways to identify subgroups that respond well to different types of treatments is a current critical goal of asthma research (table 1).

**Table 2.1** Classification of asthma

<b>Severity</b>	<b>Symptom frequency</b>	<b>Night time symptoms</b>	<b>%FEV<sub>1</sub> of predicted</b>	<b>FEF Variability</b>	<b>SABA use</b>
<b>Mild Intermittent</b>	≤2/week	≤2/month	≥80%	<20%	≤2 days/week
<b>Mild persistent</b>	>2/week	3–4/month	≥80%	20–30%	>2 days/week
<b>Moderate persistent</b>	Daily	>1/week	60–80%	>30%	daily
<b>Severe persistent</b>	Continuously	Frequent (7×/week)	<60%	>30%	≥twice/day

### 2.1.3 Impact of asthma

Asthma can have diverse degrees of impact on the physical, mental and social prosperity of individuals living with the condition. Individuals with asthma tend to report a poor QOL. This pattern is more reported among individuals with serious or ineffectively controlled asthma, (ACAM 2011, ACAM 2004).

There is additionally a greater societal asthma affect that we should all know about: It is evident that asthma influences all zones of the individual, both physically and mentally, yet it likewise applies incredible weight on the family's fund and may significantly meddle with the capacity to attempt an ordinary every day exercises (Gelfand, 2008). Also, asthma, similar to whatever other illness, has social and in addition restorative measurement and it is progressively being perceived that these two measurements are interlinked (Nocon & Booth, 1991). Moreover, asthma likewise affects the social insurance framework and economy of our nations.

2.1.3.1 Physical impact: in light of a trigger, an asthma assault can bring about airway aggravation bronchial confinement and discontinuous airway deterrent. Airway aggravation is the body's reaction to an aggravation and is portrayed by swelling breathing way limitation and bodily fluid emission. Bronchial confinement happens when the muscles in your airway contract and fix around your bronchial tubes (the breathing tubes in your lungs). Bodily fluid or liquid that is

discharged by the response can impede your airway route and make it progressively hard to inhale productively (Jagoda, 2011). Steady with its chronicity and its appearances, including aspiratory work weakness and indications of wheezing, hack, dyspnea and trunk snugness, asthma disables patients' prosperity, henceforth, essentially influences their day by day exercises (Gelfand, 2008). As expressed, inability is a long haul lessening in the capacity to take part in people exercises (Newacheck, 2000), asthma is the absolute most predominant cause handicap in the U.S ("The Impact of Asthma," n.d.).

2.1.3.2 Psychological impact: Difficulty breathing, prompting to the impression of "air craving", can obviously be horribly disquieting. It is basic for individuals with asthma to experience expect that they will pass on amid an asthma scene. The dread of biting the dust then can turn out to be more broad and proceed when the individual is not having dynamic side effects, creating a sentiment tension ("Emotional and social impact of asthma,"). Asthma has for quite some time been viewed as a condition in which mental variables have a part. As in numerous diseases, mental factors may influence result in asthma by means of their consequences for treatment adherence and side effect revealing. Notwithstanding the proof that sorrow is regular in individuals with asthma and applies a negative effect on result, few treatment thinks about have analyzed whether enhancing manifestations of despondency do, truth be told, result in better control of asthma side effects or enhanced personal satisfaction in patients with asthma. Mental components may impact the side effects and administration of asthma, and various pathways may add to the connections amongst asthma and psychiatric ailment states, for example, wretchedness. The idea that passionate anxiety can encourage or worsen intense and constant asthma has been perceived episodically for a long time. Mental boundaries, for example, flawed side effect attribution, appropriation or dismissal of the debilitated part, and low self-regard, may adversely affect treatment adherence. On the other hand, the nearness of a perpetual and possibly life-undermining ailment may apply enough anxiety that a tension or depressive issue rises in defenseless patients.

2.1.3.3 Economic impact: Not just is asthma identified with particular disability in patients additionally to a momentous cost to the group. Asthma is connected with huge human services consumptions that incorporate both immediate,

backhanded expenses, and immaterial expenses are high. The financial expenses connected with asthma are evaluated to rank as one of the most noteworthy among incessant infections because of the critical social insurance usage connected with this condition. Coordinate expenses are those connected with medications and gadgets doctors, and doctor's facilities. Backhanded expenses are characterized as "lost assets, for example, time of work and school, and untimely retirement. Immaterial expenses are identified with personal satisfaction weakness and social issues of the patients and their families. It is a typical shared idea that great administration of the illness could prompt to bleakness, mortality, and expenses of asthma. The cost to society of asthma in the U.S. is over \$50 billion every year in human services costs, missed school and work days, and early demise ("The Impact of Asthma," n.d.). The immediate asthma effect on medicinal services costs is additionally huge. In Thailand, the normal aggregate per individual yearly cost of asthma in 2012 was 8,009.37 Baht (around USD 258), and the immediate cost represented 83.95% of the aggregate cost (Trakultivakorn,2012). Family affect: Asthma likewise influences the lives of the relatives who furnish nurture patients with asthma. When one relative is subjected to asthma, the malady triggers issues for the individual with the illness as well as the whole family. The worry of living with an incessant ailment uncovers itself from multiple points of view among the different relatives. Somebody with asthma, for instance, might probably get included in battles, be less helpful, or be adamant, discouraged, restless or pulled back. In an investigation of youngsters with determined asthma and their parental figures, roughly 33% of guardians missed work amid the 12-month think about as a result of their kids' asthma (Laforest, Yin, &Kocevar, 2004). Also, it was found that amid the intense asthmatic assault, relatives needed to manage gigantic weight in minding or trasporting the patients to crisis room. This circumstance conveyed upsetting occasion to the relatives (Laforest, Yin, &Kocevar, 2004).

2.1.3.4. Hospital impact: The most noteworthy impacts are brought on by clinic weights, for example, expanded length of doctor's facility stay and bed inhabitation, expanded workload, expanded doctor's facility death rates and higher re-affirmation rates. In U.S, a five-year examine demonstrated the immediate cost of asthma is \$4 billion out of the total\$7.2 billion (Bahadori et al., 2009). In

Thailand, the information announced in 2004 from the Index of Medical Specialties demonstrated that 2,150 million Baht were spent for medications treating unfavorably susceptible maladies and asthma, which expanded 10% after just a single year (Bunnaq, Jareoncharsri, Tantilipikorn, Vichyanond, and Pawankar, 2009).

2.1.3.5. Social impact: Like numerous dynamic endless illnesses, asthma influences patients and in addition their social framework. The vast majority of the effect of asthma is on physical working and on the capacity to perform social parts, the ailment puts an incredible encroachment on the general public. A few people may miss school or work because of their asthma or keeping in mind the end goal to look after a youngster or cherished one with asthma. For others, asthma impacts us in various ways, as not having the capacity to partake in specific exercises. Asthma impacts a person, as well as society also. The impacts of asthma can incorporate diminished support in school and brandishing and other relaxation exercises.

## **2.2 QOL among patients with asthma**

### **2.2.1 The idea of QOL**

WHO (1994) expressed QOL was “an individual’s view of their position in life with regards to the way of life and esteem frameworks in which they lived and in connection to their objectives, desires, guidelines, and concerns”. This point of view assumes a critical part in patient’s physical wellbeing, mental state, level of freedom, social connections, individual convictions and the relationship to remarkable components of the earth. Personal satisfaction can be considered from numerous points of view. The idea QOL can be gotten from Aristotle’s work (384-322 BC.). The QOL-idea was created in the 1960’s in sociologies to incorporate prosperity in the entire populace as a part of the estimation of the individual’s subjective experience. To gauge QOL got to be distinctly prominent after the Second World War (Campbell 1976).

There is no agreement definition or general comprehension of the idea personal satisfaction. QOL is an idea as well as a term about which there is an instinctive comprehension: “a term that everybody can see however not very many can’t characterize. It is an unclear and ethereal element, something that many individuals discuss however which no one unmistakably realizes what to do about” (Campbell 1976). The idea of QOL has turned out to be progressively utilized as a part of all spaces of ceaseless infection look into (Hallin 2000). In spite of the developing fame of QOL as a result measure, investigate keeps on being vexed by the absence of an unmistakable and brief meaning of the idea (Bowling 2001).

### **2.2.2 QOL among patients with asthma**

Asthma applies a significant effect on the life of many individuals. Lately ponders have surveyed which variables are connected with personal satisfaction in asthma. Some of these examinations have been completed with a wide, unmistakable approach, while others have concentrated on specific components. Asthma may impact rest (Lewis 2001, Wijnhoven 2001), capacity to work and occupation per socialization, interest in games, and a large group of different exercises (Juniper 1997, Legorreta 2000). Individuals with asthma announced poor fulfillment, weakness status, and high mental misery (Ampon 2005). Past reviews likewise found that mental prosperity may keep on being influenced despite the fact that the asthma in patients is all around controlled by rules (Nishimura 2004). Others thinks about have tended to the impact of psychosocial variables on HRQOL and included perceived control of the sickness (Calfee 2006).

### **2.2.3. Measuring QOL in patients with asthma**

Measuring QOL has turned into an inexorably imperative measurement of evaluating patient prosperity and medication viability. As there are currently a few asthma personal satisfaction surveys to look over, it is vital to value their qualities and shortcomings. To help with this decision we have looked into the current surveys structuredly. Data identifying with the applied and estimation display, unwavering quality, legitimacy interpretability, load, organization arrangement and interpretations was extricated from the distributed writing. The instruments vary in all criteria

considered, and along these lines it can't be accepted that they measure a similar thing. QOL polls for use in asthma are by and large too long or complex for routine utilize. A short and basic measure of wellbeing status in asthma has been produced for this reason.

In many instruments to assess patients' QOL with asthma are excessively tedious, for example, St Georges Respiratory Questionnaire with 56 things. So the aviation route Questionnaire 20 (AQ 20) is synopsis from St Georges Respiratory Questionnaire just with 20 things and its curtness and straightforwardness makes it especially reasonable for routine use in clinical practice. The AQ20 was outlined at St. George's Hospital Medical School in the UK as a short and straightforward measure of the wellbeing status of people with asthma. The new polls have either 20 things (AQ20). The things of the AQ20 shape (see Appendix). Reaction to everything takes the shape 'Yes', "No" or 'Not applicable. Positive reactions just are scored and after that summed to give an aggregate score out of 20 (AQ20). The synopsis score ranges from 0 (best wellbeing) to 20 (most exceedingly awful wellbeing). Higher scores demonstrate a decrease in the personal satisfaction because of asthma side effects. It indicates great unwavering quality and legitimacy; no area sub scores are proposed. Of the 20 things, no less than 6 seem to gauge side effects (e.g., windedness and hacking assaults), 5 seem to quantify wellbeing status (e.g., trouble taking part in exercises in view of side effects), 5 to evaluate feelings identified with manifestations (e.g., stress and eagerness), and 4 QOL, all the more barely defined (e.g., trouble and can't appreciate a full life). The instrument utilizes yes/no reactions as opposed to Likert scale, making it extremely basic and brisk to direct (4-5minutes).

## **2.3 Symptom management theory as a conceptual framework to explain QOL among patients with asthma**

### **2.3.1. Symptom management theory**

Dodd and colleague (Dodd et al., 2001) explained that symptom management model is composed of three main concepts are symptom experience, symptom management strategies and symptom outcomes. The symptom experience

consists of the perception, evaluation and response to symptoms. According to Dodd and colleagues (Dodd et al., 2001) the target of symptom management is to avert or delay a negative outcome through biomedical, professional and self-care strategies and all troublesome symptoms need to be managed both the symptom experience and the outcomes. Within each component there are sub concepts which describe the property of each component. Each component is related to each other. External factors influencing symptom include the characteristic of a person, environment and type or severity of illness. In the symptom outcome concept “quality of life” is an ultimate outcome on this model.

The components of the Symptom management model are influenced by the nursing science domains, which are the personal, the environmental and the health/illness domains. These domains have their origin in the met paradigmatic concepts of nursing: human beings, environment, health and nursing (Fawcett 2005). The symptom management model continues to evolve as a framework for understanding symptoms, designing and testing management strategies and for evaluating outcomes. The model is highly generalizable. The symptom management model is offered as a conceptualization to guide selection of management strategies in contrast to a recently published theory of unpleasant symptoms that focuses more on explaining the symptom experience and how it affects function (Lenz et al. 1997).

The most recognizable strength of the theory is its reflection of symptom, which is one of the quality indicators of health care service. In addition, thanks to its comprehensiveness, it possesses a high potential of applying to clinical practice. Another advantage of the theory is the components cover symptom experiences which refer to patients’ problem, symptom management strategies reflecting intervention and symptom outcome referring to the results from the intervention. Signs and symptoms are important aspect of health and illness that disrupt patients’ physical, mental, and social functioning. An acute or unrelenting symptom is often what brings the patient in to the health care system, particularly after self- care management strategies have failed. The presence of a symptom or cluster of symptoms may be the first indication to the patient or provider of a developing illness. As with all chronic diseases, the responsibility for the daily symptom management needs to be shared between health care professionals, patients, and their families.

Based on the above mentioned characteristics, the theory can be used to reflect patients' symptom so that healthcare providers as well as the individual are able to manage the symptoms well. Accordingly, the theory is assessed as highly practical for usage in clinical practice.

The symptom management theory has evolved as more research studies have contributed to the understanding and development of relationships among the three concepts of the theory. This theory can be used as the framework if nurses would like to study about symptom management. The research scope can be covered from descriptive to experimental research. This theory can be used as the theoretical framework for this present study.

### **2.3.2. Symptom management theory and the patients with asthma**

In asthma disease, symptoms closely reflect the status of asthma. Therefore, in order to achieve the desired outcomes, observing and managing symptoms are necessary. In asthma patients, for example the most common symptom is wheezing. Other symptoms include: shortness of breath, chest tightness or pain, chronic coughing, trouble sleeping due to coughing or wheezing. Besides, the perception of airway narrowing appears to be lessened in subjects with asthma and is likely to be in connection with a rising risk of asthma attack. (Jang & Choi, 2002)(Nosedá, 2003). Also inflammatory activity within the airways of asthmatic subjects could explain differences in dyspnea perception (Anderson & Smith, 1991; Pauwels, Joos, & Van der Straeten, 1988). More specifically, the eosinophilia in sputum and bronchial biopsies appears to influence dyspnea perception in severe asthmatics and has been suggested as a sign of clinical instability. The symptom experience consists of the perception, evaluation and response to symptoms. The main symptom included in the thesis was dyspnea. "Perception of symptoms is a conscious, cognitive senses in the context of a particular environment or situation" and refers to whether the person notices a change from his or her usual way of feeling or behaving (Dodd et al. 2001). Asthma symptoms may be worse during exercise, when patients have a cold or they are under high pressure. Although adults with asthma are physically responsible for their own symptom management, support and intervention from caregivers is sometimes vital.

Symptom experiences of patient with asthma can be measured by standard scale called symptom experience scale. In clinical practice, this theory provides nurses with a useful tool to observe as well as treat patient with asthma. It can be utilised as a measurement scale to assess patient symptom such as coughing, wheezing, shortness of breath chest tightness and dyspnea. Symptom observation and evaluation is concretized based on different dimensions and phases rather than general reactions. Therefore, if nurses, other healthcare providers and their Family understand symptom management model, then it will provide the concepts and a framework that cover all symptoms of asthma disease to achieve aim control symptoms, which most important outcome to improved quality of life. By understanding the components and the relationship between the components, nurses are able to intervene precisely to control the symptoms. To be more specific, it is necessary to acknowledge the pathophysiology of asthma and acute asthma, followed by the disease's impacts on patients.

## **2.4 Factors associated with QOL among patients with asthma**

### **2.4.1. Symptom management and its association with QOL among patients with asthma**

Asthma is one of the diseases most common adult chronic disorders. Supporting asthma patients in improving their asthma control and symptoms as well as their quality of life are important goals in clinical management. But the low congruence between patients' symptom reports and their pulmonary function leads to disease management errors. The accuracy with which asthma patients recognize their symptoms is affected by emotional factors, and because high negative affectivity is related to low interoceptive accuracy and worse asthma symptoms and asthma physical health, the frequent mental distress prevalent among asthmatics is thought to result in difficulty in distinguishing symptoms of stress/distress from those of asthma. It thus has the potential to improve patient's discrimination between asthma symptoms and stress/distress, resulting in improved asthma management, control and QOL.

### **2.4.2 Level of dyspnea and its association with QOL among patients with asthma**

Dyspnea is a subjective experience of breathing discomfort and a prominent symptom of asthma and at the same time, the important component of the subjective patient's well-being. The aim of the effective treatment of the asthma patients is to achieve the improvement of their symptoms as well as improve their QOL. The frequently used definition describes dyspnea as more limited or difficult respiration than expected, according to the level of activity. Dyspnea or breathlessness, which patients call in different ways, is the consequence of the dynamic hyperinflation and the impairment of lung mechanics in asthma, i.e. the increased resistance in the airways as well as the reduced elastic. At the onset of the disease, dyspnea only exists at strenuous effort, but it can appear at rest with further impairment of lung mechanics in this chronic progressive disease. In that way, dyspnea has a significant effect on the impairment of health related QOL of these patients.

