

**SELF-MANAGEMENT PROGRAM AMONG ADULT PATIENTS
WITH ASTHMA: EVIDENCE-BASED NURSING**

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Thematic Paper
entitled
**SELF-MANAGEMENT PROGRAM AMONG ADULT PATIENTS
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ABSTRACT

Asthma is a chronic disease and can be well controlled if patients are able to manage their symptoms properly. A sufficient amount of evidence has shown that patients who attended at asthma self-management education program had more effective asthma control and less morbidity from asthma.

The purpose of this study was to summarize current evidence from self-management programs on asthma control among adult patients with asthma. The study applied the search strategy PICO (Population Intervention Comparison Outcome) framework to investigate and select relevant evidence from electronic database sources from the Mahidol University library system. Thirteen studies which comprised 1 systematic review of RCTs (Randomized Control Trials), 11 RCTs and 1 expert opinion were selected according to their reliability, validity and applicability. After synthesizing the 13 documents it is recommended that: 1) self-management program can be conducted through hospital teaching activities, small group discussion, individual teaching, and telephone follow-up; 2) the contents in the program should cover etiology of asthma, risk reduction, proper use of medications and regular exercise; 3) skill training on techniques of using inhaler, a peak flow meter (PEM), and monitoring of peak expiratory flow (PEF) should be emphasized; 4) teaching materials such as video tapes, booklets, educational pamphlet should be used to facilitate the teaching and learning process; and 5) to assure the effectiveness of the program, the specific outcomes such as self-management behaviors, rate of hospital readmission should be measured.

It is recommended that the self-management program should be applied to appropriately work with the clinical practices in Bangladesh. The implementation of these activities should be performed to ensure improvement. Further research to evaluate the effectiveness of self- management program is also recommended.

**KEY WORDS: ADULT PATIENTS WITH ASTHMA / SELF-MANAGEMENT
PROGRAM / ASTHMA CONTROL / EVIDENCE-BASED
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49 pages

CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	vi
CHAPTER I INTRODUCTION	1
1.1 Background and significance of the clinical problem	1
1.2 Clinical problem of the study	8
1.3 Purpose of the study	9
1.4 Expected benefits of the study	10
CHAPTER II METHODOLOGY	11
2.1 Search Strategy	11
2.1.1 Search framework	11
2.1.2 Scope of searching	11
2.2 Appraisal method and levels of evidence	12
CHAPTER III FINDINGS	16
3.1 Search results	16
3.2 Conclusion	35
CHAPTER IV CONCLUSION AND SUGGESTIONS	39
4.1 Conclusion	39
4.2 Suggestions	41
REFERENCES	43
BIOGRAPHY	49

LIST OF TABLES

Table	Page
2.2 Level of research and empirical evidences	15
3.1 List and level of the selected evidences	16

CHAPTER I

INTRODUCTION

1.1 Background and significance of the clinical problem

Asthma is a life-threatening condition that increases in worldwide prevalence daily. The Global Initiative for Asthma (GINA) defines asthma as “a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyperresponsiveness 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 widespread, but variable, airflow obstruction within the lung that is reversible either spontaneously or with treatment” (GINA, 2002, p. 2).

Worldwide, 300 million people suffer from asthma (GINA, 2012). And this rate is likely to reach 400 million by the year 2025 (To et al., 2012). In the United States of America (USA), 31 million people suffer from asthma (Loignon, Bedos, Vigny, & Leduc, 2009). According to another study by Self, Usery, Howard-Thompson, and Sands (2007), 2 million people with worsening conditions visit the emergency department every year in the USA. According to the Centers for Disease Control and Prevention [CDC], (2012), asthma was responsible for 479,300 hospital admissions, 8.9 million doctors' visits and 3,388 deaths in 2009 while 18.7 million adults in the USA suffered from asthma in 2010. In the United Kingdom (UK), 5.4 million people suffered from asthma in which 4.3 million were adults (Kaufman, 2011). Approximately 2.2 million adult people are affected by asthma in Canada (Poureslami et al., 2012) with 27 percent in Australia (Bel, 2013). Another study shows 140,000 people to be suffering from asthma in Singapore in which 5 percent were adults (Prabhakaran, Lim, Abisheganaden, Chee, & Choo, 2006). This rate is 2 percent for Vietnam (Bel, 2013) and approximately 15 percent for Thailand (Bunnag, Jareoncharsri, Tantilipikorn, Vichyanondand, & Pawankar, 2009) with nearly 30

million people suffering from asthma in India in which approximately 12% are adults (Kant, 2013).

In Bangladesh, more than 7 million adults are affected by asthma and other related diseases. Furthermore, asthma was the second most frequently encountered cause of death in Bangladesh in 2000 (Hassan et al., 2009). Bangladesh is a developing country in South East Asia region with a population of nearly 160 million. The per capita income is 470 US dollar per annum where approximately 50 percent of the population lives at a low quality level and nearly one-fourth of the total population is at a very low level. The population density is 928 per square kilometer. The hospital bed and population ratio is 1: 3500, and the doctor and patient ratio is 1: 3866 with a nurse and patient ratio of 1: 8226, a hospital bed and nurse ratio of 13:1 and a doctor and nurse ratio of 3: 1. Health costs are only 6.6 percent (Chowdhury, Kabir, & Alam, 2008). A study was conducted by Begum et al., (2012) over asthma patients admitted into the National Institute of Diseases of the Chest and Hospital, Mohakhali, Dhaka, Bangladesh, during October-December 2010 to gather information from asthma patients about the etiology and risk factors affecting asthma. According to the findings among 100 patients, 69 percent were 30 - 60 years old and 25 percent were older than 60 years. It was found that 69 percent of the respondents were active cigarette smokers, 41 percent always drank tea and 15 percent chewed betel leaf with tobacco. All of the respondents were in lower socioeconomic groups and lived in very crowded areas.

Pathophysiology and pathogenesis of asthma

Asthma is a chronic lung disease characterized by reversible obstruction in the airways. When smooth bronchial muscle contractions occur, the airways rapidly become narrow. Due to multiple stimuli such as allergens or irritants induced in acute bronchoconstriction, the consequences are an IgE from mast cells such as histamine, tryptase, leukotrienes and prostaglandins (National Heart Lung and Blood Institute [NHLBI], 2007). Another reason for acute airflow obstruction is aspirin and other non-steroidal anti-inflammatory drugs (NHLBI, 2007). Moreover, other sources of acute airflow obstruction include exercise, cold air and irritants. Psychological stress is also another important issue in the exacerbation of asthma (NHLBI, 2007). Many factors

contribute to the development of asthma such as 1) predisposing factors such as atopy and gender; 2) causal factors such as exposure to indoor and outdoor allergens, as well as occupational sensitizers; 3) contributing factors such respiratory infection, air pollution, active or passive smoking, etc. These factors are responsible for the inflammation of the airways. Airway inflammation increases airway hyper-responsiveness which causes bronchospasm or bronchoconstriction furthering leading to obstruction of the lumen in the airways. Next, cough and mucosal edema lead to hyper secretion of mucus which develops a mucus plug in the small airways (deWit & Kumagai, 2013; NHLBI, 2007; Pellico, 2013; Workman, 2013). Some asthmatics may develop remodeling that changes airway structure, including fibrosis, injuries to the cells and hypertrophy of the smooth airway muscle (NHLBI, 2007). Further obstruction and narrowing of the airways follows with limitation of airflow (deWit & Kumagai, 2013). As a result, wheezing, cough, dyspnea and chest tightness occur.

Risk factors and triggers for asthma

1. Host factors:

1.1 Genetic susceptibility; (El-Akkary, 2006; GINA, 2006; Holgate & Douglass, 2013; Kaufman, 2011).

1.1.1 Genes pre-disposing to atopy.

1.1.2 Genes pre-disposing to airway hyper responsiveness.

1.2 Obesity (El-Akkary, 2006; GINA, 2006; Holgate & Douglass, 2013).

1.3 Sex (El-Akkary, 2006; GINA, 2006; Holgate & Douglass, 2013).

1.4 Race or ethnicity (GINA, 2006; Holgate & Douglass, 2013).

1.5 Family size (Holgate & Douglass, 2013).

2. Causal factors:

2.1 Indoor allergens such as house dust mites, mold, yeasts from animal allergens e.g., dogs, cats, rodents, (El-Akkary, 2006; GINA, 2006);

horses, rabbits, guinea pigs, rats, gerbils, mice etc. cockroach allergens and fungi (Bunnag et al., 2009).

2.2 Outdoor allergens such as pollens from trees, grasses, weeds etc. and fungi, molds, yeasts (El-Akkary, 2006; GINA, 2006; Holgate & Douglass, 2013).

2.3 Active and passive smoking (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009).

2.4 Indoor air pollution e.g., smoke and fumes from gas and biomass fuels used for heating and cooling, as well as molds and cockroach infestations (El-Akkary, 2006; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013).

2.5 Outdoor air pollution (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013).

2.6 Respiratory viral infections (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013).

2.7 Diet such as formulas of intact cow's milk or soy protein, oily fish, vegetable oil (El-Akkary, 2006); low intake of fruits and vegetables, fish, butter and dairy fat, vitamin C and E, beta-carotene, selenium, magnesium, and high intake of sodium, margarine (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009).

2.8 Drugs (Bunnag et al., 2009; GINA, 2006; Holgate & Douglass, 2013).

2.9 Obesity such as overweight condition (Bunnag et al., 2009; El-Akkary, 2006; GINA, 2006; Holgate & Douglass, 2013).

2.10 Socioeconomic status such as poverty or inner-city residence (Hassan et al., 2009; Holgate & Douglass, 2013).

2.11 Occupational sensitizers such as flour, disinfectants, wood dust, poultry mites, storage mites, locusts, dander and soybean dust (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013).

2.12 Chemicals such as formaldehyde, ethylene diamine etc. (Holgate & Douglass, 2013).

3. Triggers:

3.1 Allergens such as house dust mites, pollens, cat allergens (Bunnag et al., 2009; GINA, 2006; Holgate & Douglass, 2013).

3.2 Pollutants (Bunnag et al., 2009; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013).

3.3 Respiratory infections (GINA, 2006; Holgate & Douglass, 2013).

3.4 Exercise (GINA, 2006; Holgate & Douglass, 2013).

3.5 Weather changes (GINA, 2006; Holgate & Douglass, 2013)

3.6 Sulphur dioxide (Holgate & Douglass, 2013).

3.7 Emotions such as stress (Holgate & Douglass, 2013).

3.8 Drugs such as paracetamol and non-steroidal anti-inflammatory drugs, methyldopa etc. (GINA, 2006; Holgate & Douglass, 2013).

3.9 Tobacco smoke (Bunnag et al., 2009; El-Akkary, 2006; GINA, 2006; Hassan et al., 2009; Holgate & Douglass, 2013; NHLBI.2007).

3.10 Smoke and dust (Hassan et al., 2009; Holgate & Douglass, 2013).

3.11 Foods and additives such as coffee bean dust, meat tenderizer, tea, shellfish, amylase, egg proteins (GINA, 2006; Holgate & Douglass, 2013)

3.12 Irritants such as household sprays and paint fumes (GINA, 2006; Holgate & Douglass, 2010; Kaufman, 2011).

Impact of asthma

Asthma is a major cause of harmful effects on a patient's daily life, including physical activity, sleep style, behaviors, social and psychological activities. The lifestyles of family member who care for these patients are also affected in addition to impact on finances, normal movement and quality of life (Cousens, Goeman, Douglass, & Jenkins, 2007). Globally, the burden of this disease is growing for patients, families, health service providers and governments. A report from the World Health Organization (WHO) shows that 15 million people were disabled and lost daily routines due to asthma. Additionally, 250,000 asthma-related deaths occur

around the world each year (GINA, 2012). According to CDC report (2012), nearly 9 asthma-related deaths occur daily with 4,000 such deaths per year in the USA. Asthma is a serious public health, social and financial problem. In 2008, 14.2 million people missed work and approximately 1 in 3 adults missed a minimum of one workday per year. In 2009, 479,300 people were admitted to hospital, 1.9 million visited emergency departments (ED) and 8.9 million visited doctors. Nearly 3 in 5 people lose routine actions due to asthma. Every year, 56 billion US dollars are spent in the USA due to asthma treatment and work productivity is hampered (CDC, 2012, p.1). The study of Nguyen, Zahran, Iqbal, Peng, and Boulay (2011) found direct costs at 80% and 20% due to difficulty in control. In addition, annual expenditures for each patient per year exceed 2,500 US dollars. Emergency treatment is more costly and families suffer from this economic burden (GINA, 2006). Asthma self-management strategies can improve the health outcomes of individuals and impacts on health services.

Self-management concept and asthma control

Self-management refers to the behaviors of individuals in controlling medical, social and psychological aspects of health in partnership with health care providers (Bycroft & Tracey, 2006). There are concepts or theory related to self-management for example self-efficacy theory, social cognitive theory, self-regulation theory and so on (Baptist et al., 2013; Chen, Sheu, Chang, Wang, & Huang, 2010; Palen et al., 2001). Asthma self-management can be achieved by some helpful manners about asthma which are related adequate knowledge about asthma, risk factors, medication, inhalation techniques, proper use of a peak flow meter and managing behavior (Baptist et al., 2013; Chen, Sheu, Chang, Wang, & Huang, 2010; Durna & Ozcan, 2003; Huang et al., 2008; Osman et al., 2002; Palen et al., 2001; Perneger et al., 2002; Poureslami et al., 2012; Thoonen et al., 2002; Tousman et al., 2011). Self-efficacy empowers patients to change health behaviors. Therefore, patient self-efficacy is an important element of asthma education programs that is necessary to strengthen for improving patient self-care behaviors (Chen et al., 2010). For behavioral modification, the patient's general and asthma-specific self-efficacy expectancies and outcome expectancies should be increased. Therefore, more social support by important others should be recognized to enhance the intentions towards

self-management behaviors (Palen et al., 2001). No evidence has been found in Bangladesh on such strategy for asthma control. To control asthma by modifying behavioral attitudes, self-management programs are essential in combination with self-treatment guidelines (action plans). The term “self-management” is sometimes interchangeably used with self-care and means a real understanding of patients’ knowledge about their diseases (Loignon et al., 2009). The self-management program helps asthma patients by reducing hospitalization and emergency department visits, unscheduled doctors’ visits, work loss and nocturnal asthma while improving quality of life. A large amount of evidence indicates that self-management strategy can improve patients’ health status, quality of life and self-efficacy as well as asthma control by modifying behavior (Chen et al., 2010; Durna & Ozcan, 2003; Huang, Li, & Wang, 2008; Mancuso, Sayles, Robbins, & Allegrante, 2010; Palen et al., 2001; Poureslami et al., 2012). Patients can maintain better self-control with successful treatment outcomes in accomplishing proficient self-care by continuous instruction about asthma (Urek et al., 2005). By applying self-regulatory process asthma patient can observe and gain knowledge from their experience and find out methods for changing behavior, improving multiple health outcomes. The self-regulation theory suggests that self-management is effective for improving asthma quality of life, asthma control, and healthcare utilization in adult asthma patients (Baptist et al., 2013).