Dyspnea and QOL are important criteria for the evaluation of the disease effect and treatment outcomes in asthma patients. Measuring dyspnea represents the critical aspect in the assessment and therapy of these patients. When selecting the instrument for the measurement of patient-reported outcomes, it is of great importance to know, beforehand, its psychometric properties. Understanding the concept of patient reported outcomes for the difference of physiological outcomes which physicians assess in asthma patients is very important since these patients and their doctors do not always have the same perceptions about the most important facts which need to be followed in this illness. The level of dyspnea, the main symptom of patients with asthma exacerbations, can help us to determine how these patients can function in everyday life, i.e. to indicate what their quality of life is. On the other hand, the researcher can reliably expect that any medical intervention in asthma patients that leads to symptom improvement and decrease of their feeling of shortness of breath will also improve their QOL.

### **2.4.3 FEV1 and its association with QOL among patients with asthma**

Information about predictors of decline in pulmonary function (forced expiratory volume in 1 second [FEV1]) or quality of life in patients with asthma might help to determine those who need additional care. Pulmonary function and QOL are both autonomously of huge significance in the administration of asthma. Evaluating the aviation route deterrent by measuring the constrained expiratory volume in one moment (FEV1) was, as of not long ago, the most well-known approach to survey ailment seriousness, reaction to treatment, and (short-term) forecast in asthma patients. FEV1 is a marker for the level of obstacle with asthma, a vital measure of aspiratory capacity. Notwithstanding, it is essential that FEV1 is just a marker, and not a clinical result of asthma. Lung work information has frequently been utilized to assess sickness seriousness and asthma treatment impacts, however the lung capacity is inadequately associated to QOL and asthma side effects (Juniper 1997, Jones 1995, Teeter 1998).

### **2.4.4 Social support and its relationship with personal satisfaction among patients with asthma**

The relationship between social support and QOL in grown-ups with asthma is accepted to be imperative, however has not been very much examined. In principle, stress may influence the personal satisfaction in asthma through various diverse instruments, including intercession by means of a stage up in infection seriousness or through psychosocial pathways that may adjust the effect of sickness and how it is seen at the individual level, both of which may influence the personal satisfaction. The QOL in asthma is progressively perceived as a clinically essential wellbeing measure, mirroring the impact of sickness from the patient's point of view. There is no single way to deal with surveying worry in connection to wellbeing, adding further difficulties to the methodical investigation of this issue. Cases of pessimistic stressors incorporate demise of an accomplice, relative or dear companion, major monetary misfortune, and experience of a noteworthy individual wrongdoing or damage. The analyst wished to test whether negative life occasions were connected with poorer asthma-particular QOL among grown-ups with asthma, steady with an unfriendly impact of weight on wellbeing. Adapting and social support has been found to have constructive outcomes in unending sickness (Cohen et al., 2000; Cohen and Wills,

1985). It has been recommended that proper adapting methodologies can help in asthma administration while an improper procedure may expand the hazard for loss of control over the sickness (Barton et al., 2003). Social support, then again, has been accounted for to affect the wellbeing result and additionally in the lessening of stress (Ell et al., 1992; Ford et al., 2006) though low or inadequate support has been connected with expanded hazard for clinic confirmation (Wainwright et al., 2007).

## **2.5 Conclusion**

While asthma disease is control able, it is a progressive disease and serious effects on all aspects of a patients' QOL such as physical function, psychological well-being and social behavior. The symptom management model has been argued to be one of the essential solutions for helping nurses, other healthcare providers and their family understand symptom to care planning, and giver-care to promote self-management and providing supportive care of patients with asthma. So, understanding about symptom management mode play an important role in that cover all symptoms of asthma disease to achieve aim control symptoms and in order to provide a comprehensive view of the effects of factor associated to QOL among patients with asthma disease, to aim advanced patient' quality of life. In this study, the researchers select symptom management theory because the theory provided the concepts that cover all variables. Beside it provides a framework for understanding symptom, designing the appropriate management strategies to achieve the outcome- QOL. The model which helps the researchers study to identify QOL of patients may be influenced by several factors such as dyspnea status, FEV1, severity of the disease and social support. In the symptom outcome concept "quality of life" is an ultimate outcome on this model. Symptom management is useful to achieve a better understanding of the mechanisms and assessment of dyspnea and when helping in advanced practice roles in order to successfully manage asthma. The ultimate goal of symptom management is to facilitate improve QOL of the patients.

As aforementioned, it can be concluded that symptom management model can be well elaborate the phenomena of patients with asthma by describing the QOL as an outcome and symptom experiences (FEV1, level of dyspnea and social support) as influencing factors.

## **CHAPTER III**

### **METHODOLOGY**

In this chapter include research design, population and sample of the study, studied instruments and their validity and reliability, data collection procedure, human right protection, data analysis and assumption of the statistic used in this study will be consecutively presented.

#### **3.1 Research design**

This study was a cross-sectional study with descriptive correlational design, in order to explore the relationship between level of dyspnea, FEV1, social support and quality of life (QOL) in patients' asthma.

Data were collected from patient hospital records and interview patients by questionnaires.

#### **3.2 Population and sample of the study**

##### **3.2.1 The population of this study**

The population of this study included patients both male and female with the age of 18 years and above who have been diagnosis asthma; inpatients and outpatients to the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, Vietnam..

**Sample was selected from the population according to the following criteria:**

- 1) Age of 18 and or older have been diagnosed asthma
- 2) Nearly discharge from the hospital or visit at outpatient of the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, VietNam.

3) Able to verbally communicate with the researcher in Vietnamese language

**The Exclusion criteria:**

1) Patients with critical illness: respiratory failure, unstable vital signs: Respiratory rate > 30 times/minute, SpO<sub>2</sub> < 80 %, purple on the lip, finger or body, heart rate > 90 times/ minute and patients with severe pain (Tulaimat and colleagues, 2014; McEvoy, 2014).

2) Incomplete fill out questionnaire

**Termination criteria:**

1) If patients increase dyspnea during the interview process

**3.2.2 The sample of the study**

The researcher was test the relationship between level of dyspnea, FEV<sub>1</sub>, social support and quality of life in patients' asthma. Three parameters require including in this study and 1) the level of significance  $\alpha = 0.05$ , 2) the power of the statistical test (Power  $1 - \beta = 0.8$ ) and 3) effect size for this study ( $f^2 = .099$ ). The sample size in this study will be calculated by using G\*power version 3.1.9.2 program to determine the minimum number of participants needed for co-relational design (Faul, Erdfelder, Buchner, & Lang, 2009). Based on G\*power, sample size should be at least 115 Asthma patients.

**3.3 Setting**

The population of this study included patients, who have been diagnosis asthma and are nearly discharged from the hospital or visit at outpatient of the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, VietNam.

Bach Mai hospital, the first special – category comprehensive general hospital of Vietnam, is an intensive health facility at the highest technical level and is responsible for various important tasks in the health sector of the country. Bach Mai hospital established in 1911. With nearly 2000 beds, 2 Institutes, 8 Centers, 21 Clinical departments, 6 Paraclinical departments, 9 Functional departments, 1 Nursing college school. Its modern system of equipment and facilities has also helped fulfill its

responsibility in performing a number of important tasks of the country's health sector: Providing care and treatment at the highest level, training, scientific research, providing guidance and direction to health facilities of lower levels, disease and epidemic prevention and control, international cooperation, health economic management.

The research was conducted at the Allergy and Clinical Immunology Centre as it is a center specializing in Bach Mai hospital, Viet Nam. Every day, the Centre receives about 2- 3 new cases of asthma and exam for 7- 10 asthma patients in total of 50-60 patients visit center per day (monthly report of Allergy and Clinical Immunology Centre at Bach Mai hospital). Healthcare services are provided by the physicians and nurses' every day from 7:30 a.m. to 4:30 p.m. at the Centre. Their services include physicians examined patients, prescription drugs for patients and nurses perform medicines for patients follow the doctor ordered, performed the daily care plan for patients. So, the researcher can collected data every day.

### **3.4 Instruments**

In this study, researcher uses five questionnaires to collect data, including: Demographic data, FEV1 measurements, Modified Borg Scale (MBS), Multidimensional Scale of Perceived Social Support (MSPSS) and Airways Questionnaire 20 (AQ20):

#### **Part I: General information and information related to illness of the patients.**

The questionnaire part demographic data of the patients had items including age, gender, occupation, marital status, address at present, educational level and ways of medical payment. The illness history and previous treatment information of patients with asthma includes: weigh, height, BMI, date of admission, disease diagnosis, duration of illness, co morbidity, medical history.

**Part II: FEV1 measurements.**

According GINA (2014), Spirometry is a simple test to measure the amount of air a person can breathe out, and the amount of time taken to do so. Spirometry measurements used for diagnosis of Asthma include:

(1) FVC (Forced Vital Capacity): maximum volume of air that can be exhaled during a forced maneuver

(2) FEV1 (Forced Expired Volume in one second): volume expired in the first second of maximal expiration after a maximal inspiration. This is a measure of how quickly the lungs can be emptied.

FEV1 expressed as a percentage of the vital capacity (VC) is the standard index for assessing and quantifying airflow limitation. FEV1%VC declines with age and height. FEV1 is the maximum amount of air you can forcefully exhale in one second. It is then converted to a percentage of normal. FEV1 is a marker for the degree of obstruction with your asthma, an important measure of pulmonary function. In this study FEV1 will be measured by the lung function test machine by the physician. The researcher will collect data from the result of the test (GINA, 2014).

FEV1 is influenced by the age, sex, height and ethnicity, and is best considered as a percentage of the predicted normal value. Appropriate normal values for the local populations should be used as follows:

- 1) FEV1 predicted  $\geq 80\%$  and FEV1 variability  $< 20\%$  is mild intermittent
- 2) FEV1 predicted  $\geq 80\%$  and FEV1 variability 20- 30% is mild persistent
- 3) FEV1 predicted 60- 80% and FEV1 variability  $> 30\%$  is moderate persistent
- 4) FEV1 predicted:  $< 60\%$  and FEV1 variability  $> 30\%$  is severe persistent.

**Part III: Borg scale**

Rapid assessment and monitoring is essential for patients with acute bronchospasm. We thus decided to examine a tool called the MBS that had the potential to provide quick and easy information about a patient's subjective state of dyspnea. This 0 to 10 rated scale gave our asthma patients a device they could use to measure and evaluate their dyspnea. The Borg scale to encourage a standardized approach to identify subjective perception of dyspnea (rating of perceived dyspnea).

Scale may also be used to identify subjective perception of exertion (rating of perceived exertion), or subjective perception of fatigue (rating of perceived fatigue). The patient is asked to rate their perception of the severity level of their dyspnea.

#### **Part IV: Social Support**

Social support was measured by the MSPSS measures perception of social support of patients from three sources: Family (items 3, 4, 8, and 11), friends (items 6,7, 9, and 12) and significant others (items 1, 2, 5, and 10). Many scales have been designed to assess social support, including in-person interviews and self-report questionnaires. The MSPSS is one of these scales, which was originally developed by Canty-Mitchell and Zimet in 1990. Zimet et al, (1988), have well argued that the MSPSS is a short scale (12 items total), Each item is scored on a likert scale ranging from 1 (Very strongly Disagree) to 7 (Very strongly agree) and MPSS items are easy to understand and despite being a brief instrument it measures support from three sources. Total scores of social support range from 12 to 84 with higher scores suggesting greater levels of perceived social support .MSPSS has proven to be psychometrically sound in diverse samples, and to have good internal and test-retest reliability, and robust factorial validity. The total MSPSS demonstrated high internal consistency with Cronbach alpha 0.91 and sub scale with Cronbach alpha coefficients ranged from 0.90 to 0.95 (Atadokht, Hajloo, Karimi, & Narimani, 2015).

#### **Part V: QOL measures**

QOL was be measured by the AQ-20. The AQ20 was designed at St. George's Hospital Medical School in the UK as a short and simple measure of the health status of individuals with asthma. The AQ-20 is a short version (20 items) of the SGRQ. It includes 20 items with "yes" responses scored as 1, and "no" and "not applicable" scored as 0. The summary score ranges from 0 (best health) to 20 (worst health). Higher scores indicate a decline in the QOL due to asthma symptoms. It shows good reliability and validity; no domain sub scores are suggested. Of the 20 items, at least 6 appear to measure symptoms (e.g., breathlessness and coughing attacks), 5 appear to measure health status (e.g., difficulty engaging in activities because of symptoms), 5 to assess emotions related to symptoms (e.g., worry and restlessness), and 4 QOL, more narrowly defined (e.g., bother and cannot enjoy a full life). The instrument employs yes/no responses rather than Likert scale, making it very

simple and quick to administer (4-5 minutes). The internal consistency of the AQ20 was high with Cronbach's  $\alpha$  was 0.81 (Hajiro et al., 1999) and in study of Evren et al. showed that the internal consistency coefficient (Cronbach's alpha) was 0.89 for Factor 1 (Physical Aggression), 0.84 for Factor 2 (Hostility), 0.82 for Factor 3, 0.59 for Factor 4, and 0.93 for AQ 20; Test-retest correlations were 0.80 for Factor 1(Physical Aggression), 0.77 for Factor 2 (Hostility), 0.78 for Factor 3, 0.54 for Factor 4, and 0.84 for AQ total score (Evren, Çınar, Güleç, Çelik, &Evren, 2011).

### **3.5 Instrument Reliability and Validity**

#### **3.5.1 Instrument Validity**

The instrument of this study including questionnaire demographic data of the patients, the MBS, AQ 20 These instruments were translated into Vietnamese by English teacher and verified by 5 experts including doctors, head nurse, nurses in order to confirm the feasibility and the understanding of the contents for using in patients with asthma. After review the instruments, all members agreed to approved these instruments to be used to interview patients and apply to study.

#### **3.5.2 Instrument Reliability**

After obtain the IRB approval the MBS, MSPSS, AQ 20 were used in 30 patients with asthma who had characteristic similar to the studied sample as aforementioned. The reliability by Cronbach's alpha coefficient were employed to test each instrument reliability for 30 patients and for the whole sample (n = 115) (table 3.1).

**Table 3.1** Reliability of scales (n= 30 and n=115)

Scale		N of Items	Cronbach's Alpha (n = 30)	Cronbach's Alpha (n = 115)
<b>Multidimensional Scale of Perceived Social Support (MSPSS)</b>		12	0.899	0.781
<b>Airways Questionnaire 20 (AQ 20)</b>		20	0.803	0.792

### 3.6 Data collection

The data collection was conducted in the following sequences:

1) After getting the approved and received permission to collect data by the IRB Faculty of Nursing, Mahidol University, Thailand and IRB of Vietnam National University, the researcher met the director of Bach Mai hospital, head of department and a head nurse of the Allergy and Clinical Immunology Centre in order to explain the purpose for data collection. Then, the head nurse introduced researcher to target population (patients).

2) The researcher self-introduced, made a relationship with the patients, then informed sample about the objectives of study, read the participation information sheet to them, described data collection procedure and invited them to join in to the study. After the patients agreed to join in to the study, they were invited to sign the consent form. The researcher used the questionnaire and assessment form for data collection. Some demographic data were collected from medical record form.

3) The researcher organized the private room to interview the sample or asked them to do questionnaire by themselves. Then, she used five questionnaires for data collection. The questionnaires were 1) Demographic data questionnaire have 24 questions, 2) FEV1 measurements, 3) MBS have 1questions, 4) MSPSS has 12 questions, and 5) AQ 20 has 20 questions.

4) Participants were asked to feel free to withdraw from the study at any time without explain; confidentiality was maintained by not collecting data that could identify any one individual and also through employing unique study codes. The patients answered the questions in the context of an interview which lasted for about 30 - 45 minutes.

### **3.7 Protection of humanrights**

As with any medical research, this study the researcher protected and respected the right of the human subject consisted 2 dimensions including benefit from research, and data confidentiality.

3.7.1 The researcher collected the data after receiving approval from Institutional Review Board of Nursing faculty, Mahidol University and Institutional of Review Board of SMP, Hanoi National University.

3.7.2 The researcher self - introduced to the participants at Allergy and Clinical Immunology Centre, informed the patients about the research objective and all data collection process. The researcher explained the purpose of the study, the research procedure, benefits, risks, types of questionnaire, length of time to complete the questionnaires, and the right to refuse participation in the study anytime. If the patients withdraw from the research project and will not influence on their treatment or caring process. After patients agreed to join in the research process, they were invited to sign their name in the consent form.

3.7.3 This research did not cause any risk to the patients physical health. The data collection process took time about 30 to 45 minutes. Although the patients did not get any benefit from this research but the results were expected to produce benefit for other patients who have the same health care problem as the sample.