Asthma control is very important issue. It will be controlled with proper treatment. Asthma control refers to reduce symptoms, medication adherence and potential risks for exacerbation in addition to declining lung function (Taylor et al., 2008). Low levels of asthma control cause significant effects on health, social and economic costs as well as the cost to our healthcare system. Currently, asthma control is the key clinical focal point of asthma management. However, the currently significant issue is how asthma patients can engage themselves in controlling their disease by making decisions as well as managing daily activities to maintain better health. The characteristics of well-controlled asthma are as follows: 1) no daytime symptoms/twice or less per week; 2) no limited activities; 3) no nocturnal/awakening symptoms; 4) no need for relief/rescue treatment or twice/less per week; 5) normal lung function (PEF or FEV1) and 6) no exacerbation (Holohan, Manning, & Nolan,

2012). To control asthma by developing self-management behaviors in asthma patients, the following information, training and advice must be properly provided: 1) education and motivation; 2) comprehensive patient and caregiver education; 3) adequate understanding about asthma; 4) avoidance of risk factors; 5) adequate medication; 6) proper inhalation techniques; 7) correct use of peak flow meters; 8) self-monitoring to assess control; 9) a written asthma action plan; 10) how and when to seek medical attention; 11) prevention of symptoms and attacks; 12) differences between “relievers” and “controllers” and 13) adequate coping behavior (Holohan et al., 2012; Sarver & Murphy, 2009; Shen et al., 2011).

From the literature review, the author drew the conclusion that the self-management program is a significant issue affecting asthma management. A great deal of evidence shows that patients participating in asthma self-management education programs are more knowledgeable about asthma. Most of the studies focused on asthma self-management programs aimed at minimizing impact, especially concerning asthma-related morbidity and mortality.

1.2 Clinical problems of the study

The prevalence of asthma is global and asthma rates are particularly high in developing countries. Bangladesh is a developing country. Within the context of the clinical situation as a developing country and the author’s experiences in the clinical setting, most asthma patients have limited knowledge in reading and writing. These patients do not have basic knowledge about the disease and symptoms. Nearly all patients have no knowledge about avoiding risk factors that exacerbate asthma. Moreover, asthma patients are unaware of proper techniques for inhaler use as well as the use of peak flow meters. As a result of this insufficient knowledge, asthma patients ignore their disease and practice irregular medication adherence. Most asthma patients are unable to practice self-care and experience frequent attacks. Due to frequent attacks and excess readmission rates, nurses’ workloads and hospital burdens have increased. More education is needed to acquire the necessary knowledge and practice for self-care. On the other hand, there are barriers to evidence-based practice such as 1) deficient EBP knowledge and skills; 2) inadequate time and resources to search for

evidence-based care; 3) lack of information due to the absence of professional journals; 4) inadequate administrative support or incentives; 5) absence of EBP mentors and 6) overwhelming patient loads. Moreover, nurses at these hospitals have no special training in asthma management and provide routine care according to prescriptions of doctors. The nurses at these hospitals fail to pay proper attention to patient education due to shortage of time resulting from patient overcrowding and a shortage of nursing staff. The vision of the national health sector is to see Bangladeshi people healthier, happier and economically productive to make Bangladesh a middle income country by 2021. To establish this vision, quality care should be an essential component toward improving clinical practice. Quality care can be improved by reducing patient overload through evidence-based nursing practice.

According to the above information and patient overload, the most important issues are to reduce nurses' workload and hospital burden. For these reasons, asthma patients should be provided self-management education programs to control asthma. Moreover, nursing competence should be increased to enhance patient satisfaction by providing cost-effective nursing care through evidence-based practice. The information from the author's setting reflects that the most important issue is self-management among adult patients with asthma. To develop local service innovation and new ways of working by solving the above clinical problem, the author would like to find evidence-based self-management program among adult patients with asthma.

The above circumstances show that asthma patients cannot control their asthma satisfactorily due to insufficient knowledge and management about asthma. Nurses should have more awareness by implementing self-management programs among adult patients with asthma through evidence-based practice.

1.3 Purpose of the study

The purpose of this study is to summarize current evidence for self-management programs on asthma control among adult patients with asthma.

1.4 Expected benefits of the study

1.4.1 The summarized evidence from this study can be used as recommendations to develop self-management programs among adult patients with asthma.

1.4.2 Nurses will have evidence-based self-management program for adult patients with asthma in Bangladesh.

CHAPTER II

METHODOLOGY

The self-management program on asthma control among adult patients with asthma proposed in this study is based on best evidence available. The author applied the method of searching for evidence-based practice. Search strategy was set to search and select the best evidence. Related evidences were evaluated for their importance and applicability in view of setting and condition, health care resources, and patient preferences and values. Then, the evidence-based intervention was summarized. In this chapter, the author described search strategy according to the following steps:

2.1 Search strategy

2.1.1 Search framework

The PICO Framework (Melnyk & Fineout-Overholt, 2005) was used to search and select evidence for self-management program on asthma control among adult patients with asthma. The details of this PICO Framework are as bellows;

- P (Population) = adult patients with asthma
- I (Intervention) = self-management program
- C (Comparison) = no comparison
- O (Outcome) = asthma control

2.1.2 Scope of searching:

The self-management program on asthma control among adult patients with asthma on the basis of evidence-based practice was searched from the following scope:

1) Keywords were used according to the PICO Framework in the searching;

P (Population) = adult patients with asthma / adult asthma

I (Intervention) = self-management program / asthma self-management / asthma education / self-efficacy

C (Comparison) = no comparison

O (Outcome) = asthma control / quality of life

A Boolean operator was used in the searching. For each PICO component, the author collected any synonyms by relating terms with “OR”, then located citations that are relevant to all the PICO components by relating with “AND”.

2) The databases/sources used for the search:

The author used electronic databases/sources of Mahidol University library system for searching systematic reviews from the Cochrane Database of Systematic Reviews. In addition, research studies were searched from PubMed, EBSCO, Ovid Full Text, ScienceDirect and SAGE online journals. The author also used reference lists for a manual search from systematic reviews. The author searched guidelines from National Institute for Health and Care Excellence websites.

3) Type of evidence:

The author searched for full text studies published in English from 2001 to 2014 such as systematic reviews of randomized controlled trials (RCTs), high quality single randomized controlled trials, and guidelines.

2.2 Appraisal method and levels of evidence

The author applied method and principle as proposed by Melnyk and Fineout-Overholt (2011) to appraise research evidences and the criteria of AGREE II developed by Brouwers, et al., (2009), to appraise the guideline for the quality, reliability and utility of the evidences.

2.2.1 Appraisal for research evidences

Three questionnaires were used to appraise the collected empirical evidences as follows;

1) Are the results of the study valid? (Validity)

The validity of empirical evidence refers to whether the evidence was conducted through scientific procedure and able to scientifically answer the raising questions. In evidence-based nursing practice validity of evidence is an important measurement tools. A major concern is quality of the study methodology. It is intended to answer the question and solve the problems. To appraise the study validity, possible sources of bias need to be identified. Also possibility of confounding variables in the study design need to evaluated. To reduce influencing factors, randomization is an important step for the validity of a research and it helps more likely the results will be valid. Validity is significant for a research because it helps to measure what types of test researcher used and ensuring that using methods not only ethical and cost effective but also truly measures the ability to meet all of the requirements and solve the clinical problems.

2) What are the results? (Reliability)

The reliability of any research evidence depend on accuracy, honesty, consistency, achievement and repeatability as anyone can perform same experiment with using similar equipment, condition and achieve exactly the same outcome. To evaluate reliability, it is important to understand study results. The reliability can be assessing by intervention effect by considering both clinical significance of the result and statistical significance of the finding.

3) Will the results help locally? (Applicability)

Applicability means the usefulness of the results in a given situation. The goal of any research evidence is to apply the results to the patient individually or in a group. During application the results in clinical setting validity, reliability and usefulness for clinical decision making are considered. Regarding this critical appraisal question it should be considered whether the subjects in the study are similar to the patients for whom care will be provided, the benefits are greater than the risk of treatment, the treatment is feasible to apply in the practice setting, and the patient and their family prefers the treatment.