3.7.4 All contents were kept confidential, only the researcher and the research team were able to get access to the data. Any content related to data that presented in the thesis or any publication would be anonymous. In case of ones who withdrawn themselves from the research, all data would be deleted from the database and would not be used as any part of the research. In this research all patients who agreed to join in the study did not withdraw themselves.

3.7.5 In case of further questions or more explanation, the participants were told that they were able to ask the researcher at any time throughout the research process.

3.7.6 After the participants clearly understood the research process and agreed to join in the research, they were invited to sign their name in the consent form.

### **3.8 Data analysis**

1. Quantitative data were analyzed using computer programs.
2. All data were analyzed using descriptive statistic in terms of frequency, percentage, mean and standard deviation and range were used to describe general information and studied variables, including level of dyspnea, FEV1, social support and QOL in patients with asthma.
3. The variables were tested for their normal distribution according to the assumption of the Pearson Product-Moment correlation coefficient. All studied variables did not show normal distribution so that Spearman's rho was employed to test correlation among the variables.

## **CHAPTER IV**

### **RESULTS**

This research aimed to study the factors related to quality of life (QOL) among patients with asthma. Data were collected from 115 patients using data collection form. The results are presented in the following topics; general characteristics of the sample, clinical characteristics, FEV1 measurements, Modified Borg Scale(MBS), Multidimensional Scale of Perceived Social Support (MSPSS) and Airways Questionnaire 20 (AQ20). This study was conducted to examine the relationship between level of dyspnea, FEV1, social support and QOL among patients with asthma at the Allergy and Clinical Immunology Centre of Bach Mai Hospital, Hanoi, Vietnam from August to October, 2016. The findings were presented in descriptive statistic as follows:

1. The demographic data of patients with asthma.
2. The information related to illness and treatment
3. The correlation between dyspnea, FEV1, social support and QOL among patients with asthma.

#### **4.1 The demographic data of patients with asthma.**

The demographic data were collected including age, gender, BMI, marital status, educational level, occupation and income. It can be seen from the Table 4.1. The findings illustrate that there is a nearly equal distribution between males (46.1%) and females (53.9%). The most popular age was the group of 41-60 years with 37.4% while the age of 18-30 years old was the least popular with 13%. Most of the sample were married (91.3%), finished high school education (48.7%) and resided in Northern provinces (51.3%), (Table 4.1)

**Table 4.1:** The characteristic of patients with asthma (n=115)

<b>Characteristics</b>		<b>Number (n=115)</b>	<b>Percentage (%)</b>
<b>Gender</b>	Male	53	46.09
	Female	62	53.91
<b>Age</b>	18-30	15	13.04
	31-40	41	35.70
	41-60	43	37.40
	>60	16	13.90
<b>Location of residence</b>	Ha Noi	49	42.61
	North	59	51.30
	Middle	7	6.09
<b>Marital status</b>	Married	105	91.30
	Single	10	8.70
<b>Education</b>	Primary school	5	4.35
	Secondary school	31	26.96
	High school	56	48.69
	Bachelor degree	21	18.26
	Upper bachelor degree	1	0.87
	Others	1	0.87
<b>Occupation</b>	Public servant	15	13.04
	Farmer	12	10.44
	Worker	21	18.26
	Housewife	9	7.83

In regard to the sample socioeconomic status, 22.6% were self-employed; 73.9% had governmental insurance and 87.0% had to pay for the treatment expense by themselves. More than 30% of the subjects have the income of 100-200 USD, and only 13% of them have income of more than 300 USD. BMI of the participants

showed that 71.3% participants were normal and only 13% participants were overweight. (Table 4.1-cont)

**Table 4.1:** The characteristic of patients with asthma (n=115) (cont)

<b>Characteristics</b>		<b>Number (n=115)</b>	<b>Percentage (%)</b>
<b>Occupation</b>	Self-employed	26	22.61
	Retired	19	16.52
	Other jobs	13	11.30
<b>Health insurance</b>	Yes	85	73.9
	No	30	26.1
<b>Payment method</b>	Self-pay	100	87.0
	Insurance	15	13.0
<b>Income (USD)</b>	Under 100	31	26.96
	101- 200	36	31.30
	201- 300	33	28.70
	Over 300	15	13.04
<b>BMI (kg/m<sup>2</sup>)</b>			
	Overweight (25- 29.99)	15	13.04
	Normal (18.50- 24.99)	82	71.31
	Mild underweight (<18.50)	18	15.65
	Min: 39.00		
	Max: 80.00		
	Mean $\pm$ SD: 55.9 $\pm$ 9.1		

## 4.2 The information related to illness and treatment

About 19.1% were current smokers. The percentage of sample having drug allergy, food allergy and weather allergy were 13.0%, 13.9% and 50.4% respectively. Co-morbidity is very common with disease Allergic rhinitis (38.3%). Approximately 60% use inhaler before admission. Regarding clinical symptoms, dyspnea, cough and wheezing were most common with 97.4%, 84.4% and 53.0% correspondingly.(Table 4.2)

**Table 4.2:** The characteristics of illness and treatment (n=115)

<b>Characteristics</b>	<b>Number (n=115)</b>	<b>Percentage (%)</b>
<b>Smoking</b>	22	19.13
<b>Drug allergy</b>	15	13.04
<b>Food allergy</b>	16	13.91
<b>Weather allergy</b>	58	50.43
<b>Using inhaler before admission</b>	68	59.13
<b>Co-morbidity</b>		
<b>No</b>	41	35.65
<b>Yes</b>	74	64.35
Hypertension	10	8.70
Heart disease	1	0.87
Diabetes Mellitus	1	0.87
Allergic rhinitis	44	38.26
Other	18	15.65
<b>Clinical symptoms</b>		
<b>( can answer more than one)</b>		
Wheezing	61	53.04
Chest tightness	36	31.30
Fever	4	3.48
Cough	97	84.35
Dyspnea	112	97.39

The mean of FEV1 was 68.2 (SD=22.2%) and the mean FEV1/FVC was 79.3% (SD= 17.2%). Meanwhile, the mean of FVC was 82.3 (SD=17.6) and SpO2 was 96.9% (SD=2.2), (Table 4.3)

**Table 4.3:** Pre-clinical characteristics among respondents

<b>Characteristics</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>
<b>FVC</b>	82.30	17.60	85.10	43.50	932
<b>FEV1</b>	68.20	22.20	72.10	24	117.90
<b>FEV1/FVC</b>	79.30	17.20	82.40	1	117.90
<b>SpO2</b>	96.90	2.20	98	91	100

There were more than 1/5 of patients who are very slight breathlessness. The group of highly dyspnea accounts for 8.7%. The group of lowest dyspnea accounts for 17.4% (Table 4.4)

**Table 4.4:** Level of dyspnea

<b>Level of dyspnea</b>	<b>Number (n=115)</b>	<b>Percentage (%)</b>
Very Very Slight Breathlessness	20	17.39
Very slight breathlessness	26	22.61
Slight breathlessness	19	16.52
Moderate breathlessness	20	17.39
Somewhat severe breathlessness	20	17.39
Severe breathlessness	10	8.70

The mean of Social Support score was 4.94 (SD=0.56). Of which, the mean score for Family domain was 5.41 (SD=0.64); for Friends domain was 4.72 (SD=0.69) and for Others was 4.70 (SD=0.76) (Table 4.5)

**Table 4.5:** Social support among respondents

Scale	Mean	SD	Median	Min	Max
Social support from Family	5.41	0.64	5.25	3.75	7
Social support from Friends	4.72	0.69	5	3	7
Social support from Others	4.70	0.76	4.75	3	7
Total social support score	4.94	0.56	5	3.58	6.42

Table 4.6 shows the QOL among asthma patients. The mean QOL was 7.96 (SD=4.10). Most of patients had QOL score ranged from 0-5 (34.8%).

**Table 4.6:** Quality of life among asthma patients

Quality of life	Number (n=115)	Percentage (%)
0-5	40	34.78
6-10	37	32.17
11-15	38	33.05
Min: 0		
Max: 15		
Mean $\pm$ SD: 7.96 $\pm$ 4.10		
Median: 8		

### 4.3 The correlation between level of dyspnea, social support, FEV1 and QOL among patients with asthma

All variables in this study were tested for their normal distribution and the results showed that all variables did not have normal distribution. Spearman's rho was employed to test correlation among studied variables. Table 4.7 shows the hypothesis testing for the correlation between level of dyspnea, social support, FEV1 and QOL among patients with asthma.

Hypothesis 1 states that level of dyspnea is negatively correlated with QOL in patients with asthma

Hypothesis 2 states that FEV1 is positively correlated with QOL in patients with asthma.

Hypothesis 3 states that social support is positively correlated with QOL in patients with asthma.

The results show that social Support score and FEV1 are positively correlated with QOL while Dyspnea score is negatively correlated with QOL. (Table 4.7)

**Table 4.7:** Correlation between dyspnea, social support, FEV1 and quality of life among respondents

	SS Family	SS Friends	SS Others	Total SS score	MBSR Dysnea	FEV1
SS Family	1.00					
SS Friends	0.338*	1.00				
SS Others	0.370*	0.598*	1.00			
Total SS score	0.725*	0.768*	0.812*	1.00		
MBSR	-0.074	-0.104	-0.063	-0.071	1.00	
FEV1	0.212*	0.247*	0.239*	0.298*	-0.755*	1.00
Quality of life	0.074	0.175	0.274*	0.244*	+0.788*	0.674*

\*  $p < 0.05$

## **CHAPTER V**

### **DISCUSSION**

The objective of this study is to relationship among level of dyspnea, FEV1, social support and quality of life (QOL) in patients with asthma. The discussions are presented as follow:

1. Characteristics of the sample;
2. QOL in patients with asthma
3. Relationship among level of dyspnea, FEV1, social support and QOL in patients with asthma

#### **5.1. Characteristics of the sample**

##### **Demographic data**

In Vietnam, endemic asthma has attracted most concerns from researchers in terms of respiratory diseases. Also, other conditions have been focused only in recent years. There is a limit in the number of studies investigating asthmatic issue in Vietnam. The rates of asthma in community might vary across the settings, but most of them found that asthma has not been an urgent problem with a low prevalence. According to a research carried out in Da Lat, there was a much lower prevalence of asthma and asthma-like symptoms, i.e. only 3.4% in 5–14 year-old children and 2.3% in the population over 15 years old ( $p < 0.05$ ) (Sy et al., 2007). In a study of Lam HT et al. (2011), the asthma rates in Hanoi and Bavi were 5.6% and 3.9%, respectively; and the prevalence of asthma among women was lower than that among men (Lâm et al., 2011). However, an increasing trend has been observed in recent years (Network, 2015), raising the need to improve the quality of asthma-related services and enhance the health outcomes of asthma treatment, especially patients' QOL.

In this study, there were 115 patients with asthma recruited in Bach Mai Hospital. The result shows that a nearly equal distribution between males (46.1%) and females (53.9%). The most popular age group was 41-60 years with 37.4%. These findings are consistent with the results in previous studies. Another study of Weber et al. in emergency department shows that female patients accounted for 73% patients (Weber et al., 2002). The mean age of patients in the study of Weber et al. was consistent with our study (with  $37 \pm 10$  years old) (Weber et al., 2002). Our findings were similar to a study of Gupta et al., which indicates that men only accounted for 33.2% and the age mean of patients was  $43.6 \pm 19.2$  (Gupta et al., 2004).

Most of the samples were from Northern provinces. It is due to the fact that Bach Mai Hospital is one of the biggest hospitals in Vietnam and located in Hanoi, centre of Northern region. The research was conducted at the Allergy and Clinical Immunology Centre, a specialized center in Bach Mai hospital. In each day, there are 2-3 new asthma cases admitted to this center and 7-10 asthma patients going to this center for examination.

The monthly income among asthma patients were 4.0 million VND that were equal to the average income of Vietnamese population. However, it should be noted that asthma can lead to a financial burden for the patients. Asthma patients have to spend direct and indirect medical cost, as well as loss their income due to this disease. Intangible costs are related to QOL impairment and social problems of the patients and their families. It is a common shared concept that good management of the disease could lead to decrease the risk of morbidity, mortality, and costs of asthma. The cost to society of asthma in the U.S. is over \$50 billion per year in healthcare expenses, missed school and work days, and early death ("The Impact of Asthma," n.d.). The direct asthma impact on healthcare expenses is also significant. In Thailand, the average total per person annual cost of asthma in 2012 was 8,009.37 Baht (approximately USD 258), and the direct cost accounted for 83.95% of the total cost (Trakultivakorn, 2012). Therefore, it is very important to improve their treatment outcomes and eventually improve their quality of life and reduce their economic burden.

### **Clinical characteristics**

Regarding to smoking habit, there are a number of studies examining rates of co-occurring asthma and smoking. Chen and colleagues found there was no difference in asthma rates between male smokers and nonsmokers among participants in the National Population Health Survey conducted in Canada (Chen, Dales, Krewski, & Breithaupt, 1999). Langhammer and colleagues examined the prevalence of asthma among smokers in Norway (Langhammer, Johnsen, Holmen, Gulsvik, & Bjermer, 2000). Results indicated a slight increase in the odds of reporting an asthma diagnosis with an increasing number of pack years of smoking compared to nonsmokers (OR = 1.03; 95% confidence interval [CI] = 1.025–1.035). Backer and colleagues conducted a self-report study among Danish adults which indicated that significantly more individuals with asthma were smokers than individuals without asthma (52% and 38%, respectively) (Backer, Nepper-Christensen, Ulrik, von Linstow, & Porsbjerg, 2002). In our study, only 19.1% patients were current smokers. It can be explained by that most of the sample were female. In Vietnamese culture, smoking in female is unacceptable. Therefore, the prevalence of smoker among the patients were low compared to other previous studies.

In accordance to allergy, the percentage of sample having drug allergy, food allergy and weather allergy were 13.0%; 13.9% and 50.4%, respectively. Co-morbidity is very common with Allergic rhinitis (38.3%). In literature, allergy is one of the most common reasons causing asthma in children and adults. The development and severity of allergy and asthma can be influenced by a number of environmental factors, among which are viruses, exposure to a mix of allergens and airborne irritants (traffic emissions and cigarette smoke), and endotoxins that are released from bacteria, to name a few. Exposures and infections from early stage of life are considered to hold a part in the development and severity of asthma, i.e. the 'hygiene hypothesis'. Biological substances, like fungi and pollen, have a significant effect, as sensitization to these environmental allergens is an important risk factor for the development of asthma (Zeldin et al., 2006). In addition, allergic rhinitis (AR) has been shown to be a risk factor for asthma in children and adults (Leynaert, Neukirch, Demoly, & Bousquet, 2000). A longitudinal, population-based European study confirmed an association between AR and adult-onset asthma. Of 6461 adults, those with AR had a

greater risk (OR: 3.65; 95% CI 2.37–5.61) of developing asthma by the 8-year follow up versus controls without AR (OR: 2.75; 95% CI 1.76 – 4.29) (Shaaban et al., 2008).

## **5.2 QOL in patients with asthma**

Asthma negatively affects many people's lives. One of the foci of recent studies is detect which factors are related to QOL in asthma. Asthma is likely to exert adverse impacts on the quality of sleep (Lewis 2001, Wijnhoven 2001), working capability, socialization, participation in sports, and a host of other activities (Juniper 1997, Legorreta 2000). People suffering with asthma reported reduced satisfaction, lower health status, and high mental distress (Ampon 2005). It was also proved that patients' psychological well-being is inclined to remain affected when the asthma is under good control based on standard guidelines (Nishimura 2004). Others studies have addressed the influence of psychosocial factors on HRQOL and included perceived control of the disease (Calfee 2006).

In this study, Airway Questionnaire 20 was employed to measure the QOL of asthma patients. The AQ20 scores are out of a total of 20, with high scores indicating a poor QOL. Of the 20 items, at least 6 appear to measure symptoms (e.g., breathlessness and coughing attacks), 5 appear to measure health status (e.g., difficulty engaging in activities because of symptoms), 5 to assess emotions related to symptoms (e.g., worry and restlessness), and 4 QOL, more narrowly defined (e.g., bother and cannot enjoy a full life). High scores represent a poor QOL. The internal consistency of the AQ20 was high with Cronbach's  $\alpha$  was 0.81 (Hajiro et al., 1999) and in study of Evren et al. showed that the internal consistency coefficient (Cronbach's alpha) 0.84 for AQ total score (Evren, Çınar, Güleç, Çelik, & Evren, 2011). This study found that the mean QOL was 7.96 (SD=4.10) and most of patients had QOL score ranged from 0-5 (34.8%). This score is equal to the result of a study of Win et al, which found that mean AQ20 score was  $7.66 \pm 4.69$  (Win, Pearce, Nathan, Cafferty, & Laroche, 2008). A study of Tuomisto et al (2016) shows that the mean of AQ20 score among uncontrolled patients were 8 score (Tuomisto et al., 2016). It means that for our patients who are uncontrolled of their disease, health workers should notice to addressing the urgent problems.