2.2.2 Appraisal for systematic reviews

Three questionnaires were used to appraise the systematic reviews as follows;

1) Are the results of the review valid? (Validity)

Randomized controls trials are usually treated the most appropriate research design to compare the effectiveness of different treatments to identify which is better. To appraise a systematic review, clear description should be considered about the databases accessed with searching years, strategies, and search terms that were used. Inclusion criteria for the studies are to be kept in the analysis. Data of the articles should be extracted by using a standard procedure regarding target population, sample size, program provider, program content, intervention components, processes, and outcomes. This quality assessment process of the studies should be done by at least two independent members of the team. The systematic review should report clearly how this was conducted and what criteria were used to evaluate. A clear description of the basis for quality assessment should be included in the review.

2) What were the results? (Reliability)

The reliability of any research evidence depend on accuracy, honesty, consistency, achievement and repeatability as anyone can perform same experiment with using similar equipment, condition and achieve exactly the same outcome. A systematic review provides a clearer estimate of treatment effect than individual studies. The effectiveness of the intervention in a summary statistic should be compared across the study. The interpretations and validity should be reasonable and presented according to the strength of the reviewers.

3) Will the results help me in caring for my patients? (Applicability)

During application the results in clinical setting validity, reliability and usefulness for clinical decision making are considered. To appraise a systematic review these are the key points to consider; whether the study patients are similar to my patients or not, whether the findings of the reviewed are feasible for my setting or not, whether the outcomes with risks and benefits were considered or not, whether my patients and caregiver's preference and values are similar with studied population or not.

2.2.3 Appraisal for guideline

Author used the criteria of AGREE II developed by Brouwers, et al., (2009), to appraise the guideline. Following 6 domains applied for guideline appraisal with the rating of agreement range from 1 to 7. While 1 refers to strongly disagree on that item and 7 refers to strongly agree on that item.

Domain 1- Scope and purpose

Domain 2- Stakeholder involvement

Domain 3- Rigour of development

Domain 4- Clarity of presentation

Domain 5- Applicability

Domain 6- Editorial independence.

Table 2.2: Level of research and empirical evidence according to the criteria of Melnyk & Fineout- Overholt, (2011).

Level of evidence	Source of empirical evidence
Level I	Systematic review or a meta-analysis of RCTs.
Level II	Evidence from at least one RCT.
Level III	Evidence from at least one well-designed controlled trials without randomization.
Level IV	Evidence from well-designed case controlled and cohort studies.
Level V	Evidence from a systematic review of descriptive and qualitative study.
Level VI	Evidence from a descriptive or qualitative study.
Level VII	Opinions, attitudes of experts and/or a report by expert committee.

CHAPTER III

FINDINGS

3.1 Search results

The author collected 35 interventional samples of evidence-based practice published from 2001 to 2013 and only 13 were selected for analysis. Among these, 1 was a systematic review, 1 was a guideline and 11 were RCTs. The remaining 22 samples of evidence-based practice were excluded because they were not related to the self-management program.

Table 3.1 - List and level of the selected samples of evidence-based practice

Order	Title	Author/ Year	Publication source/ Database	Evidence Type	Level of evidence
1	Behavioral Effects of Self-Treatment Guidelines in a Self-Management Program for Adults with Asthma	Palen, J. van dar., Klein, J. J, Zielhuis, G. A., Herwaarden, C. L. A., & Seydel, E. R./2001	Patient education and counseling/ PubMed	Randomized control trial	Level II
2	A Randomized Controlled Behavioral Trial of a New Adult Asthma Self-Management Program	Tousman, S. A., Zeitz, H., Bond, D., Stewart, D., Rackow, R., Greer, R. . . . Ganjwala, P./2011	Journal of Asthma & Allergy Educators/ SAGE online journals	Randomized control trial	Level II
3	A Randomized Controlled Trial of a Self-Regulation Intervention for Older Adults with Asthma	Baptist, A. P., Ross, J. A., Yang, Y., Peter X. K. Song, P. X. K., & Clark, N. M./2013	Journal of The American Geriatrics Society/ PubMed	A double-blind randomized controlled trial	Level II

Table 3.1 - List and level of the selected samples of evidence-based practice

(cont.)

Order	Title	Author/ Year	Publication source/ Database	Evidence Type	Level of evidence
4	The Effects of the Self-Efficacy Method on Adult Asthmatic Patient Self-Care Behavior	Chen, SY., Sheu, S., Chang, CS., Wang, TH., & Huang, MS./2010	Journal of Nursing Research/Ovid Full Text	Randomized control trial	Level II
5	Individualized programme to promote self-care among older adults with asthma: randomized controlled trial.	Huang, T.-T., Li, Y.-T., & Wang, C.-H./2008	Journal of Advanced Nursing/Pub Med	Randomized controlled trial.	Level II
6	Asthma education tailored to individual patient needs can optimise partnerships in asthma self-management	Thoonen, B. P. A., Schermer, T. R. J., Jansen, M., Smeele, I., Jacobs, A. J. E., Grol, R. & Schayck, O. C. P./2002	Patient Education and Counseling/PubMed	Randomized control trial	Level II
7	Effectiveness of Educational Interventions on Asthma Self-Management in Punjabi and Chinese Asthma Patients: A Randomized Controlled Trial	Poureslami, I., Nimmon, L., Doyle-Waters, M., Rootman, I., Schulzer, M., Kuramoto, L. & Fitzgerald, J. M./2012	Journal of Asthma/EBSCO	Randomized controlled trial.	Level II
8	Evaluation of Self-Management Education for Asthmatic Patients	Durna, Z. & Ozcan, S./2003	Journal of Asthma/EBSCO	Randomized control trial	Level II
9	Randomized Trial of a Comprehensive Asthma Education Program after An Emergency Department Visit	Brown, M. D, Reeves, M. J., Meyerson, K. & Korzeniewski, S. J./2006	Annals of Allergy, Asthma & Immunology/Science Direct	Randomized controlled trial.	Level II

Table 3.1 - List and level of the selected samples of evidence-based practice**(cont.)**

Order	Title	Author/ Year	Publication source/ Database	Evidence Type	Level of evidence
10	A Randomized Trial of Self-Management Planning for Adult Patients Admitted to Hospital with Acute Asthma	Osman, L. M., Calder, C., Godden, D. J., Friend, J. A R., McKenzie, L., Legge, J. S. & Douglas, J. G./2002	Thorax/ PubMed	Randomized control trial	Level II
11	Effects of Patient Education on Self-Management Skills and Health Status in Patients with Asthma: A Randomized Trial	Perneger, T. V., Sudre, P., Muntner, P., Uldry, C., Courtehouse, C., Naef, A.-F., . . . Assal, J.-P./2002	The American Journal of medicine/ PubMed	Randomized control trial.	Level II
12	Educational and Behavioral Interventions for Asthma: Who Achieves Which Outcomes? A Systematic Review	Clark, N. M., Griffiths, C., Keteyian, S. R. & Partridge, M. R./2010	Journal of Asthma and Allergy/Cochrane Database	Systematic reviews of randomized controlled trials (RCTs)	Level I
13	British Guideline on the Management of Asthma: A National Clinical Guideline	British Thoracic Society /2012	Retrieved from http://sign.ac.uk/pdf/sign101.pdf	National guideline	-

3.1.1 Summary of the samples of evidence-based practice

Evidence Number: 1

1.1 Title: Behavioral Effects of Self-Treatment Guidelines in a Self-Management Program for Adults with Asthma.

1.2 Author/year: Palen, J. Van Dar, Klein, J. J., Zielhuis, G. A., Herwaarden, C. L. A. & Seydel, E. R./2001

1.3 Evidence Type: Randomized control trial.

1.4 Evidence Level: II

1.5 Publication Source/Database: Patient Education and Counseling/
PubMed

1.6 Objective: To evaluate behavioral changes among adult asthmatics.

1.7 Methods: In this study, randomization was applied into an experimental group (Group S) and a control group (Group C) by a sealed cover manner. The study was a single center similar group test with a 1-year follow-up. An asthma nurse specializing in asthma management provided self-management education and training to all of the participants. The education session included 5-10 patients and over three 90-minute sessions. The contents of the teaching covered the etiology of asthma, medication, allergic conditions, triggers, exacerbating symptoms, smoking cessation, the importance of physical exercise and compliance with maintenance therapy. The training covered tolerable behavior, medication adherence, perceived disease severity, appropriate inhalation techniques and the use of a peak flow meter. And at one year after the intervention, asthma-specific self-efficacy, outcome expectancies and asthma-specific knowledge improved. Changes were found on generalized self-efficacy, social support and self-management behavior in experimental group patients.