### **5.3 The relationship between level of dyspnea, FEV1, social support and QOL among patients with asthma**

#### **5.3.1 The relationship between level of dyspnea and QOL**

Dyspnea is one of the cardinal symptoms for asthma diagnosis, severity evaluation, and monitoring. Dyspnea is generally reported by patients to indicate an uncomfortable stimulus often accompanied by multiple descriptors, the most common being chest tightness, difficulty of inspiration, unrewarded inspiration, and expiratory difficulty (Killian et al. 2000). In asthma, dyspnea is believed to signal the severity of airflow obstruction (Banzett et al. 2000, Killian et al. 2000).

The literature includes a variety of studies that have attempted to understand how patients measure the sensation of dyspnea or shortness of breath (Mahler & Wells, 1988). The Modified Borg scale (MBS) was used by Burdon et al with a group of patients with asthma to determine their perceived dyspnea as it related to specific pulmonary changes in air flow obstruction (Burdon, Juniper, Killian, Hargreave, & Campbell, 1982). Belman et al found that the MBS was a reliable tool for quantifying dyspnea in subjects with COPD who were undergoing a 6-minute treadmill walk (Belman, Brooks, Ross, & Mohsenifar, 1991). Other literature review clearly showed that the MBS was a valid and reliable tool when used in pulmonary medicine and in exercise physiology studies.

In this study, we used Modified Borg Scale to measure the degree of dyspnea. The finding shows that there were more than 1/5 of patients who were very slight breathlessness, 17.4% patients had very very slight breathlessness, which was similar to the percentage of patients having moderate breathlessness. The percentage of patients who were somewhat severe breathlessness was 7.4%.

On the other hand, this study has shown that the level of dyspnea is negatively correlated significantly with QOL ( $r = 0.7883^*$ ,  $p < 0.05$ ). This means that the asthma patients with high level of dyspnea may have reduced quality of life. The moderately strong correlation between AQ20 and dyspnea was also illustrated in another study (Hajiro et al., 1999) with  $r = 0.60$ ,  $p < 0.005$ . Symptom of patients with asthma exacerbations can help us to determine how these patients can function in everyday life, in other words, to indicate what their QOL is. The researcher can

reliably expect that any medical intervention in asthma patients that leads to symptom improvement and decrease of their feeling of shortness of breath will also improve their QOL.

### **5.3.2 The relationship FEV1 and QOL**

Pulmonary function and quality of life are both independently of great importance in the management of asthma. Assessing the airway obstruction by measuring the forced expiratory volume in one second (FEV1) was the most common way to assess disease severity, response to therapy, and (short-term) prognosis in asthma patients. FEV1 is a marker for the degree of obstruction with asthma, an important measure of pulmonary function. However, it is important that FEV1 is only a marker, and not a clinical outcome of asthma. Lung function data has often been used to evaluate disease severity and asthma treatment effects, but the lung function is poorly correlated to QOL and asthma symptoms (Juniper 1997, Jones 1995, Teeter 1998).

The results of this research show that FEV1 was positively medium correlated with quality of life at  $r = 0.6743^*$ ,  $p < 0.05$ , which means that patients who had high FEV1 demonstrated high QOL. This is similar with Aquiles et al. (2003), which show correlation between FEV1 and AQ20 ( $r = - 0.216$ ,  $p < 0.001$ ). Again, it is important to note that FEV1 is only a marker, and not a clinical outcome of asthma. According to the findings, my study indicates that clinical nurses should take into account monitoring FEV1 to better manage patients' symptoms.

### **5.3.3 The relationship between social support and QOL**

Social support was measured by the MSPSS measures perception of social support of patients from three sources: Family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12) and significant others (items 1, 2, 5, and 10). MSPSS has proven to be psychometrically sound in diverse samples, and to have good internal and test-retest reliability, and robust factorial validity. The total MSPSS demonstrated high internal consistency with Cronbach alpha 0.91 and sub scale with Cronbach alpha coefficients ranged from 0.90 to 0.95 (Atadokht, Hajloo, Karimi, & Narimani, 2015). However, in

our knowledge, there has been a lack of research using MSPSS to measure social support among asthma patients.

In terms of family, asthma affects the lives of the family members of patients with asthma. The stress of living with a chronic disease reveals itself in many ways among the various family members. Someone with asthma, for example, may be more likely to get involved in fights, be less cooperative, or be stubborn, depressed, anxious or withdrawn. Moreover, it was found that during the acute asthmatic attack, family members had to deal with huge burden in caring or transporting the patients to emergency room. This situation brought stressful event to the family members (Laforest, Yin, & Kocevar, 2004). Meanwhile, regarding to society, due to the disease, some people may miss school or work. For others, asthma impacts on the patients in different ways, like not being able to participate in certain activities. Consequently, asthma patients cannot contribute their role to the development of their family and community.

The researcher wished to test whether negative life events were associated with poorer asthma-specific QOL among adults with asthma, consistent with an adverse effect of stress on health. Coping and social support has been found to have positive effects in chronic illness (Cohen et al., 2000; Cohen & Wills, 1985). It has been suggested that appropriate coping strategies can help in asthma management whereas an inappropriate strategy may increase the risk for loss of control over the illness (Barton et al., 2003). Social support, on the other hand, has been reported to have positive effects on the health outcome as well as in the reduction of stress (Ell et al., 1992; Ford et al., 2006) whereas low or insufficient support has been associated with increased risk for hospital admission (Wainwright et al., 2007).

Nonetheless, social support is very important to improve the health status and treatment outcome of patients with asthma. Over the past quarter century, much research has convincingly documented the beneficial effects of social networks and social support on morbidity, mortality, and a variety of positive chronic illness outcomes (Bloom, 1990). Literature across many social science disciplines convincingly demonstrated that supportive social relationships have protective effects for a variety of physical and mental health outcomes.

In this study, the mean of Social Support score was 4.94 (SD=0.56). Of which, the mean score for Family domain was 5.41 (SD=0.64); for Friends domain was 4.72 (SD=0.69) and for Others was 4.70 (SD=0.76). To explore the correlation between social support and quality of life, Spearman's rho was calculated and the results are shown in Table 4.7. When comparing to other diseases such as depression/anxiety among breast cancer patients (Ng et al., 2015), gynecologic cancer (Yagmur & Duman, 2016) or prenatal women (Jonsdottir et al., 2016), our finding was much lower. Patients who receive social support was reported as had a significant and positive relationship with QOL in asthma patients ( $r = 0.2444$ ,  $p < 0.05$ ). This result suggests that the level of social support among asthma patient was weak. It may due to that people around the patients do not have sufficient awareness about this disease. This finding indicated that nurses in practice should be notice this problem and promote the social support from family, friends, social as well as health care system to asthma patients.

## **5.4 Conclusion**

In this study, we found that social support score and FEV1 are positively correlated with QOL while Dyspnea score is negatively correlated with QOL. This is consistent with the hypothesis of research. Understanding the associations between dyspnea, FEV1, social support and QOL is very important to provide comprehensive care for patients with asthma. It is expected that this research can be used as a nursing care plan to promote the QOL of patients with asthma by managing those influencing factors. Moreover, identifying some factors such as level of dyspnea, FEV1, social support, related QOL as well as providing nursing care program will assist Vietnamese people with asthma to be able to improve their life, their quality of function and health.

## **CHAPTER VI**

### **CONCLUSION AND RECOMMENDATION**

#### **6.1 Conclusion of the study**

This descriptive correlation study aimed to examine the relationship between level of dyspnea, FEV1, social support and quality of life (QOL) among patients with asthma who aged 18 – 88 years old at the Allergy and Clinical Immunology Centre from August to October, 2016. Symptom management theory was utilized as a framework of this study. The sample size in this study was calculated by using G\*power version 3.1.9.2 program to determine the minimum number of participants needed for co-relational design. The sample calculation yielded 115 samples. The research setting was the Allergy and Clinical Immunology Centre, a center specializing in Bach Mai hospital, Hanoi, Viet Nam.

After obtaining approval from Institutional Review Board of Nursing faculty, Mahidol University and Institutional of Review Board of SMP, Vietnam National University, Hanoi, Vietnam, the researcher used 5 instruments, namely the demographic data questionnaire, FEV1 measurements, Modified Borg Scale (MBS), Multidimensional Scale of Perceived Social Support (MSPSS) and Airways Questionnaire 20 (AQ20) to collect data. All instruments were tested for their validity and reliability as clearly explained in chapter 3. Cronbach's alpha coefficient of social support and QOL were 0.7811 and 0.7924 respectively. The 115 samples were selected according to the inclusion criteria. The researcher collected data by herself from 7.30 am to 4.30 pm every day until the sample reached the target of the studied sample size. For each sample the researcher spent 30 to 45 minutes on interviewing and collected some data from their patients' records. During data collection, there was no adverse event among the samples. All samples recruited in the study remained throughout the study process with no attrition.

Data analysis was conducted by using SPSS computer program. The descriptive statistics were used to describe general information and study variables,

including level of dyspnea, FEV1, social support and QOL. The assumption of Pearson' Product Moment Correlation was tested and it was found that all variables were not in normal distribution. Accordingly, Spearman's rho was used to examine correlation between level of dyspnea, FEV1, social support and QOL among patients with asthma.

**The findings are summarized as follows:**

Within 115 patients, there were 53.9% of female 46.1% of male. The most popular age was group of 41-60 years with 37.4% while the age of 18-30 years old was the least popular with 13%. Most of the sample were married (91.3%), finished high school education (48.7%) and resided in Northern provinces (51.3%). In regard to the sample socioeconomic status, 22.6% were self-employed; 73.9% had governmental insurance. More than 30% of the subjects have the income of 100-200 USD, and only 13% of them have income of more than 300 USD. BMI of the participants showed that 71.3% participants were normal and only 13% participants were overweight.

About 19.1% were current smokers. The percentage of sample having drug allergy, food allergy and weather allergy were 13.0%; 13.9% and 50.4%, respectively. Co-morbidity is very common with disease Allergic rhinitis (38.3%). Approximately 60% use inhaler before admission. Regarding clinical symptoms, dyspnea, cough and wheezing were most common with 97.4%; 84.4% and 53.0%, correspondingly.

The mean of FEV1 was 68.2 (SD=22.2%). The percentage of patients with very very slight breathlessness was 17.4%, which was similar to that of patients with moderate breathlessness, 17.4%. The percentage of patients who were somewhat severe breathlessness was 7.4%. The mean of Social Support score was 4.94 (SD=0.56). Of which, the mean score for Family domain was 5.41 (SD=0.64); for Friends domain was 4.72 (SD=0.69) and for Others was 4.70 (SD=0.76). The mean QOL was 7.96 (SD=4.10). Most of patients had QOL score ranged from 0-5 (34.8%).

The results show that FEV1 had positive correlation with QOL at  $r = 0.6743^*$ ,  $p < 0.05$ , social support had positive correlation with QOL (at  $r = 0.2444^*$ ,  $p < 0.05$ ). Nevertheless, level of dyspnea had negative correlation with QOL (at  $r = 0.7883^*$ ,  $p < 0.05$ ).

## **6.2 Implications of Research Findings**

### **6.2.1 Implications for nursing practice**

To enhance QOL in patients with asthma, nurses should perform these following activities:

1. If nurses and other healthcare providers understand symptom management model, then it will provide the concepts and a framework that cover all symptoms of asthma disease to achieve aim symptoms control, thus enhancing their quality of life.

2. Develop guidelines to decrease and control patients' dyspnea, Nurses can use this knowledge to able to promote QOL of patients with asthma by managing influencing factors. In addition, asthma patients will be confident in his or her own ability to achieve a desired outcome and from there they can improve their QOL because of providing some insights that may lead to better care.

3. Provide routine assessment FEV1 during patients' follow up visit to identify and evaluate level of disease severity and asthma treatment effects. Health care teams can evaluate and develop effective clinical nursing intervention for increasing QOL in patients with asthma during the time when patients are examined in the hospital.

4. Promote social support from family, friends, society as well as healthcare system to asthma patients. Thus, the patients' QOL will be improved.

### **6.2.2 Implications for further study**

1. Further research should analyze and discuss the effects of social support to asthma patients in Vietnam. Numerous studies have affirmed that social support has beneficial impacts on chronic diseases, especially in terms of health outcome and quality of life in patients. However, the findings of this research suggest that this aspect has not given appropriate concern under the studied context.

2. Clinical practice guidelines to improve QOL among patients with asthma should be developed and tested for its effectiveness by using quasi-experimental research.

3. AQ 20 scale in Vietnamese version should be tested in its psychometric property by using in adequate numbers of patients, advanced statistic-factor analysis in Vietnamese context.

## REFERENCES

- ACAM 2004. *Measuring the impact of asthma on quality of life in the Australian population*. Cat.no. ACM 3. Canberra: AIHW.
- ACAM 2011. *Asthma in Australia 2011: with a focus chapter on chronic obstructive pulmonary disease*. Asthma series no. 4. Cat. no. ACM 22. Canberra: AIHW.
- American Thoracic Society.(1999). Dyspnea. Mechanisms, assessment, and management:a consensus statement. *American Journal of Respiratory and Critical Care Medicine*, 159,321-340.
- Ampon, R. D., Williamson, M., Correll, P. K., & Marks, G. B. (2005). Impact of asthma on self-reported health status and quality of life: a population based study of Australians aged 18-64. *Thorax*, 60(9), 735-739. doi: 10.1136/thx.2005.040311
- Anderson, S. D., & Smith, C. M. (1991). Osmotic challenges in the assessment of bronchial hyperresponsiveness. *American review of respiratory disease*, 143(3), S43- S46.doi: 10.1164/ajrccm/143.3\_Pt\_2.S43
- Aquiles, C. Fernanda R., Paul, J., Jose, R.J. (2003). Validation of the Airways Questionnaire 20 – AQ20 in patients with chronic obstructive pulmonary disease (COPD) in Brazil. *J Pneumol*. 2003; 29(1): 28-35)
- Asthma Impact on your Child's Life. E Medicine Health. Asthma's Impact on the Nation. (n.d).
- ATS Committee on Proficiency Standards for Clinical Pulmonary Function Laboratories. (2002). ATS statement: guidelines for the six-minute walk test. *American Journal of Respiratory and Critical Care Medicine*, 166(1), 111–117

- Backer, V., Nepper-Christensen, S., Ulrik, C. S., von Linstow, M. L., & Porsbjerg, C. (2002). Factors associated with asthma in young Danish adults. *Ann Allergy Asthma Immunol*, 89(2), 148-154. doi: 10.1016/s1081-1206(10)61930-8
- Bahadori, K., Doyle-Waters, m. M., Marra, C., Lynd, L., Alasaly, K., Swston, J., & FitzGearld, J. M. (2009). Economic burden of asthma: a systematic review. *BMC Pulmonary Medicine*, 9, 24. Doi:10.1186/1471-2466-9-24.
- Barnes, P. J. (1996). Pathophysiology of asthma. *British Journal of Clinical Pharmacology*, 42(1), 3-10.
- Belman, M. J., Brooks, L. R., Ross, D. J., & Mohsenifar, Z. (1991). Variability of breathlessness measurement in patients with chronic obstructive pulmonary disease. *Chest*, 99(3), 566-571.
- Bestall, J. C., Paul, E. A., Garrod, R., Garnham, R., Jones, P. W., & Wedzicha, J. A. (1999). Usefulness of the Medical Research Council (MRC) dyspnea scale as a measure of disability in patients with chronic obstructive pulmonary disease. *Thorax*, 54, 581-586
- Bloom, J. R. (1990). The relationship of social support and health. *Soc Sci Med*, 30(5), 635-637.
- Borg, G. (1980). Psychophysical Judgment and the Process of Perception. In: Geissler, H. G & Petzol, P (Eds.), *A category scale with ratio properties for intermodal and interindividual comparisons* (pp. 25-34). Amsterdam, The Netherlands: North Holland Publishing Co.
- Boshuizen, R. C., Vincent, A. D., & Heuvel, M. M. (2013). Comparison of modified Borg scale and visual analog scale dyspnea scores in predicting re-intervention after drainage of malignant pleural effusion. *Supportive Care in Cancer*, 21(11), 3109-3116
- Bunnaq, C., Jareoncharsri, P., Tantilipikorn, P., Vichyanond, P., & Pawankar, R. (2009). Epidemiology and Current Status of Allergic Rhinitis and Asthma in Thailand-ARIA Asia-Pacific Workshop Report. *Asian Pacific Journal of Allergy and Immunology*, 27, 79-86.