1.8 Results: Self-reported compliance with medication; base line compliance of 94.1% but falling to 90.1% ($P=0.08$) at one year. Inhalation techniques: after 1 year this rate had risen to 82.5% ($P=0.041$). Progress in generalized asthma specific self-efficacy was 14 % ($P=0.036$), social support was 7 % ($P=0.023$), asthma-specific knowledge progressed to 80.7% (S.D. 20.9), while progress in self-treatment behavior was ($P=0.003$) and self-management behavior was ($P=0.008$).

Evidence Number: 2

2.1 Title: A Randomized Controlled Behavioral Trial of a New Adult Asthma Self-Management Program.

2.2 Author/year: Tousman, S. A., Zeitz, H., Bond, D., Stewart, D., Rackow, R., Greer, R., . . . Ganjwala, P./2011

2.3 Evidence Type: Randomized control trial.

2.4 Evidence Level: II

2.5 Publication source/database: Journal of Asthma & Allergy Educators/SAGE online journals.

2.6 Objectives: To plan and apply an adult asthma self-management program with a randomized control trial.

2.7 Methods: 45 randomly selected patients participated in the study. Among these, 24 were assigned to the control group and 21 were assigned to the intervention group. The patients in the intervention group attended seven weekly meetings including interactive discussions, problem-solving, social support and behavior modification. The contents of on behavior modification practice were homework assignments. Participants were encouraged to perform self-management behaviors such as avoidance of trigger factors, reading about asthma, peak flow monitoring and controlling medication. Practicing relaxation, hand washing, regular exercising, and drinking water were the components of daily life behaviors.

2.8 Results: The patients who received self-management program exhibited significant improvements in terms of knowledge, $t(15) = 5.616.3$, $P < .001$; depression, $t(15) = 3.1$, $P = .007$; overall quality of life, $t(15) = 3.1$, $P = .007$; quality of living environment, $t(15) = 2.9$, $P = .009$; quality of emotional life, $t(15) = 3.4$, $P = .004$; asthma self-efficacy, $t(15) = 4.02$, $P = .001$; and patient activation, $t(14) = 2.7$, $P = .014$. In addition, the patients reported raising rates of drinking water, $t(15) = 2.52$, $P = .023$; washing hands, $t(15) = 3.7$, $P = .002$; and monitoring peak flows, $t(15) = 4.19$, $P = .001$.

Evidence Number: 3

3.1 Title: A Randomized Controlled Trial of a Self-Regulation Intervention for Older Adults with Asthma.

3.2 Author/year: Baptist, A. P., Ross, J. A., Yang, Y., Peter X. K. Song, P. X. K., & Clark, N. M./2013

3.3 Evidence Type: A double-blind randomized controlled trial.

3.4 Evidence Level: II

3.5 Publication source/database: Journal of the American Geriatrics Society/PubMed

3.6 Objective: To appraise a self-regulation intervention for asthma for older adults.

3.7 Methods: This blind randomized study was performed in a single-center tertiary care academic center with 70 older adult asthma patients aged 65 randomly assigned to either the treatment or control group. Patients received a 6-session program performed over the telephone and in group sessions. Outcomes were measured at 1, 6 and 12 months, and the following instruments were used: the mini-Asthma Quality of Life Questionnaire (mAQLQ), Asthma Control Questionnaire (ACQ), healthcare utilization, exhaled nitric oxide (FENO), and percentage of predicted forced expiratory volume in 1 second (FEV1%).

2.8 Results: Among the patients in the treatment group, the mAQLQ scores were found to be significantly high at 1, 6, and 12 months, even though risk factors were under control. Reduced differences were found among the two groups over time, even at 12 months. Greater ACQ improvement was found at 1, 6 and 12 months in the treatment group than in the control group. The ACQ scores among the treatment group were nearly within the same control range as the control group at 12 months. There were no differences in FENO or the predicted FEV1% whereas healthcare utilization was low in the treatment group.

Evidence Number: 4

4.1 Title: The Effects of the Self-Efficacy Method on Adult Asthmatic Patient Self-Care Behavior.

4.2 Author/year: Chen, S.-Y., Sheu, S., Chang, C.-S., Wang, T.-H., & Huang, M.-S./2010

4.3 Evidence Type: Randomized control trial.

4.4 Evidence Level: II

4.5 Publication source/database: Journal of Nursing Research/Ovid Full Text

4.6 Objectives: To evaluate the effects of a self-efficacy intervention on the self-care behaviors and self-efficacy of adult patients with asthma.

4.7 Methods: In this study, 60 participants were out-patients who were randomly assigned into two groups (a treatment group of 30 and a control group of

30). All of the participants were provided education based on medication, relaxation, pursed-lip breathing and coughing with joint and muscle stretching exercises. The patients who were in the treatment group provided the self-efficacy intervention as follows: watching a 15-20-minute DVD, reading a healthcare booklet on self-efficacy, sharing illness experiences with support groups and receiving medical follow-ups by telephone. The Out-patient Department provided routine health education to the control group patients. The self-care behavior scale had a content validity index = .95, Cronbach's α = .82 and the self-efficacy scale had a content validity index = .98, Cronbach's α = .82

4.8 Results:

1) Significant progress was found in the self-care behaviors among patients who were involved with the self-efficacy program as follows: medication adherence ($p = .008$); self-monitoring ($p = .000$); avoidance of antigens ($p = .001$); regular follow-up visits ($p = .000$); and regular exercise ($p = .016$).

2) Participant self-efficacy improved as follows: asthma attack prevention ($p = .030$), and management during asthma attacks ($p = .017$).

Evidence Number: 5

5.1 Title: Individualized Program for Promoting Self-Care among Older Adults with Asthma: A Randomized Controlled Trial.

5.2 Author/year: Huang, T.-T., Li, Y.-T., & Wang, C.-H./2008

5.3 Evidence Type: Randomized controlled trial.

5.4 Evidence Level: II

5.5 Publication source/database: Journal of Advanced Nursing/PubMed

5.6 Objective: To evaluate the effectiveness of individualized a self-care education program in older adults with asthma.

5.7 Methods: This study was performed in northern Taiwan between January and December of 2006. The participants were 148 older adult asthma patients selected randomly and divided into the following three groups: routine care, individualized education and education with peak flow reading. The follow-up was performed for 6 months. The variables of the study were demographic data, self-care skill, self-efficacy and self-care behavior.

5.8 Results: Self-care proficiency showed higher scores ($F = 334.06$ and 481.37 , $P < 0.001$) and self-care and self-efficacy scores ($F = 104.08$ and 68.42 , $P < 0.001$) were found to be higher among the education groups than the routine care group. Moreover, the patients who received education with peak flow reading had better self-care behavior and self-efficacy scores ($P < 0.001$) and asthma control indicators ($P = 0.025$) than the education alone group. There were no differences among the patients in unscheduled health service usage.

Evidence Number: 6

6.1 Title: Asthma Education Tailored to Individual Patient Needs Can Optimize Partnerships in Asthma Self-Management.

6.2 Author/year: Thoonen, B. P. A., Schermer, T. R. J., Jansen, M., Smeele, I., Jacobs, A. J. E., Grol, R., & Schayck, O. C. P./2002

6.3 Evidence Type: Randomized control trial.

6.4 Evidence Level: II

6.5 Publication source/database: Patient Education and Counseling/ PubMed

6.6 Objective: To compare the effectiveness of a self-management program and routine care.

6.7 Methods: The study was a randomized control trial with a total of 193 asthmatic patients (98 in a tailored education group and 95 in a care group). The patients ranged in age between 16-60 years and required corticosteroids. There were 98 steroid dependent asthmatic patients in the tailored education program and 95 patients in the routine care group. The study period was 6 months. Information exchanged and patient satisfactions were the outcome measures.

6.8 Results: The major findings showed a significant drop in information need ($P=0.005$) among the patients who received the tailored education program. Another vital finding was that the patient satisfaction of this group rose from 87.9 to 93.7, although there was no change in other group ($P= 0.000$). By providing the tailored education program, GP-patient interaction improved significantly with the effective self-management program.

Evidence Number: 7

7.1 Title: Effectiveness of Educational Interventions on Asthma Self-Management in Punjabi and Chinese Asthma Patients: A Randomized Controlled Trial.

7.2 Author/year: Poureslami, I., Nimmon, L., Doyle-Waters, M., Rootman, I., Schulzer, M., Kuramoto, L. & Fitzgerald, J. M./2012

7.3 Evidence Type: Randomized controlled trial.

7.4 Evidence Level: II

7.5 Publication source/database: Journal of Asthma/EBSCO

7.6 Objectives: To search the effectiveness of different formats of culturally relevant information and their impact on asthma patients' self-management within Punjabi, Mandarin, and Cantonese communities.

7.7 Methods: 85 adult asthma patients completed the study (including 42 Chinese and 43 Punjabi aged 21–87 years with 42 males and 43 females). Two sets of videos (knowledge and community videos) and pictorial pamphlets were developed as educational materials with direct involvement of patients, family members, community key informants and practitioners. Scientific information was provided by the instructional video about asthma symptoms, avoidance of exposure to chemicals, dust, pollution and foam, as well as smoking, sedentary lifestyles and diet behaviors as well as and how to manage asthma attacks. The duration of the intervention was 9 months and the patients were assigned randomly to 1 of the 3 experimental groups: Group 1 viewed a physician-led instructional video on asthma symptoms, exercise and how to avoid asthma triggers. Group 2 viewed a patient-generated community video on community opinions and narratives covering the community members' cultural beliefs and practices about asthma and asthma management by using social interactive communication styles. Group 3 viewed knowledge and community videos and one comparison group, Group 4 read an educational pamphlet only. The outcomes were knowledge of asthma triggers and symptoms, medication and skills with inhalation techniques.

7.8 Results: The following behaviors improved significantly among all participants:

1) Knowledge of asthma symptoms, (CI = $_{-0.83} \text{ } _{0.53}$, F-statistics = 9.44, df = 1 and 72, $p < .01$).

2) Inhaler use, (CI) = $_{-1.79} \text{ } _{0.52}$, F-statistics = 45.60, df = 1 and 71, $p < .001$) and

3) Understanding of physician's instructions, (CI = $_{-0.37} \text{ } _{0.2193}$, F-statistics = 11.12, df = 1 and 71, $p < .01$).

Evidence Number: 8

8.1 Title: Evaluation of Self-management Education for Asthmatic Patients.

8.2 Author/year: Durna, Z., & Ozcan, S./2003

8.3 Evidence Type: Randomized control trial.

8.4 Evidence Level: II

8.5 Publication source/database: Journal of Asthma/EBSCO

8.6 Objectives: To assess the requirement of asthmatic patients for self-management education and plan supportive educational programs.

8.7 Methods: The participants in this study were 42 literate patients seeking treatment at the Chest Diseases Department of the Medical Faculty, Istanbul University. The participants were selected randomly for an educational program. The evaluation tools used included a survey form designed by research team, and the contents of the survey form were questions based on demographic characteristics, general health history, asthma triggers, morbidity factors, educational needs and health perceptions. A linear analog scale was used to assess patients' health perceptions. Health perception scores were reassessed at 1 month after the intervention. Improvement in the quality of patients' lives was measured by the St. George Questionnaire (SGRQ) developed by the research team. An asthma diary was used to assess the peak expiratory flow (PEF). Patients were divided into 6 groups with 5-10 patients in each group and education sessions for 120 minutes. Doctors and nurses conducted the programs with follow-up 2 months later.

8.8 Results:

1) Development in the patients last month health perception scores ($t=2.19$, $P=0.04$).

2) Development in the patients' faith in the effectiveness of treatment (t=8.27, p=0.000).

3) Development of the quality of patients lives (Total SGRQ 3.96 p=0.001).

Evidence Number: 9

9.1 Title: Randomized Trial of a Comprehensive Asthma Education Program after an Emergency Department Visit.

9.2 Author/year: Brown, M. D., Reeves, M. J., Meyerson, K., & Korzeniewski, S. J./2006

9.3 Evidence Type: Randomized controlled trial.

9.4 Evidence Level: II

9.5 Publication source/database: Annals of Allergy, Asthma & Immunology/ ScienceDirect

9.6 Objective: To carry out a randomized trial of asthma education after an emergency department visit.

9.7 Methods: This study was performed at a community hospital in Grand Rapids, Michigan, with an Emergency Department (ED) survey of 100,000 patient visits in 2004. A total of 242 asthma patients were selected randomly and divided into treatment or routine care groups during the emergency department visit. Trained asthma educators conducted the intervention. The self-management education program included the following: 1) the treatment plan included use of corticosteroid inhalation for patients and PCP; 2) assurance of the understanding of asthma management and control by self-monitoring; 3) refinement of an individualized asthma management plan (AMP); 4) follow-up home visits to determine asthma triggers and any need for change in treatment and management; 5) contact by telephone for follow-up appointments with the PCP at 3-5 days after the ED visit; 6) approximately 6 weeks after the ED visit, patients received home visits for review of current medications and inhalers, spacers and PEF meter techniques; 7) patients were provided basic asthma education (AE) related to triggers, early signs and ways to avoid repeated asthma exacerbations. The primary outcome decreased ED visits or urgent visits to a physician office during the 6-month follow-up period. Secondary outcomes were ED

visits and hospitalizations during the 6-month follow-up period on the following: 1) compliance with spacers and PEF meters; 2) use of an AMP; 3) activities to decrease asthma triggers and 4) missed days of work.

9.8 Results: According to the follow-up findings among 191 patients (80%) at 6 months, 23.1% of the treatment group vs. 31.1% of the usual care group had an urgent asthma visit (hazard ratio [HR] with 0.79; 95% confidence interval [CI], 0.48 –1.29). The sub-group analysis suggested greater benefit among children (HR, 0.62; 95% CI, 0.33–1.19) than adults (HR, 1.08; 95% CI, 0.50 –2.33).

Evidence Number: 10

10.1 Title: A Randomized Trial of Self-Management Planning for Adult Patients Admitted to Hospital with Acute Asthma.

10.2 Author/year: Osman, L. M., Calder, C., Godden, D. J., Friend, J. A. R., McKenzie, L., Legge, J. S. & Douglas, J. G./2002

10.3 Evidence Type: Randomized control trial.

10.4 Evidence Level: II

10.5 Publication source/database: Thorax/PubMed

10.6 Objective: To determine whether or not a self-management program would decrease readmission rate with acute asthma.

10.7 Methods: In this study, participants were composed of 280 adult asthma patients aged 14–60 years, hospitalized and appearing for daily visits. The subjects were randomized with sealed envelopes. A respiratory specialist nurse applied the self-management program to the patients in two 20-minute visits. The patients were supplied a booklet and asked to come for a second visit to raise questions and concerns about treatment. A self-management action plan was developed in line with the discharge medication. A plan was made in line with symptoms and peak flow readings. In the plan during the discharge period, the patients were encouraged to maintain oral steroid dosages in line with their PEF rates. Readmission with acute asthma within 12 months was the primary outcome and secondary outcomes were morbidity at 1 month after release from hospital and patient satisfaction.