- Burdon, J. G., Juniper, E. F., Killian, K. J., Hargreave, F. E., & Campbell, E. J. (1982). The perception of breathlessness in asthma. *Am Rev Respir Dis*, *126*(5), 825-828. doi: 10.1164/arrd.1982.126.5.825
- Calfee, C. S., Katz, P. P., Yelin, E. H., Iribarren, C., & Eisner, M. D. (2006). The influence of perceived control of asthma on health outcomes. *Chest*, *130*(5), 1312-1318. doi: 10.1378/chest.130.5.1312
- Campbell, A. (1976). Subjective measures of well-being. *American Psychologist*, *31*(2), 117-124.
- Canty-Mitchell, J. & Zimet, G.D. (2000). Psychometric properties of the Multidimensional Scale of Perceived Social Support in urban adolescents. *American Journal of Community Psychology*, *28*, 391-400.
- CDC National Asthma Control Program. (2011). *Asthma's Impact on the Nation*. Received from [http://www.cdc.gov/asthma/impacts\\_nation/asthmafactsheet.pdf](http://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf).
- Chen, Y., Dales, R., Krewski, D., & Breithaupt, K. (1999). Increased effects of smoking and obesity on asthma among female Canadians: the National Population Health Survey, 1994-1995. *Am J Epidemiol*, *150*(3), 255-262.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310-357. doi: 10.1037/0033-2909.98.2.310
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310-357. Doi: 10.1037/0033-2909.98.2.310
- Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). *Social Relationships and Health*. United State, US: Oxford University Press.
- Curtis, J. R., Deyo, R. A., & Hudson, L. D. (1994). Pulmonary rehabilitation in chronic respiratory insufficiency. Health-related quality of life among patients with chronic obstructive pulmonary disease. *Thorax*, *49*, 162-170
- Cutrona, C. E., & Russell, D. W. (1990). *Type of social support and specific stress: Toward a theory of optimal matching*. Oxford, England: John Wiley & Sons
- Dakof, G. A., & Taylor, S. E. (1990). Victims' perceptions of social support: What is helpful from whom? *Journal of Personality and Social Psychology*, *58*(1), 80-89.

- Dakof, G. A., & Taylor, S. E. (1990). Victims' perceptions of social support: What is helpful from whom? *Journal of Personality and Social Psychology*, 58(1), 80-89. Doi: 10.1037/0022-3514.58.1.80
- Dodd, M., Janson, S., Facione, N., Faucett, J., Froelicher, E. S., Humphreys, J., et al. (2001). Advancing the science of symptom management. *Journal Advetage Nurses*, 33(5), 668-676. 10.1037/0022-3514.58.1.80
- Duff, A. L., Pomeranz, E. S., & Gelber, L. E. (1993). Risk factors for acute wheezing in infants and children: viruses, passive smoke, and IgE antibodies to inhalant allergens. *Pediatrics*, 92, 535-540.
- Ell, K., Nishimoto, R., Mediansky, L., Mantell, J., & Hamovitch, M. (1992). Social relations, social support and survival among patients with cancer. *Journal of Psychosomatic Research*, 36(6), 531-541. Doi: [http://dx.doi.org/10.1016/0022-3999\(92\)90038-4](http://dx.doi.org/10.1016/0022-3999(92)90038-4) Emotional and social effect of asthma. University of Illinois.
- Esposito, S., & Principi, N. (2001). Asthma in children: Are Chlamydia or Mycoplasma involved? *Pediatric Drugs*, 3(3), 159-168.
- Evren, Ö., Çınar, H., Güleç, S., Çelik, B., & Evren. (2011). The Validity and Reliability of the Turkish Version of the Buss-Perry's Aggression Questionnaire in Male Substance Dependent *Inpatients. Düşünen Adam Psikiyatri ve Nörolojik Bilimler Dergisi*, 24, 283-295 Doi: 10.5350/DAJPN2011240404
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41 (4), 1149-1160. Doi: 10.3758/BRM.41.4.1149.
- Ferrer, M., Alonso, J., Morera, J., Marrades, R. M., Khalaf, A., Aguar, M. C., et al. (1997). Chronic obstructive pulmonary disease stage and health related quality of life. The quality of life of Chronic Obstructive Pulmonary Disease Study Group. *Annals of Internal Medicine*, 127, 1072-1079
- Fitzpatrick, M. F., Engleman, H., Whyte, K. F., Deary, I. J., Shapiro, C. M., & Douglas, N. J. (1991). Morbidity in nocturnal asthma: sleep quality and daytime cognitive performance. *Thorax*, 46(8), 569-573. Doi: 10.1136/thx.46.8.569

- Frey, C., & Röthlisberger, C. (1996). Social support in healthy adolescents. *Journal of Youth and Adolescence*, 25(1), 17-31. Doi: 10.1007/BF01537378
- Gelfand, E. W. (2008). The Impact of Asthma on the the patient, the family, and society. *Johns Hopkins*, 8(3), 57-63.
- GINA. (2004). *Asthma Toll Reaches 300 Million...and Still Set to Rise: Asthma prevalence appears to be increasing in most countries In Southeast Asia*. [http://www.ginasthma.org/local/uploads/files/wad2004-regional\\_press\\_release-southeast\\_asia.doc](http://www.ginasthma.org/local/uploads/files/wad2004-regional_press_release-southeast_asia.doc).
- GINA. (2004). *Prevalence of asthma- Especially severe asthma- Increasing in East Asia and the Pacific*. Retrieved from [http://www.ginasthma.org/local/uploads/files/wad2004-regional\\_press\\_release-east\\_asia\\_pacific.doc](http://www.ginasthma.org/local/uploads/files/wad2004-regional_press_release-east_asia_pacific.doc)
- GINA. (2014). *Global strategy for asthma management and prevention*. Retrieved from [http://www.ginasthma.org/local/uploads/files/GINA\\_Report2015\\_Tracked.pdf](http://www.ginasthma.org/local/uploads/files/GINA_Report2015_Tracked.pdf)
- Global Asthma Network Study Group.(2014).The Global Asthma Report 2014.[http://www.globalasthmanetwork.org/publications/Global\\_Asthma\\_Report\\_2014.pdf](http://www.globalasthmanetwork.org/publications/Global_Asthma_Report_2014.pdf)
- Gupta, D., Keogh, B., Chung, K. F., Ayres, J. G., Harrison, D. A., Goldfrad, C., . . . Rowan, K. (2004). Characteristics and outcome for admissions to adult, general critical care units with acute severe asthma: a secondary analysis of the ICNARC Case Mix Programme Database. *Crit Care*, 8(2), R112-121.
- Haas, B. K. (1999). A multidisciplinary concept analysis of quality of life. *Western Journal of Nursing Research*, 21(6), 728-742.
- Hajiro, T., Nishimura, K., Jones, P. W., Tsukino, M., Ikeda, A., Koyama, H., et al. (1999). A Novel, Short, and Simple Questionnaire to Measure Health-related Quality of Life in Patients with Chronic Obstructive Pulmonary Disease. *American Journal of Respiratory and Critical Care Medicine*, 159, 1874–1878
- Holgate, S. T. (1993). Asthma: past, present and future. *European Respiratory Journal*, 6, 1507-1520.

- Jagoda, R. (2011). How does asthma affect the body?, Live strong.
- Jang, A. S., & Choi, I. S. (2002). Relationship between the perception of dyspnoea and airway inflammatory markers. *Respiratory Medicine*, 96(3), 150-154.
- Janssens, J. P. (2001). When and how to assess quality of life in chronic lung disease. *Swiss Medical Weekly*, 131(43-44), 623-629. Doi: 2001/43/smw-09889
- Jonsdottir, S. S., Thome, M., Steingrimsdottir, T., Lydsdottir, L. B., Sigurdsson, J. F., Olafsdottir, H., & Swahnberg, K. (2016). Partner relationship, social support and perinatal distress among pregnant Icelandic women. *Women Birth*. doi: 10.1016/j.wombi.2016.08.005
- Juniper, E. F. (1997). Quality of life in adults and children with asthma and rhinitis. *Allergy*, 52(10), 971-977.
- Juniper, E. F., Guyatt, G. H., Epstein, R. S., Ferrie, P. J., Jaeschke, R., & Hiller, T. K. (1992). Evaluation of impairment of health related quality of life in asthma: development of a questionnaire for use in clinical trials. *Thorax*, 47(2), 76-83.
- Kimura T., Yokoyama A., Nakaruma H., Eboshida (2009). A. Perceived Stress, Severity of Asthma, and Quality of Life in oung Adults with Asthma. *Allergology International*.; 58:71-79.
- Laforest, L., Yin, D., & Kocevar, V. S. (2004). Association between asthma control in children and loss of workdays by caregivers. *Ann Allergy Asthma Immunol*, 93,265-271.
- Lakey, B., & Cohen, S. (2000). Social support theory and measurement. In S. Cohen, L. G. Underwood & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientist*. (pp. 29-52). United state, US: Oxford University Press.
- Lâm, H. T., Rönmark, E., Văn Trường, N., Ekerljung, L., Kim Chúc, N. T., & Lundbäck, B. (2011). Increase in asthma and a high prevalence of bronchitis: Results from a population study among adults in urban and rural Vietnam. *Respiratory Medicine*, 105(2), 177-185. doi: <http://dx.doi.org/10.1016/j.rmed.2010.10.001>
- Langhammer, A., Johnsen, R., Holmen, J., Gulsvik, A., & Bjermer, L. (2000). Cigarette smoking gives more respiratory symptoms among women than

- among men. The Nord-Trondelag Health Study (HUNT). *J Epidemiol Community Health*, 54(12), 917-922.
- Larsen, G. L. (1992). Asthma in children. *New England Journal of Medicine*, 326, 1540-1545.
- Leblanc, P., Bowie, D. M., Summers, E., Jones, N. L., & Killian, K. J. (1986). Breathlessness and exercise in patients with cardio respiratory disease. *American review of respiratory disease*, 133(1), 21–25
- Leung, R., & Ho, P. (1994). Asthma, allergy, and atopy in three south-east Asian populations. *Thorax*, 49(12), 1205–1210.
- Lewis, D. A. (2001). Sleep in patients with asthma and chronic obstructive pulmonary disease. *Current Opinion in Pulmonary Medicine*, 7(2), 105-112.
- Leynaert, B., Neukirch, F., Demoly, P., & Bousquet, J. (2000). Epidemiologic evidence for asthma and rhinitis comorbidity. *J Allergy Clin Immunol*, 106(5 Suppl), S201-205.
- Maddox, L., & Schwartz, D. A. (2002). The pathophysiology of Asthma. *Annual Reviews*, 53, 477-498.
- Mahler, D. A., & Wells, C. K. (1988). Evaluation of clinical methods for rating dyspnea. *Chest*, 93(3), 580-586.
- Masoli, M., Fabian, D., Holt, S., & Beasley, R. (2004). *Global Burden of Asthma*. Retrieved from [http://www.ginasthma.org/local/uploads/files/GINABurdenReport\\_1.pdf](http://www.ginasthma.org/local/uploads/files/GINABurdenReport_1.pdf).
- Masters, K., Stillman, A., & Spielmans, G. (2007). Specificity of social support for back pain patients: Do patients care who provides what? *Journal of Behavioral Medicine*, 30(1), 11-20. doi: 10.1007/s10865-006-9078-z
- Masters, K., Stillman, A., & Spielmans, G. (2007). Specificity of Social Support for Back Pain Patients: Do Patients Care Who Provides What?, *Journal of Behavioral Medicine*, 30(1), 11-20. Doi: 10.1007/s10865-006-9078-z
- Meek, P. M., Schwartzstein, R. M., Adams, L., Altose, M, D., Breslin, E, H., Carrieri-Kohlman, V., et al. (1999). Dyspnea. Mechanisms, assessment, and management: a consensus statement. *American Journal Respiratory Critical Care Medicine*, 159(1), 321-340. doi: 10.1164/ajrccm.159.1.ats898

- Mitchell, E. A., & Borman, B. (1986). Demographic characteristics of asthma admissions to hospitals. *N Z Med J*, 99(807), 576-579.
- National Asthma Education and Prevention Program. (2007). *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma*. Retrieved from [http://www.ncbi.nlm.nih.gov/books/NBK7232/pdf/Bookshelf\\_NBK7232.pdf](http://www.ncbi.nlm.nih.gov/books/NBK7232/pdf/Bookshelf_NBK7232.pdf).
- Nelson, H. S., Szeffler, S. J., & Jacobs, J. (1999). The relationship among environmental allergen sensitization, allergen exposure, pulmonary function, and bronchial hyperresponsiveness in the childhood asthma management program. *Journal of Allergy and Clinical Immunology*, 104, 775-785.
- Network, G. A. (2015). The Global Asthma Report 2014. Auckland, New Zealand.
- Newacheck, P. W. (2000). Prevalence, Impact, and Trends in Childhood Disability Due to Asthma. *Jama Pediatrics*, 154(3).
- Ng, C. G., Mohamed, S., See, M. H., Harun, F., Dahlui, M., Sulaiman, A. H., . . . Taib, N. A. (2015). Anxiety, depression, perceived social support and quality of life in Malaysian breast cancer patients: a 1-year prospective study. *Health Qual Life Outcomes*, 13. doi: 10.1186/s12955-015-0401-7
- Nishimura, K., Hajiro, T., Oga, T., Tsukino, M., & Ikeda, A. (2004). Health-related quality of life in stable asthma: what are remaining quality of life problems in patients with well-controlled asthma? *Journal of Asthma*, 41(1), 57-65.
- Nocon, A., & Booth, T. (1991). The social impact of asthma. *Family Practice*, 8(1), 37-41.
- Nosedá, A. (2003). Dyspnoea and perception of airway obstruction. *Revue des Maladies Respiratoires*, 20(3), 364-372.
- Pauwels, R., Joos, G., & Van der Straeten, M. (1988). Bronchial hyperresponsiveness is not bronchial asthma. *Clinical Allergy*, 18(4), 317-321.
- Pope, J & Stewart, L. J. (2013). Asthma Impact on your Child's Life. Received from website [http://cancer.dartmouth.edu/pf/health\\_encyclopedia/hw161366#hw161366-sec](http://cancer.dartmouth.edu/pf/health_encyclopedia/hw161366#hw161366-sec).

- Rona, R. J., Duran-Tauleria, E., & Chinn, S. (1997). Family size, atopic disorders in parents, asthma in children, and ethnicity. *Journal of Allergy and Clinical Immunology*, *99*, 454-460.
- Shaaban, R., Zureik, M., Soussan, D., Neukirch, C., Heinrich, J., Sunyer, J., . . . Leynaert, B. (2008). Rhinitis and onset of asthma: a longitudinal population-based study. *Lancet*, *372*(9643), 1049-1057. doi: 10.1016/S0140-6736(08)61446-4
- Silva, K.J., Cordeiro, G.D., Rossinoli, C., Galhardo, M.L. & Faganello, M.M. (2016). Evaluation of Life Quality and Dyspnea Intensity on Chronic Airway Diseases Patients in Pulmonary Rehabilitation Program. *Journal of Biosciences and Medicines*, *4*, 10-15. Doi: <http://dx.doi.org/10.4236/jbm.2016.41002>
- Simon, P. M., Schwartzstein, R. M., Weiss, J. W., LaHive, K., Fencl, V., Teghtsoonian, M., & Weinberger, S. E. (1989). Distinguishable sensations of breathlessness in normal volunteers. *American review of respiratory disease*, *140*, 1021-1027
- Smoller, J. W., Pollack, M. H., Otto, M. W., Rosenbaum, J. F., & Kradin, R. L. (1996). Panic anxiety, dyspnea, and respiratory disease. Theoretical and clinical considerations. *American Journal Respiratory Critical Care Medicine*, *154*(1), 6-17. Doi: 10.1164/ajrccm.154.1.8680700
- Society, T. M. T. (2012). Guidelines on management of adult Asthma. *British Thoracic Society*.
- Sullivan, M., & Tunsater, A. (2001). Health-related quality of life informative measure of outcome in clinical trials. Practical examples: asthma/chronic obstructive lung disease. *Lakartidningen*, *98*(41), 4428-4433.
- Sy, D. Q., Thanh Binh, M. H., Quoc, N. T., Hung, N. V., Quynh Nhu, D. T., Bao, N. Q., . . . Homasson, J. P. (2007). Prevalence of asthma and asthma-like symptoms in Dalat Highlands, Vietnam. *Singapore Med J*, *48*(4), 294-303.
- The impact of asthma.(n.d). Retrieved from <http://www.americanasthmafoundation.org/impact-asthma>

- Tuomisto, L. E., Ilmarinen, P., Niemela, O., Haanpaa, J., Kankaanranta, T., & Kankaanranta, H. (2016). A 12-year prognosis of adult-onset asthma: Seinajoki Adult Asthma Study. *Respir Med*, *117*, 223-229. doi: 10.1016/j.rmed.2016.06.017
- Uchino, B. (2006). Social Support and Health: A Review of Physiological Processes Potentially Underlying Links to Disease Outcomes. *Journal of Behavioral Medicine*, *29*(4), 377-387. doi: 10.1007/s10865-006-9056-5
- Ulrik, C. S. (1999). Outcome of asthma: longitudinal changes in lung function. *Europe respiratory Journal*, *13*(4), 904-918.
- VOV. (2013). Vietnam has 3.5 million asthma sufferers. Retrieved from <http://english.vov.vn/Society/Vietnam-has-35-million-asthma-sufferers/259923.vov>
- Wasserman, K., & Cassaburi, R. (1988). Dyspnea: Physiological and pathophysiological mechanisms. *Annual Review of Medicine*, 39503-39515
- Weber, E. J., Silverman, R. A., Callahan, M. L., Pollack, C. V., Woodruff, P. G., Clark, S., & Camargo, C. A., Jr. (2002). A prospective multicenter study of factors associated with hospital admission among adults with acute asthma. *Am J Med*, *113*(5), 371-378.
- Wijnhoven, H. A. H. (2003). The influence of co-morbidity on health-related quality of life in asthma and COPD patients. *Respiratory Medicine*, *97*(5), 468-475.
- Wijnhoven, H. A., Kriegsman, D. M., Hesselink, A. E., Penninx, B. W., & de Haan, M. (2001). Determinants of different dimensions of disease severity in asthma and COPD: pulmonary function and health-related quality of life. *Chest*, *119*(4), 1034-1042.
- Wilson, R. C & Jones, P. W. (1989). A comparison of the visual analogue scale and modified Borg scale for the measurement of dyspnoea during exercise. *Clinical science* (London), *76*(3), 277-282

- Win, T., Pearce, L., Nathan, J., Cafferty, F., & Laroche, C. (2008). Use of the Airway Questionnaire 20 to detect changes in quality of life in asthmatic patients and its association with the St George's Respiratory Questionnaire and clinical parameters. *Can Respir J*, *15*(3), 133-137.
- Wright, G. W., & Branscomb, B. V. (1954). Origin of the sensations of dyspnea. *Transactions of the American Clinical and Climatological Association*, 1966, 116-125
- Yagmur, Y., & Duman, M. (2016). The relationship between the social support level perceived by patients with gynecologic cancer and mental adjustment to cancer. *Int J Gynaecol Obstet*, *134*(2), 208-211. doi: 10.1016/j.ijgo.2015.12.010
- Zeldin, D. C., Eggleston, P., Chapman, M., Piedimonte, G., Renz, H., & Peden, D. (2006). How exposures to biologics influence the induction and incidence of asthma. *Environ Health Perspect*, *114*(4), 620-626.
- Zimet, G.D., Dahlem, N.W., Zimet, S.G. & Farley, G.K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*, 30-41.
- Zimet, G.D., Powell, S.S., Farley, G.K., Werkman, S. & Berkoff, K.A. (1990). Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *55*, 610-17.

## **APPENDICES**

## **APPENDIX A**

### **LIST OF THE EXPERTS**

- 1. Prof. Dr. Nguyen Van Doan, MD, PhD**  
Director of Allergy and Clinical Immunology Centre at Bach Mai Hospital in Hanoi City, Vietnam.
- 2. PhD. Pham Huy Thong**  
Vice Director of Allergy and Clinical Immunology Centre at Bach Mai Hospital in Hanoi City, Vietnam.
- 3. Dr. Bui Van Khanh**  
Doctor of Allergy and Clinical Immunology Centre at Bach Mai Hospital in Hanoi City, Vietnam.
- 4. Bachelor. Do Xuan Quang**  
Head nurse of Allergy and Clinical Immunology Centre at Bach Mai Hospital in Hanoi City, Vietnam.
- 5. Bachelor. Bui Minh Thu**  
Head nurse of Bach Mai Hospital in Hanoi City, Vietnam.

## APPENDIX B

### CERTIFICATE OF APPROVAL



MAHIDOL UNIVERSITY

*Since 1888*

The Institutional Review Board  
Faculty of Nursing, Mahidol University  
Tel 0-2441-5333 Ext 2531-32

Document No. 0517.0510/IRB-NS 453  
Date May 3, 2016  
Subject Result of research project considerations after the revision  
Dear Chair, Master of Nursing Science Program in Adult Nursing (for Vietnamese Nurses)

According to the student named Mrs. Le Thu Hoai has submitted the research project entitled Factors related to quality of life among patients with asthma protocol no. IRB-NS2016/21.0703 at the Institutional Review Board, Faculty of Nursing, Mahidol University on the (date) May 2, 2016 the IRB committee have examined and found the research protocol and all the research documents are revised according to the suggestions of the IRB. The IRB committee have made the decision and the results are as follows:

- Approve.  
On the date May 2, 2016  
Please look at the guideline for the research conduct post approval.  
The document is attached together with the COA

A handwritten signature in cursive script, reading "Fongcum Tilokulchai".

(Associate Professor Dr. Fongcum Tilokulchai)  
Chair, Institutional Review Board

Copy to Associate Professor Dr. Wimolrat Puwarawuttipanit  
Mrs. Le Thu Hoai



**CERTIFICATE OF APPROVAL**

From

Institutional Review Board Faculty of Nursing Mahidol University

COA No.IRB-NS2016/346.0205

**Title of Project:** FACTORS RELATED TO QUALITY OF LIFE AMONG PATIENTS WITH ASTHMA

**Project Number:** IRB-NS2016/21.0703

**Principle Investigator:** Mrs. Le Thu Hoai

**Name of Institution:** Faculty of Nursing Mahidol University

**Approval includes**

- 1) IRB-NS Submission form version received date 2 May 2016
- 2) Participant Information sheet version date 2 May 2016
- 3) Consent form version date 2 May 2016
- 4) Questionnaire version received date 2 May 2016

Institutional Review Board Faculty of Nursing Mahidol University is in full compliance with International Guidelines for Human Research Protection such as Declaration of Helsinki, The Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP)

**Date of Approval:** 02 May 2016

**Date of Expiration:** 01 May 2017

**Signature of Chair:**

Handwritten signature of Fongcum Tilokkulchai in blue ink.

(Associate Professor Dr. Fongcum Tilokkulchai)

Chair

**Signature of Dean, Faculty of Nursing**

Handwritten signature of Yajai Sitthimongkol in blue ink.

(Associate Professor Dr. Yajai Sitthimongkol)

Dean, Faculty of Nursing

Office of Institutional Review Board Faculty of Nursing Mahidol University Room 503 Faculty of Nursing, Mahidol University  
999 Phuttamonthon 4 Road, Salaya, Nakhon Pathom 73170, THAILAND Tel: (662)-441-5333 Ext. 2531, 2532

## APPENDIX C

### PARTICIPANT INFORMATION SHEET

(English version)

- 2 MAY 2016  
21.0703

IRB-NS Form No. 3.1

#### Participant Information Sheet

*In this document, there may be some statements that you do not understand. Please ask the principal investigator or his/her representative to give you explanations until they are well understood. To help your decision making in participating the research, you may bring this document home to read and consult your relatives, intimates, personal doctor or other doctor.*

**Title of Research Project:** Factors related to quality of life among patients with asthma.

**Name of Researcher:** Le ThuHoai

**Research Site-Office and its telephone number available for contact both in and out of the officehours:**

Bach Mai hospital: 78 GiaiPhong Street, Dong Da District, Hanoi City,  
Vietnam.Code: 100000, Phone number:(+84)438683731 Fax:  
(+84).438691607 e-mail

**Source of Fund:** No research funding

This research project aims to examine the relationship between level of dyspnea, FEV1, social support and quality of life in patients with asthma, which expects the following benefits:

- 1) Providing basic data about factors related QOL in patients with asthma.
- 2) In the future, developing program by using this data to promote QOL in patients with asthma.

However, in this study, the sample doesn't get any benefit directly but asthma patients will get benefit in the future.

You are invited to participate in this research project because you have been diagnosis in asthma patients and being age 18 years old or above.

There will be 115 participants, and the research will last for 30- 45 minutes to answer questionnaires.

\*To participate in this research is completely VOLUNTARY.

**If you decide to participation the research project, you will go through the following procedure.**

1) The research assistant will introduce you about the objective of study, data collection procedure and asks for the research cooperation. If you decided to voluntary participate in this stud , research assistant asks you to sign consent form. Research assistant will introduce researcher to you.

Participant Information Sheet for version 5 date 10 August 2015

Approved by Institutional Review Board  
Faculty of Nursing Mahidol University  
Project Number IRB-NS 2016/21.0703  
Date of Approval - 2 MAY 2016

IRB-NS Form No. 3.1

2) The researcher will collect some demographic data from medical record form and make a relationship with you.

3) The researcher will organize private room to interview the patients or let the patients do questionnaire by themselves. Then, research assistant uses five questionnaires for data collection at data resource including: 1) Demographic data questionnaire have 24 questions, 2) FEV1 measurements, 3) Modified Borg scale (MBS) have 1questions, 4) Multidimensional Scale of Perceived Social Support (MSPSS) has 12 questions, and 5) Airways Questionnaire 20 (AQ 20) has 20 questions. Total questionnaire has 57 questions and time is about 30-45minutes.

4) During interview or use questionnaire, if you feel uncomfortable, you can stop participating in this study.

5) During interview or use questionnaire, you may feel uncomfortable. You can stop the process until the patient feel comfort to continue or stop participating from the study.

If you do not participate in this research project, you will receive a standard assessment and treatment.

**If you have any questions about this research project please feel free to contact the researcher, Mrs Le Thu Hoai via telephone: (+84) 987013399.**

You don't get any money or payment for participating in this research.

If relevant information arises about benefits and risks of the research project, the researcher will inform the participant immediately and without concealment.

Your information will be kept confidential, it will not be subject to an individual disclosure, but will be included in the research report as part of the overall results. Individual information may be examined by a researcher, the ethics committee, etc.

You have the right to withdraw from the project at anytime without prior notice. And the refusal to participate or the withdrawal from the research project will not at all affect the proper service or treatment that you will receive.

This research project is approved by The Institutional Reviews Boards,

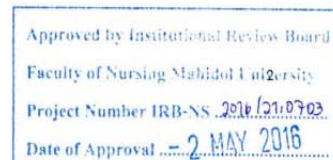
1) Faculty of Nursing (IRB-NS) at the office of IRB-NS room 503 5<sup>th</sup> floor  
Tel 0066 2 4415333 ext2531, 2532 Fax 0066 2 4415333ext 2531,  
Email: nsirbnursing@mahidol.ac.th,ns.irbnursing@gmail.com

2) SMP- IRB institutional review board of Vietnam National University,  
Telephone number: (+84)437450118, Fax: +84-4-37450146

Mobile Phone number of IRB: (+84)913597423 (Contact IRB Chair - SMP:

Associate Professor Le Thi Luyen, MD, PhD)

Participant Information Sheet for version 5 date 10 August 2015



IRB-NS Form No. 3.1

On the condition that I am not treated as indicated in the information sheet distributed to the subjects, I can contact the Chair, or the representative of the IRB-NS at the contact address presenting above.

I thoroughly read the details in this document.

Signature..... Participant  
(.....)  
Date.....

Approved by Institutional Review Board  
Faculty of Nursing Maillard University  
Project Number IRB-NS ~~2016/21/0303~~  
Date of Approval - 2 MAY 2016

**(Vietnamese version)**

Thông tin dành cho đối tượng nghiên cứu Phiên bản 02/ ngày 08 tháng 08 năm 2016

**THÔNG TIN DÀNH CHO ĐỐI TƯỢNG NGHIÊN CỨU**

Tài liệu này có thể có một số vấn đề mà ông/bà có thể không hiểu. Hãy hỏi người nghiên cứu và đại diện của cô ấy để được giải thích thêm cho đến khi ông/bà hiểu rõ ràng vấn đề. Để giúp cho việc quyết định có tham gia vào chương trình nghiên cứu hay không ông/bà có thể mang tài liệu này về nhà để đọc kỹ hoặc hỏi ý kiến từ người thân và các bác sỹ.

**Đề tài nghiên cứu:** Các yếu tố liên quan đến chất lượng cuộc sống của bệnh nhân hen phế quản.

**Người thực hiện nghiên cứu:** Lê Thu Hoài

**Địa chỉ và điện thoại liên hệ trong và ngoài giờ hành chín (Đại diện của người nghiên cứu):**

Địa chỉ bệnh viện Bạch Mai: 78 đường Giải Phóng, Quận Đống Đa, Hà Nội, Việt Nam. Mã bưu chính: 100000. Số điện thoại: (+84)438683731 Fax: (+84).438691607.

**Nguồn kinh phí:** tự túc

**Mục đích của nghiên cứu:** Nghiên cứu này nhằm đánh giá mối liên quan giữa mức độ khó thở, FEV1, hỗ trợ xã hội và chất lượng cuộc sống của bệnh nhân hen phế quản.

**Lợi ích của nghiên cứu:**

1) Cung cấp dữ liệu cơ bản về các yếu tố liên quan đến chất lượng cuộc sống của bệnh nhân hen phế quản.

2) Phát triển các can thiệp giúp cải thiện chất lượng cuộc sống của bệnh nhân hen phế quản thông qua sử dụng dữ liệu nghiên cứu này trong tương lai.

Tuy nhiên, trong nghiên cứu này, người tham gia nghiên cứu có thể không thu được các lợi ích trực tiếp, nhưng những bệnh nhân hen phế quản sẽ thu được các lợi ích trong tương lai.

Ông (bà) được mời tham gia chương trình nghiên cứu bởi vì Ông (bà) được chẩn đoán là hen phế quản và trên 18 tuổi.

Sẽ có khoảng 115 người tham gia, và buổi nghiên cứu sẽ có phần Hỏi- đáp diễn ra trong vòng 30-45phút.

Việc tham gia hoàn toàn TỰ NGUYỆN.

**Nếu Ông (bà) quyết định tham gia nghiên cứu này, Ông (bà) sẽ phải đi qua những quy trình sau:**

1) Trợ lý nghiên cứu sẽ giới thiệu với ông (bà) về mục đích của nghiên cứu, quy trình thu thập số liệu và hỏi về việc tham gia vào nghiên cứu. Nếu ông bà quyết định tự nguyện tham gia vào nghiên cứu này, trợ lý nghiên cứu sẽ yêu cầu ông (bà) ký vào phiếu cam kết. Sau đó trợ lý nghiên cứu sẽ giới thiệu nhà nghiên cứu đến ông (bà).

2) Nhà nghiên cứu sẽ thu thập một số thông tin chung trong hồ sơ bệnh án và làm quen với ông (bà).

3) Nhà nghiên cứu sẽ sắp xếp một phòng riêng để phỏng vấn ông (bà) hoặc để ông (bà) tự làm bản câu hỏi. Sau đó, trợ lý nghiên cứu sẽ dùng 5 bộ câu hỏi để thu thập dữ liệu, bao gồm: 1) Bộ câu hỏi thu thập dữ liệu nhân trắc học gồm 24 câu hỏi, 2) Đo lường FEV1, 3) Thang đo Borg đã hiệu chỉnh (Mức độ khó thở nhận thức được) gồm 1 câu hỏi, 4) Thang

*Thông tin dành cho đối tượng nghiên cứu Phiên bản 02/ ngày 08 tháng 08 năm 2016*  
 đo đa khía cạnh về Nhận thức hỗ trợ xã hội (MSPSS) gồm 12 câu hỏi, 5) Bộ câu hỏi AQ20 cho bệnh nhân hen phế quản bao gồm 20 câu hỏi. Tổng số câu hỏi là 57 câu và thời gian dự kiến trong khoảng 30-45 phút.

4) Trong quá trình phỏng vấn hoặc sử dụng bản câu hỏi, nếu ông (bà) cảm thấy khó chịu, ông (bà) có thể dừng việc tham gia vào nghiên cứu này.

5) Trong quá trình phỏng vấn hoặc sử dụng bản câu hỏi, ông (bà) có thể cảm thấy khó chịu. Ông (Bà) có thể tạm dừng quá trình cho đến khi cảm thấy đủ khỏe mạnh để tiếp tục, hoặc ông (bà) có thể dừng việc tham gia vào nghiên cứu này.

Nếu Ông/Bà không muốn tham gia vào nghiên cứu này, Ông/Bà vẫn được điều trị và chăm sóc theo đúng quy trình chuẩn của bệnh viện mà không có bất cứ trở ngại nào sau khi rút khỏi nghiên cứu.

**Nếu Ông (bà) có bất kỳ câu hỏi nào về nghiên cứu này, hãy gọi điện tới Bà Lê Thu Hoài. Số điện thoại: +84 987013399.**

Ông/Bà sẽ không nhận được, cũng như không phải trả bất cứ một khoản tiền nào khi tham gia nghiên cứu này.

Nếu có thông tin về lợi ích cũng như rủi ro của nghiên cứu này, người nghiên cứu sẽ thông tin cho ông (bà) ngay lập tức mà không được che giấu bất cứ thông tin nào.

Thông tin của Ông (bà) sẽ được bảo mật tuyệt đối, và không được tiết lộ dưới dạng thông tin cá nhân, tuy nhiên nó sẽ được thể hiện trong báo cáo tổng thể như là kết quả của một tài liệu nghiên cứu khoa học. Thông tin cá nhân của Ông (bà) sẽ được kiểm tra bởi người nghiên cứu và Hội đồng đạo đức trong nghiên cứu y sinh học.

Ông (bà) có quyền rút khỏi nghiên cứu bất cứ lúc nào mà không cần báo trước và điều này sẽ không ảnh hưởng tới các dịch vụ chăm sóc và điều trị mà Ông (bà) nhận được.