10.8 Results: The patients in the SMP (self-management program) group has more reports about no daytime wheezing than the SC group at 1 month after

discharge (OR 2.6, 95% CI 1.5 to 5.3); no sleep interruption (OR 2.0, 95% CI 1.2 to 3.5), and no work restrictions (OR 1.5, 95% CI 0.9 to 2.7). At over 12 months, 17% of the SMP patients were re-admitted compared with 27% of the SC patients (OR 0.5, 95% CI 0.3 to 1.0). Among first admission patients, OR readmission (SMP v SC) was 0.2 (95% CI 0.1 to 0.7), $p < 0.01$.

Evidence Number: 11

11.1 Title: Effects of Patient Education on Self-Management Skills and Health Status in Patients with Asthma: A Randomized Trial.

11.2 Author/year: Perneger, T. V., Sudre, P., Muntner, P., Uldry, C., Courteheuse, C., Naef, A.-F., . . . Assal, J.-P./2002

11.3 Evidence Type: Randomized control trial.

11.4 Evidence Level: II

11.5 Publication source/database: American Journal of Medicine/PubMed

11.6 Objective: To evaluate the effectiveness of a recently recognized education program for adults with asthma.

11.7 Methods: The study was conducted between January 1996 and June 1998 among all adult patients hospitalized for asthma at Geneva University Hospital. The patients were randomly assigned with a computer-generated list in sealed envelopes. The educational intervention program was composed of the following three sessions: Session 1: 1) Patients were trained to recognize and assess symptoms and triggers of asthma, e.g. allergens, irritants and emotional factors; 2) Environmental control practices were discussed; 3) Patients learned to use a peak flow meter; 4) Patients were advised to monitor peak expiratory flow rates and symptoms twice daily. Session 2: 1) Patients received illustrated information about inflammation and bronchospasms, and the purpose of asthma medications; 2) Patients were asked to classify drugs between long-term preventive and quick-relief medications; 3) Patients were trained in the correct use of their inhaled therapies using placebo devices. Session 3: 1) Patients received an individualized two-page self-management plan; 2) Patients were taught to practice management skills in line with symptoms and peak flow; 3) At any stage, inhaled salbutamol was the advocated rescue medication. Outcome measurements were as follows: 1) Patients' skills in using spray inhalers; 2)

Patients' proficiency in using peak flow monitors and 3) Three questions examined patients' knowledge about activities during asthma attacks.

11.8 Results: Development of self-management skills and health and efficiency status:

1) Confidence about asthma treatment showed better improvement in the immediate education group (OR_2.9; 95% confidence interval [CI]: 1.0 to 8.1).

2) Improved skills in proper inhalation technique (OR _ 2.4; 95% CI: 1.0 to 5.7).

3) Knowledge of the peak flow reading found (OR_3.1; 95% CI: 1.4 to 6.7).

4) Asthma Quality of Life Questionnaire "activity" score was less (difference: 0.4 on a 1 to 7 scale; 95% CI: 0.8 to 0.0). Use of health services during follow-up was the same for both groups.

Evidence Number: 12

12.1 Title: Educational and Behavioral Interventions for Asthma: Who Achieves Which Outcomes? A Systematic Review.

12.2 Author/year: Clark, N. M., Griffiths, C., Keteyian, S. R. & Partridge, M. R./2010

12.3 Evidence Type: Systematic reviews of randomized controlled trials (RCTs).

12.4 Evidence Level: I

12.5 Publication source/database: Journal of Asthma and Allergy/ Cochrane Database of Systematic Reviews

12.6 Objectives: Randomized clinical trial (RCT) data reviewed for outcomes and processes associated with asthma educational and behavioral interventions provided by different types of health professionals.

12.7 Methods: The following databases were searched: Cochrane Collaboration, Medline, PubMed and Google Scholar. The articles were published from 1998 to 2009. In this review study, reference lists were also searched among the identified samples of evidence-based practice. The following terms were used in searching: asthma self-management, asthma behavior, asthma randomized controlled

trials, asthma outcomes, asthma education and asthma patient education. In all, 1,650 samples of evidence-based practice were identified on the topic of asthma educational and behavioral interventions. After screening 249 studies in the preliminary selection, the researcher finally selected 50 RCTs for appraisal as samples. The studies were selected for evaluation of an educational pulmonary function, medication, psychosocial factors, days absent from work, days of activity limitation, self-management, self-efficacy, quality of life, emergency department visits, length of hospital stays and outpatient department visits.

12.8 Results:

- 1) Specific providers conducted particular teaching approaches.
- 2) The most common outcomes were healthcare use, and symptom control.
- 3) Asthma interventions were most frequently provided by multidisciplinary teams.
- 4) The most successful outcomes were the use of healthcare with interventions by physicians and nurses.
- 5) The best achievements by multidisciplinary teams and nurses were symptom reduction and quality of life.
- 6) The best achievements by lay persons were self-management/self-efficacy outcomes.
- 7) Skills were most frequently applied to develop patient-clinician communication and self-management.
- 8) The healthcare utilization rate was reduced by 50% and 33% in terms of symptom control.
- 9) The greatest effects on the most outcomes were self-management and patient-clinician communication interventions achieved by multidisciplinary teams and nurses.
- 10) Decreasing asthma symptoms were the effects of action plans, peak expiratory flow (PEF) monitoring, environmental control and clinician-patient communication skills.
- 11) Self-management and quality of life were the effects of patient-clinician communication and self-management education interventions.

Evidence Number: 13

13.1 Title: British Guideline on the Management of Asthma: A National Clinical Guideline.

13.2 Author/year: British Thoracic Society (BTS)./2012

13.3 Evidence Type: National guideline.

13.4 Publication source/database: Retrieved September 28th, 2014 from <http://sign.ac.uk/pdf/sign101.pdf>

13.5 Main recommendations:

1) Self-management teaching strategy based on individual needs and a written asthma action plan.

2) Before discharge, in-patients should be provided asthma action plans to manage their asthma.

3) Patients should be introduced with asthma action plans as prepared for the following discussion points: a) characteristics of the disease; b) type of treatment; c) determination of effective treatment by patients' choice; d) demonstration of treatment procedures; e) improvement of self monitoring/self measurement skills; f) compromises about asthma action plans according to patient goals; g) identification and management of acute exacerbations and h) avoidance of allergens or triggers.

4) Provide a helpful guide for compliance with action as appropriate for each patient.

5) Patients and caregivers should be provided easy, verbal and written orders and information about pharmacological treatment.

6) Self-management education should be conducted at first hospital admission and every patient should be ensured to leave hospital with an asthma action plan.

7) Education strategy should be simple and linked to patient goals as well as acceptable to patients.

Appraisal of all samples of evidence-based practice

The author applied methods and principles as proposed by Melnyk and Fineout- Overholt (2011) to appraise research samples of evidence-based practice and the criteria of AGREE II developed by Brouwers, et al., (2009), to appraise the

guidelines for the quality, reliability and utility of the samples of evidence-based practice.

1) Appraisal for research samples of evidence-based practice

Validity: In RCTs, the patients in all of the studied samples of evidence-based practice were randomly assigned into experimental and control groups after recruitment to minimize bias. The participants were assigned by sealed envelopes with randomization codes. The subjects and informants of most of the studies were kept blind from the study group. Some studies found that some subjects did not complete the study and reasons for the attrition were explained. All of the studies conducted follow-up assessments of the effects of the interventions. The subjects in the groups were analyzed in terms of who was assigned randomly and the control groups were appropriate. The instruments used to measure the outcomes were valid and reliable. All of the studies described the interventions and control management in detail. Furthermore, the subjects in each of the groups were similar at baseline. Therefore, based on the analysis of the above methods, the studies should be considered as valid.