Đề tài nghiên cứu này được chấp thuận bởi Hội đồng đạo đức, khoa Điều dưỡng, Đại học Mahidol Thái Lan đặt văn phòng tại tầng 5 phòng 504, Đại học Mahidol, Đường Phuttamonthon 4, Salaya, Nakhon Pathom 73170 Thái Lan. Điện thoại: 66 2 441 5333 số máy lẻ 2531, 2532. Fax: 0066 2 441 5333 số máy lẻ 2531.

Email: nsirbnursing@mahidol.ac.th, nsirbnursing@gmail.com

Đề tài nghiên cứu này cũng được chấp thuận bởi Hội đồng đạo đức trong y sinh học của khoa Y dược - Đại học Quốc gia Hà Nội. Địa chỉ: Tòa nhà Y1, số 144 phố Xuân Thủy, Quận Cầu Giấy, Hà Nội, Việt Nam. Số điện thoại: 0437450118, Fax: +84437450146, email: smp@vnu.edu.vn.

Nếu tôi không được hưởng sự điều trị như trong bản thông tin đưa ra, tôi có thể liên lạc với Hội đồng đạo đức, khoa Điều dưỡng, Đại học Mahidol Thái Lan hoặc Hội đồng đạo đức trong nghiên cứu Y sinh học, Khoa Y Dược, Đại học Quốc Gia Hà Nội với các thông tin liên lạc như đã nêu ở trên.

Tôi đã đọc và hiểu toàn bộ chi tiết nêu trong bản thông tin này.

Ngày..... Tháng .....Năm.....

Họ tên, chữ kí của người tham gia nghiên cứu

# APPENDIX D INFORMED CONSENT

(English version)

- 2 MAY 2016

21.0703

IRB-NS Form No. 4

## Consent Form for Informed and Voluntary Participation in Research

Date...../...../.....

My name is....., aged: .....years  
 old, now living at the address: No.....  
 Road/street.....Sub-district/commune: .....  
 District: ..... Province/ City: .....  
 Postal code..... Telephone Number: .....

I give my consent to participate as a subject in the research project entitled factors related to quality of life among patients with asthma.

In so doing, I am informed of the background and purpose of research project; its procedural details to carry out or to be carried out; its expected benefits and risks that may occur to the subjects, including methods to prevent and handle harmful consequences; and payment/ incentives, and expense. I thoroughly read the detailed statements in the information sheet given to the research subjects, I was also given explanations and my questions were answered by the head of the research project.

I consent to participate as a subject in this research project. On the condition that I have any questions about the research procedures, or on the condition that I suffer from an undesirable side effect from this research, I can contact Mrs Le Thu Hoai via (+84)987013399 or email: hoai100125@yahoo.com.vn.

On the condition that I am not treated as indicated in the information sheet distributed to the subjects, I can contact the Chair, or the representative of the IRB-NS at the office of IRB-NS room 503 5<sup>th</sup> floor, Faculty of Nursing, Mahidol University, Tel 0066 2 4415333 ext 2531, 2532 Fax 0066 2 4415333ext 2531, Email: nsirbnursing@mahidol.ac.th, ns.irbnursing@gmail.com

I am aware of my right to further information concerning benefits and risks from the participation in the research project and my right to withdraw or refrain from the participation anytime without any consequence on the service or health care I am to receive in the future, I consent to the researcher's use of my private information obtained in this research, but do not consent to an individual disclosure of private information. The information must be presented as part of the research results as a whole.

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Faculty of Nursing Mahidol University
Project Number IRB-NS 2016.121.0703
Date of Approval - 2 MAY 2016

IRB-NS Form No. 4

I thoroughly understand the statement in the information sheet for the research subjects and in this consent form. I thereby give my signature.

Signature.....Participants/Proxy/  
(.....) Date.....

Signature.....Person in Charge of Informing and  
Requesting a Consent/Head of (Mrs. Le Thu Hoai)  
Research Project/Date .....

In case that the participant is not literate, the reader of all the statements for the participant is (Mr./Mrs./Ms.....), who gives his/her signature as a witness.

Signature.....Witness  
(.....) Date.....

Version 5 date 10 August 2015

Approved by Institutional Review<sup>2</sup> Board  
Faculty of Nursing Mahidol University  
Project Number IRB-NS 2016.121.0303  
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*Bản chấp thuận tham gia nghiên cứu*

*Phiên bản 02/ngày 08 tháng 08 năm 2016*

**Bản chấp thuận tham gia nghiên cứu**



Ngày...../...../.....

Tên tôi là ..... Tuổi:.....

Mã ID (Người nghiên cứu ghi):.....

Địa chỉ: .....

Mã bưu chính: ..... Số điện thoại: .....

Tôi đồng ý tham gia nghiên cứu với tên đề tài: ***Các yếu tố liên quan đến chất lượng cuộc sống của bệnh nhân hen.***

Tôi đã được giải thích và hiểu về các thông tin sơ bộ và mục đích của nghiên cứu này; chi tiết của các quy trình liên quan về việc tham gia nghiên cứu; các lợi ích và rủi ro có thể xảy ra khi tham gia vào nghiên cứu này, bao gồm cả các phương pháp phòng ngừa và kiểm soát các biến chứng, cũng như các chi phí nếu có. Tôi đã đọc cẩn thận các chi tiết trong bảng thông tin nghiên cứu và tôi cũng được chủ nhiệm đề tài nghiên cứu giải thích tất cả các câu hỏi.

Tôi đồng ý tham gia trở thành đối tượng nghiên cứu cho nghiên cứu này.

Trong trường hợp có bất cứ câu hỏi nào hoặc có vấn đề mới phát sinh trong quá trình nghiên cứu, tôi có thể liên lạc trực tiếp với bà Lê Thu Hoài số điện thoại: +84 987013399, Email: hoai100125@yahoo.com.vn.

Trong trường hợp tôi không được điều trị như những điều khoản được đề cập trong bảng thông tin nghiên cứu, tôi có thể liên lạc với Chủ tịch hoặc đại diện hội đồng thẩm định điều dưỡng, khoa Điều dưỡng (IRB-NS) tại văn phòng của IRB-NS phòng 503 tầng 5, khoa điều dưỡng, Đại học Mahidol, 999 Đường Phuttamonthon 4, Salaya, Nakhon Pathom 73170 Thái Lan. Điện thoại 0066 2 441 5333 số máy lẻ 2531, 2532. Fax 0066 2 441 5333 số máy lẻ 2531, Email: nsirbnursing@mahidol.ac.th, ns.irbnursing@gmail.com

Tôi cũng có thể liên lạc với Hội đồng đạo đức trong nghiên cứu Y sinh học, khoa Y Dược, Đại học Quốc Gia Hà Nội. Địa chỉ: tòa nhà Y1, số 144 phố Xuân Thủy, quận Cầu Giấy, Hà Nội, Việt Nam; điện thoại: 04-37450188; Fax: +84437450146; Email:smp@vnu.edu.vn.

Tôi nhận thức được quyền thông tin liên quan tới các lợi ích và rủi ro của người tham gia nghiên cứu và quyền chủ động rút lui khỏi nghiên cứu mà không phải lo lắng về bất cứ hậu quả nào liên quan tới các dịch vụ chăm sóc y tế tôi sẽ nhận được trong tương lai. Tôi đồng ý cho bên nghiên cứu sử dụng thông tin cá nhân trong quá trình nghiên cứu, nhưng không đồng ý việc tiết lộ thông tin cá nhân. Thông tin của tôi phải được trình bày như là 1 phần kết quả nghiên cứu.

Tôi hoàn toàn hiểu những tuyên bố đã nêu trong bản thông tin dành cho các đối tượng nghiên cứu và trong phiếu chấp thuận tham gia nghiên cứu này. Sau đây là chữ ký của tôi.

**Chủ nhiệm đề tài**

*(Ký và ghi rõ họ tên)*

**Người tham gia nghiên cứu**

*(Ký và ghi rõ họ tên)*

# APPENDIX E INSTRUMENTS

(English version)

- 2 MAY 2016  
21.0703

Le Thu Hoai

Appendices / 37

Number: .....

## INSTRUMENT

**1: General information and information related to illness of the patients Patient's general information (for researcher collect data from medication record)**

The following questions related to patientspersonal informationand Information related to illness. Please tick (✓) or fill in blanks in the following questions:

**Personal information**

1. Age:.....

2. Gender:

Male       Female

3. Weight(Kg) .....      Height (m) ...      BMI (kg/m<sup>2</sup>) ...

4. Location ofresidence:

HaNoi       North       Middle       South

5. Maritalstatus:

Married       Single       Other

6. What is your highest educationlevel?

Primaryschool       Bachelordegree  
 Secondaryschool       Upper bachelordegree  
 Highschool       Others (pleasespecify)...

7. What is youroccupation?

Publicservant       Worker  
 Farmer       Self-employed  
 Housewife       Retired  
 Other jobs (please specify)....

8. How much of your income permonth?

8.1 Your income per month: ..... VND

8.2 Your family income permonth: ..... VND

9. Do you have your health insurance?

Yes       No

VND

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10. Payment method:

- Government
- Insurance
- Self-pay
- Others(pleasespecify)....

**Information related to illness:**

1. Admission:.....

2. Diagnosis:.....

3. History ofSmoking:

Yes  No

4. History of drug allergies:

Yes  No

5. History of food allergies:

Yes  No

6. History of weatherallergies:

Yes  No

7. Co-morbidity:

- Hypertension
- Heart disease
- Diabetes Mellitus
- Allergic rhinitis
- Other (please specify)....

8. Use the inhaler as directed by your doctor before admission:

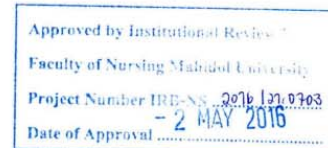
Yes  No

9. Symptoms of disease before come tohospital:

- Wheezing
- Chesttightness
- Fever
- Cough
- Dyspnea

10. SpO2:.....

11. FEV1:.....



Le Thu Hoai

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12. Is their voice breathy, or seem out of breath?

Yes       No

13. Are their sentences short or choppy?

Yes       No

14. Is there audible wheezing or coughing?

Yes       No

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## 2: Modified Borg Scale- Rating of Perceived Dyspnea

The patient is asked to rate their perception of the severity level of their dyspnea.

Scale may also be used to identify subjective perception of exertion (rating of perceived exertion), or subjective perception of fatigue (rating of perceived fatigue). When asking patients to rate their breathlessness, also note the following:

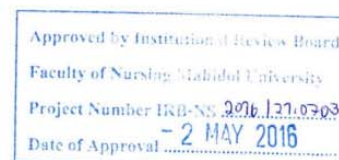
1. Is their voice breathy, or seem out of breath?
2. Are their sentences short or choppy?
3. Is there audible wheezing or coughing?

SCALE	LEVEL
0	No Breathlessness at all
0.5	Very Very Slight Breathlessness (Just Noticeable)
1	Very Slight Breathlessness
2	Slight Breathlessness
3	Moderate Breathlessness
4	Somewhat Severe Breathlessness
5	Severe Breathlessness
6	
7	Very Severe Breathlessness
8	
9	Very Very Severe Breathlessness (Almost Maximum)
10	Maximum Breathlessness

**Note:** the word “breathlessness” added for clarification.

When used to rate exertion, substitute “exertion” for “breathlessness”

When used to rate fatigue, substitute “fatigue” for “breathlessness”



**3: The Multidimensional Scale of Perceived Social Support (MSPSS)**  
**(Zimet et al.,1988)**

**Instructions:**There are 12 items in this scale.All of items will be ask about how do you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the “1” if you Very Strongly Disagree

Circle the “2” if you Strongly Disagree

Circle the “3” if you Mildly Disagree

Circle the “4” if you are Neutral

Circle the “5” if you Mildly Agree

Circle the “6” if you Strongly Agree

Circle the “7” if you Very Strongly Agree

1. There is a special person who is around when I am inneed.	1	2	3	4	5	6	7
2. There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3. My family always tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help and support I need from my family	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong	1	2	3	4	5	6	7
8. I can talk about my problems with my family	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys andsorrows	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings	1	2	3	4	5	6	7
11. My family is willing to help me make decisions	1	2	3	4	5	6	7
12. I can talk about my problems with my friends	1	2	3	4	5	6	7

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 - 2 MAY 2016  
 Date of Approval .....

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**4: Spirometry for diagnosis of asthma( for researcher)**

Spirometry is a simple test to measure the amount of air a person can breathe out, and the amount of time taken to do so. Spirometry measurements used for diagnosis of asthma include:

(1) FVC (Forced Vital Capacity): maximum volume of air that can be exhaled during a forced maneuver

FVC=.....

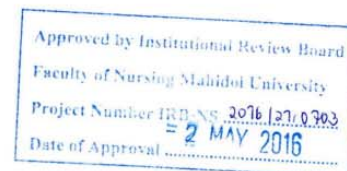
(2) FEV1 (Forced Expired Volume in one second): volume expired in the first second of maximal expiration after a maximal inspiration. This is a measure of how quickly the lungs can be emptied.

FEV1=.....

(3) FEV1/FVC: FEV1 expressed as a percentage of the FVC gives a clinically useful index of airflow limitation.

FEV1 / FVC ratio is normally >0.75 – 0.80 in healthy adults

FEV1 / FVC.....



Le Thu Hoai

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**5: Airways Questionnaire 20**

There are 20 items in AQ20 scale. questions are concerned with the effect of your chest trouble on your everyday life

Yes' response is scored '1'

'No' and Not Applicable' 'N/A' responses are scored '0'

	Question	Yes	No	(N/A)
1	Do you cough often during the day?			
2	Does your chest trouble often make you feel restless?			
3	Does gardening make you breathless?			
4	Do you worry when going to a friend's house that there might be something there that will upset your chest?			
5	Do you get chest problems when you come into contact with strong smells, exhaust fumes, cigarette smoke, perfume etc?			
6	Does your partner find your chest trouble upsetting?			
7	Do you feel breathless when trying to sleep?			
8	Do you worry about the long term effects of the drugs you take for your chest trouble?			
9	Does getting emotionally upset make your chest trouble worse?			
10	Are there times when you have difficulty getting around the house because of your chest trouble?			
11	Does your chest problem make you breathless when you do things at work?(paid employment).			
12	Does walking upstairs make you breathless?			
13	Do you get breathless doing housework?			
14	Does your chest trouble make you go home sooner than others after a night out?			
15	Do you suffer from breathlessness when you laugh?			
16	Does your chest trouble often make you feel impatient?			
17	Do you think the fullness of your life is limited by your chest trouble?			
18	Do you feel drained after a cold because of your chest trouble?			
19	Do you have a feeling of chest heaviness?			
20	Do you worry a lot about your chest trouble?			

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**(Vietnamese version)**

ID: .....

**BỘ CÂU HỎI NGHIÊN CỨU**  
**TÊN ĐỀ TÀI: CÁC YẾU TỐ LIÊN QUAN ĐẾN CHẤT LƯỢNG CUỘC SỐNG**  
**CỦA BỆNH NHÂN HEN PHẾ QUẢN**

**Phụ lục 1: Thông tin chung và thông tin liên quan đến bệnh tật của bệnh nhân.**  
**Các câu hỏi sau liên quan đến thông tin cá nhân của bệnh nhân và thông tin liên**  
**qua đến bệnh. Hãy tích (✓) vào ô thích hợp ở mỗi câu hỏi sau:**

1. Tuổi;
2. Giới:
  - Nam  Nữ
3. Cân nặng..... (Kg) Chiều cao.....(m) BMI (kg/m<sup>2</sup>).....
4. Vị trí của nơi cư trú:
  - Hà Nội  Bắc  Trung  Nam
5. Tình trạng hôn nhân:
  - Kết hôn  Độc thân  Khác.....
6. Trình độ học vấn cao nhất của bạn là gì?
  - Tiểu học  Đại học
  - Trung học cơ sở  Trên đại học
  - Trung học phổ thông  Khác (xin ghi rõ).....
7. Nghề nghiệp của bạn là gì?
  - Công chức  Nội trợ
  - Nông dân  Tự kinh doanh
  - Công nhân  Nghỉ hưu
  - Công việc khác (xin ghi rõ)....
8. Thu nhập của bản thân và gia đình là bao nhiêu tiền trong một tháng:
  - Thu nhập của bạn mỗi tháng: ..... đồng
  - Thu nhập gia đình của bạn mỗi tháng: .....đồng
9. Bản thân có thể bảo hiểm y tế không?
  - Có  Không
10. Phương pháp thanh toán:
  - Tự chi trả  Bảo hiểm y tế
  - Chính phủ chi trả  Khác(xin ghi rõ)

**Những thông tin liên quan đến bệnh:**

1. Thời gian nhập viện:
2. Chẩn đoán:
3. Tiền sử hút thuốc:  
 Có  Không
4. Tiền sử dị ứng thuốc:  
 Có  Không
5. Tiền sử dị ứng thức ăn:  
 Có  Không
6. Tiền sử dị ứng thời tiết:  
 Có  Không
7. Các bệnh trước đây đáng kể:  
 Cao huyết áp                       Viêm mũi dị ứng  
 Bệnh tim mạch                       Khác (xin ghi rõ).....  
 Đái tháo đường
8. Sử dụng 'thuốc hít' theo chỉ dẫn của bác sĩ trước khi nhập viện:  
 Có  Không
9. Các triệu chứng của bệnh trước khi đến bệnh viện:  
 Khò khè                                       Ho  
 Tức ngực                                       Khó thở  
 Sốt:
10. Khi nói, giọng có nghe rõ tiếng thờ không? Hay nghe như hết hơi?  
 Có  Không
11. Câu nói của họ có bị ngắt hay đứt quãng không?  
 Có  Không
12. Có nghe thấy tiếng khò khè hay tiếng ho không?  
 Có  Không

**Phụ lục 2: Thang đo Borg đã hiệu chỉnh - Mức độ khó thở nhận thức được.**

**Mục đích:** nhằm khuyến khích một cách tiếp cận chuẩn mực để nhận biết nhận thức chủ quan về khó thở (mức độ khó thở nhận thức được).

[Thang đo còn có thể được sử dụng để nhận biết các nhận thức chủ quan của sự gắng sức (mức độ gắng sức nhận thức được),

HOẶC nhận thức chủ quan về sự mệt mỏi (mức độ mệt mỏi được nhận thức)]

**Cách sử dụng:** Bệnh nhân được yêu cầu đánh giá sự nhận thức của họ về mức độ nghiêm trọng của chứng khó thở.

Khi yêu cầu bệnh nhân đánh giá mức độ khó thở, cần chú ý thêm về những điểm sau:

1. Khi nói giọng có nghe rõ tiếng thở không? Hay nghe như hắt hơi?
2. Câu nói của họ có bị ngắt hay đứt quãng không?
3. Có nghe thấy tiếng khò khè hay tiếng hok không?

Thang đo	Mức độ
0	Không có sự khó thở
0.5	Khó thở rất rất nhẹ (chỉ đủ để nhận thấy)
1	Khó thở rất nhẹ
2	Khó thở nhẹ
3	Khó thở trung bình
4	Khó thở nghiêm trọng một chút
5	Khó thở nghiêm trọng
6	
7	Khó thở rất nghiêm trọng
8	
9	Khó thở rất rất nghiêm trọng (gần như tuyệt đối)
10	Khó thở tuyệt đối

\*Chú ý: từ “khó thở” được bổ sung cho sự giải nghĩa  
 Khi dùng để đánh giá sự gắng sức, thêm từ “gắng sức” vào “sự khó thở”  
 Khi dùng để đánh giá sự mệt mỏi, thêm từ “mệt mỏi” vào “sự khó thở”

**Phụ lục 3: Thang đo đa khía cạnh về Nhận thức hỗ trợ xã hội (MSPSS)**  
(Zimet et al., 1988)

**Hướng dẫn:** Thang đo này gồm có 12 câu. Tất cả các câu này sẽ hỏi về bạn cảm thấy như thế nào với mỗi khẳng định. Hãy đọc kĩ các câu và đưa ra nhận định về suy nghĩ của bạn với mỗi câu.

- Khoanh tròn “1” nếu bạn hoàn toàn không đồng ý
- Khoanh tròn “2” nếu bạn rất không đồng ý
- Khoanh tròn “3” nếu bạn không đồng ý
- Khoanh tròn “4” nếu bạn không có ý kiến
- Khoanh tròn “5” nếu bạn đồng ý
- Khoanh tròn “6” nếu bạn rất đồng ý
- Khoanh tròn “7” nếu bạn hoàn toàn đồng ý

1. Luôn có một người đặc biệt ở bên cạnh tôi mỗi khi tôi cần.	1	2	3	4	5	6	7
2. Luôn có một người đặc biệt ở bên cạnh tôi, người tôi có thể chia sẻ buồn vui.	1	2	3	4	5	6	7
3. Gia đình tôi luôn cố gắng giúp tôi	1	2	3	4	5	6	7
4. Tôi nhận được sự giúp đỡ và hỗ trợ về mặt tinh cảm từ gia đình tôi mỗi khi tôi cần.	1	2	3	4	5	6	7
5. Luôn có một người đặc biệt làm cho tôi thấy thoải mái.	1	2	3	4	5	6	7
6. Những người bạn của tôi luôn cố gắng giúp tôi.	1	2	3	4	5	6	7
7. Tôi có thể tin tưởng vào những người bạn của tôi khi tôi có những hướng đi sai lầm	1	2	3	4	5	6	7
8. Tôi có thể nói chuyện với gia đình về các vấn đề của tôi.	1	2	3	4	5	6	7
9. Luôn có những người bạn ở bên cạnh tôi, người tôi có thể chia sẻ buồn vui.	1	2	3	4	5	6	7
10. Luôn có một người đặc biệt trong cuộc đời tôi, luôn quan tâm đến cảm xúc của tôi.	1	2	3	4	5	6	7
11. Gia đình tôi luôn sẵn sàng giúp tôi đưa ra quyết định	1	2	3	4	5	6	7
12. Tôi có thể nói chuyện với những người bạn về các vấn đề của tôi.	1	2	3	4	5	6	7

**Phụ lục 4: Đo dung tích phổi trong chẩn đoán hen phế quản (Dành cho nhà nghiên cứu) và chỉ số SpO<sub>2</sub>:**

➤ **Phép đo dung tích phổi/đo phế dung** là một kỹ thuật kiểm tra đơn giản để đo lượng khí một người thở ra và thời.gian để làm việc đó. Các phép đo phế dung để chẩn đoán bệnh hen phế quản bao gồm:

(1) FVC (Dung tích sống thở mạnh) khối lượng tối đa của không khí có thể được thở ra trong một lầnthở.

FVC = .....

(2) FEV<sub>1</sub> (lượng khí thải ra trong 1s): lượng khí thải ra tối đa trong giây đầu sau khi hít tối đa. Đây là một phép đo để có thể biết được phổi có thể làm rộng nhanh thế nào.

FEV<sub>1</sub> = .....

(3) FEV<sub>1</sub>/FVC: là số % của FEV<sub>1</sub> so với dung tích sống (FVC)

Tỉ lệ FEV<sub>1</sub>/FVC > 0.75-0.80 ở người lớn là bìnhthường.

FEV<sub>1</sub>/FVC = .....

➤ **SpO<sub>2</sub>:**

Fac. of Grad. Studies, Mahidol Univ.

M.N.S. (Adult Nursing) / 50

**Phụ lục 5: Bộ câu hỏi AQ20**

Bộ câu hỏi AQ20 có 20 câu. Các câu hỏi có liên quan đến vấn đề ngực của bạn trong cuộc sống hàng ngày.

Trả lời 'Có' được tính '1', trả lời 'Không' và 'Không thích hợp' được tính là '0'.

STT	Câu hỏi	Có	Không	Không thích hợp
1	Bạn có ho thường xuyên vào ban ngày không?			
2	Vấn đề về lồng ngực có thường làm bạn thấy bồn chồn không?			
3	Việc làm việc có khiến bạn khó thở không?			
4	Bạn có lo lắng khi đến nhà một người bạn mà ở đó sẽ có thứ khiến lồng ngực bạn khó chịu không?			
5	Bạn có gặp vấn đề về lồng ngực khi tiếp xúc với những mùi mạnh, khí thải, khói thuốc lá, nước hoa, v.v không?			
6	Vợ/chồng bạn có thấy khó chịu với vấn đề lồng ngực của bạn không?			
7	Bạn có thấy khó thở khi cố đi ngủ không?			
8	Bạn có lo lắng về các ảnh hưởng lâu dài của những loại thuốc bạn đang sử dụng để giải quyết vấn đề lồng ngực của bạn không?			
9	Việc khó chịu về cảm xúc có làm vấn đề về lồng ngực của bạn trầm trọng hơn không?			
10	Có lúc nào bạn cảm thấy khó khăn trong việc đi lại trong nhà vì vấn đề về lồng ngực không?			
11	Vấn đề về lồng ngực có làm bạn thấy khó thở khi làm việc ở chỗ làm không? (công việc được trả lương)			
12	Việc leo cầu thang có khiến bạn thấy khó thở không?			
13	Bạn có thấy khó thở khi làm việc nhà không?			
14	Vấn đề về lồng ngực có khiến bạn về nhà sớm hơn những người khác sau khi đi chơi vào buổi tối không?			
15	Bạn có thấy khó thở khi cười không?			
16	Vấn đề về lồng ngực có khiến bạn trở nên mất kiên nhẫn không?			
17	Bạn có nghĩ rằng vấn đề về lồng ngực khiến cho cuộc sống của bạn không còn được trọn vẹn?			
18	Bạn có thấy bị chảy nước mũi sau một trận cảm lạnh do vấn đề về lồng ngực gây ra không?			
19	Bạn có cảm giác nặng ở lồng ngực không?			
20	Bạn có lo lắng nhiều về vấn đề về lồng ngực của mình không?			


## APPENDIX F

### PERMISSION FOR USING INSTRUMENTS

- Ask your permission about using AQ 20 scale:

12/29/2016 Gmail - Ask your permission about using AQ 20 scale

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 Hoai Le Thu <hoai100125@gmail.com>

---

**Ask your permission about using AQ 20 scale**  
2 messages

---

**Thu hoai Le** <hoai100125@yahoo.com.vn> Sun, Dec 27, 2015 at 11:25 AM  
 Reply-To: Thu hoai Le <hoai100125@yahoo.com.vn>  
 To: Hoai Le Thu <hoai100125@gmail.com>

Quirk, Frances <frances.quirk@jcu.edu.au> Today at 8:14 AM

To  
 Thu hoai Le

Message body  
 Dear Le Thu Hoai,

You are most welcome to use the AQ20.  
 regards  
 Frances

---

**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Sunday, 27 December 2015 2:10 AM  
**To:** Quirk, Frances  
**Subject:** Ask your permission about using AQ 20 scale

Dear Madam/ Sir,  
 My name is Le Thu Hoai. I'm working at Bach Mai Hospital, Hanoi, Vietnam. I am a Vietnamese student of Mahidol University, Thailand. At present I am taking the international Masters Program of Adult Nursing at Faculty of Nursing in Mahidol University. My title of thesis is "The factors related to quality of life among patients with asthma". Quality of life is one of factors that I want to focus among patient with asthma. I just read about your Airways Questionnaire 20 (AQ20) that measure quality of life of asthma patients very effectively and I am really exciting its content. So, I want to ask your permission about using this instrument. Please, help me ! I promise that I only use it for reference, not for any commercial purposes.  
 Extremely grateful for your support!  
 Thank you very much!  
 I am looking forward to receiving your reply.

Best regards!  
 Mrs.Le Thu Hoai

---

**Thu hoai Le** <hoai100125@yahoo.com.vn> Thu, Dec 29, 2016 at 11:02 AM  
 Reply-To: Thu hoai Le <hoai100125@yahoo.com.vn>  
 To: Hoai Le Thu <hoai100125@gmail.com>

----- Forwarded Message -----  
**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**To:** Thu Hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Wednesday, 28 December 2016, 22:04  
**Subject:** Fw: Ask your permission about using AQ 20 scale

----- Forwarded Message -----  
**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
 [Quoted text hidden]  
 [Quoted text hidden]

- Ask your permission about using Modified Borg Scale (MBS)

12/29/2016

Gmail - Fw: Ask your permission about using Modified Borg Scale (MBS)



Hoai Le Thu &lt;hoai100125@gmail.com&gt;

---

**Fw: Ask your permission about using Modified Borg Scale (MBS)**

1 message

**Thu hoai Le** <hoai100125@yahoo.com.vn>  
 Reply-To: Thu hoai Le <hoai100125@yahoo.com.vn>  
 To: Hoai Le Thu <hoai100125@gmail.com>

Thu, Dec 29, 2016 at 11:01 AM

----- Forwarded Message -----

**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**To:** Thu Hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Wednesday, 28 December 2016, 21:47  
**Subject:** Fw: Ask your permission about using Modified Borg Scale (MBS)

----- Forwarded Message -----

**From:** Karla Kendrick <karlak49@cox.net>  
**To:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Wednesday, 13 January 2016, 12:25  
**Subject:** Re: Ask your permission about using Modified Borg Scale (MBS)

Dear Mrs Le Thu Hoai

Thank you for your interest in my research on the Modified Borg Scale.  
 Permission Granted , please send me a copy of your thesis, I would be most interested in reading it.  
 Take care, good luck.

Karla Kendrick RN BSN, MSN  
 VA San Diego Healthcare System  
 1300 Ranch Del Oro  
 Oceanside, California 92056

On Jan 7, 2016, at 7:21 PM, Thu hoai Le wrote:

Dear Karla R. Kendrick,  
 My name is Le Thu Hoai. I'm working at Bach Mai Hospital, Hanoi, Vietnam. I am a Vietnamese student of Mahidol University, Thailand. At present I am taking the international Masters Program of Adult Nursing at Faculty of Nursing in Mahidol University. My title of thesis is "The factors related to quality of life among patients with asthma". Level of dyspnea is one of factors that I want to focus among patient with asthma. I just read about your Modified Borg Scale (MBS) that measure level of dyspnea very effectively and I am really exciting its content. So, I want to ask your permission about using this instrument. Please, help me ! I promise that I only use it for reference, not for any commercial purposes.  
 Extremely grateful for your support!  
 Thank you very much!  
 I am looking forward to receiving your reply.

<https://mail.google.com/mail/u/1/?ui=2&ik=9be8a19c1c&view=pt&search=inbox&th=15948bdd10f1831f&siml=15948bdd10f1831f>

1/2

- Ask your permission about using the MSPSS

12/29/2016

Gmail - Fw: Ask your permission about using the MSPSS



Hoai Le Thu <hoai100125@gmail.com>

**Fw: Ask your permission about using the MSPSS**

1 message

**Thu hoai Le** <hoai100125@yahoo.com.vn>  
Reply-To: Thu hoai Le <hoai100125@yahoo.com.vn>  
To: Hoai Le Thu <hoai100125@gmail.com>

Thu, Dec 29, 2016 at 11:02 AM

----- Forwarded Message -----

**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**To:** Thu Hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Wednesday, 28 December 2016, 22:07  
**Subject:** Fw: Ask your permission about using the MSPSS

----- Forwarded Message -----

**From:** "Zimet, Gregory D" <gzimet@iu.edu>  
**To:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Monday, 28 December 2015, 22:28  
**Subject:** Re: Ask your permission about using the MSPSS

Dear Le Thu Hoai,

You have my permission to use the MSPSS in your research on quality of life among patients with asthma. I have attached a copy of the original English language version of the scale (with scoring information on the 2nd page) and a document listing several of the articles that have reported on the reliability and validity of the MSPSS.

I hope you are successful in your research.

Best regards,  
Greg Zimet

=====  
Gregory D. Zimet, PhD, FSAHM  
Professor of Pediatrics & Clinical Psychology  
Section of Adolescent Medicine  
Indiana University School of Medicine  
410 W. 10th Street, HS 1001  
Indianapolis, IN 46202 USA  
Phone: +1-317-274-8812  
Fax: +1-317-274-0133  
e-mail: [gzimet@iu.edu](mailto:gzimet@iu.edu)

President-Elect, Society for Adolescent Health and Medicine (SAHM)  
<http://pediatrics.iu.edu/sections-and-faculty/adolescent-medicine/our-team/faculty/bio-zimet/>  
<http://pediatrics.iu.edu/center-hpv-research/about-us/>

**From:** Thu hoai Le <hoai100125@yahoo.com.vn>  
**Sent:** Saturday, December 26, 2015 10:07 AM

## APPENDIX G

### ADDITIONAL STATISTICAL ANALYSIS

#### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BorgScale	.209	115	.000	.887	115	.000
FEV1	.073	115	.178	.976	115	.036
SumSS	.124	115	.000	.966	115	.005
QoL	.112	115	.001	.949	115	.000

a. Lilliefors Significance Correction

## **BIOGRAPHY**

<b>NAME</b>	Le Thu Hoai
<b>DATE OF BIRTH</b>	10 January 1975
<b>PLACE OF BIRTH</b>	Hanoi, Vietnam
<b>INSTITUTIONS ATTENDED</b>	Nursing School, Bach Mai Hospital, 1993 – 1996 School of Nursing Nam Dinh Nursing University, 2000 – 2004 College of Nursing Thanh Tay University, 2011 – 2012 Bachelor of Nursing Mahidol University, 2015-2016 Master of Nursing Science (Adult Nursing)
<b>POSITION AND OFFICE</b>	Head nurse of Pediatric Department,
<b>EMPLOYMENT ADDRESS</b>	Bach Mai Hospital, DongDa District, Hanoi, Vietnam
<b>HOME ADDRESS</b>	2/80 Hoang Ngan Street Cau Giay District Hanoi, Vietnam 100000 Tel. (+84) 098 701 3399 Email: <a href="mailto:hoai100125@yahoo.com">hoai100125@yahoo.com</a>