Reliability: The reliability of any research evidence depends on accuracy, honesty, consistency, achievement and repeatability as anyone can perform same experiment by using similar equipment and conditions to achieve exactly the same outcome. Most of the studies expressed results as OR with 95% CI, and p values were provided where statistical significance was found. In some studies, analysis of covariance (ANCOVA) was used to evaluate the statistical significance of the differences in the various outcome variables among the groups after controlling for the baseline value of each outcome. Internal consistency was examined by Cronbach's Alpha Coefficient. Multiple measurements of the studies were led with significant results.

Applicability: During application, the results concerning clinical setting validity, reliability and usefulness for clinical decision-making were considered. Nearly all of the participants in the studies were similar to those in the author's setting. The outcomes of all of the studies were considered and most of the outcomes were effective for asthma control among adult patients with asthma. All of the results yielded by the studies were significant for evaluation and appropriate for

self-management programs among adult asthma patients. All of the samples of evidence-based practice were measured as trustworthy for applicability in clinical settings in line with the abilities of the healthcare providers, benefits of patients and families as well as support from officials. Nurses can apply self-management programs with routine nursing work without increasing workloads which will emphasize improvement of knowledge and attitudes with behavioral modification for asthma control among adult patients with asthma. In addition, the patients and families are able to accept this cost-effective education program, while officials will support these activities. Hence, the samples of evidence-based practice are applicable.

2) Appraisal of guidelines

The author used the criteria of AGREE II developed by Brouwers, et al., (2009) to appraise the guidelines. The following 23 items were clustered in 6 domains applied for guideline appraisal with the rating of agreement ranging from 1 to 7 where 1 means “strongly disagree” on that item and 7 means “strongly agree” on the item.

Domain 1 - Scope and purpose

1. The overall objectives of the guideline were specifically described.
2. The clinical question(s) covered by the guidelines were specifically described.
3. The target group of patients in which the guideline is meant to be applied is specifically described.

Domain 2 - Stakeholder involvement

4. The guideline development group includes all relevant professional groups.
5. The views and preferences of the target patients have been sought.
6. The target users of guideline are clearly defined.

Domain 3 - Rigor of development

7. Systematic methods were used to search for evidence.
8. The criteria for selecting the evidence were clearly described.
9. The strengths and limitations of the body of evidence were clearly described.

10. The methods for formulating the recommendations were clearly described.

11. The health benefits, side effects and risks were considered in formulating the recommendations.

12. There was an explicit link between the recommendations and supporting evidence.

13. The guidelines were externally reviewed by experts prior to publication.

14. All procedures for updating the guidelines are provided.

Domain 4 - Clarity of presentation

15. The recommendations are specific and unambiguous.

16. The different options for management of the conditions or health issue are clearly presented.

17. The key recommendations suggested by the guidelines were easily identifiable.

Domain 5 - Applicability

18. The guidelines provide advice and/or tools on how the recommendations can be put into practice.

19. The guidelines describe facilitators and barriers to application.

20. The potential cost implications of applying the recommendations have been considered.

21. The guidelines present monitoring and/or auditing criteria.

Domain 6 - Editorial independence

22. The guidelines had editorially independent funding authority that did not hamper formulating; the funding was an initiative funded by the US Department of Health and Human Services and supported by the American Academy of Orthopedic Surgeons.

23. Competing interests of guideline development group members were recorded and addressed.

3.2. Conclusion

The following conclusions can be drawn from the above interventional samples of evidence-based practice:

3.2.1 Brief summary of all samples of evidence-based practice

It is concluded that the objective of this study was to summarize current samples of evidence-based practice for self-management programs on asthma control among adult patients with asthma. Most of samples of evidence-based practice focused on self-management programs on asthma control. According to the findings, self-management strategies can improve asthma control and health-related quality of life. The contents of the self-management program included the pathophysiology of asthma, symptoms, triggers, medication, smoking cessation, physical exercise and use of compliance. Moreover, the majority of the studies emphasized skill training including techniques of inhaler use, correct use of peak flow meters (PEM), and monitoring of peak expiratory flow (PEF). A large number of studies used video tapes, telephone follow-ups, booklets, questionnaires, diaries and small group discussions. The most important outcomes were knowledge about asthma, self-efficacy, behavioral modification, medication adherence, inhalation techniques and peak expiratory flow (PEF) from maximum studies. Some studies showed outcomes as unscheduled emergency department visits, quality of life and psychological support. Nearly all of the studies showed significant effects from the self-management intervention programs, including knowledge about asthma, proper inhalation techniques, peak flow reading, quality of life, asthma self-efficacy and self-management behavior on asthma control.

3.2.2 Recommendations

1) Before implementing the self-management teaching strategy, patients' individual needs, demands and expectations should be assessed (British Thoracic Society, 2012/National Guideline; Thoonen et al., 2002/Level II).

2) Self-management is an effective strategy for controlling asthma and health-related quality of life (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown, Reeves, Meyerson, & Korzeniewski, 2006/Level II;

Chen et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/Level II; Osman et al. 2002/Level II; Palen et al., 2001/Level II; Perneger et al., 2002/Level II; Poureslami et al., 2012/Level II; Thoonen et al., 2002/Level II; Tousman et al., 2011/ Level II).

3) Self-management education programs for hospitalized patients reduce post-discharge morbidity and readmission rates (British Thoracic Society, 2012/National Guideline; Osman et al., 2002/Level II).

4) Education strategy should be simple while patients and caregivers should be provided easy, verbal and written orders and information about pharmacological treatment (British Thoracic Society, 2012/National Guideline; Osman et al., 2002/Level II).

5) Self-management refers to useful behavior in relation to sufficient knowledge and skills about asthma control, avoiding trigger factors and tolerable behavior, compliance with inhaled medication, appropriate inhalation techniques and the use of a peak flow meters (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown et al., 2006/Level II; Chen et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/Level II; Osman et al. 2002/Level II; Palen et al., 2001/Level II; Perneger et al., 2002/Level II; Poureslami et al., 2012/Level II; Thoonen et al., 2002/Level II; Tousman et al., 2011/Level II).

6) The contents of teaching activities should include the pathophysiology of asthma, symptoms, triggers, medication, smoking cessation, physical exercise and use of compliance (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown et al., 2006/Level II; Chen et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/Level II; Osman et al., 2002/Level II; Perneger et al., 2002/Level II; Poureslami et al., 2012/Level II; Thoonen et al., 2002/Level II; Tousman et al., 2011/Level II).

7) The studies emphasized skills training including techniques for inhaler use, correct use of peak flow meters and monitoring of peak expiratory flow (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown et al., 2006/Level II; Chen et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/Level II; Palen et al., 2001/ Level II; Perneger et al.,

2002/ Level II; Poureslami et al., 2012/Level II; Thoonen et al., 2002/Level II; Tousman et al., 2011/ Level II).

8) The following teaching materials should be applied in the program: video tapes, DVD, telephone follow-ups, booklets, diaries, patient education guides, educational pamphlets, checklists, asthma written action plans and small group discussion (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown et al., 2006/Level II; Chen et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/level II; Osman et al., 2002/Level II Palen et al., 2001/ Level II; Perneger et al., 2002/Level II; Poureslami et al., 2012/Level II; Tousman et al., 2011/ Level II).

9) The sessions and the durations of the programs varied from 1 to 6 sessions with durations ranging from 30 to 120 minutes. Training and education sessions by asthma expert nurses were carried out in three 90-minute sessions (Palen et al., 2001/Level II). Seven 2-hour meetings lasted for 60 minutes for the discussion session and 60 minutes for individual status reports (Tousman et al., 2011/ Level II). A six-week asthma intervention consisted of three in-person group sessions and three one-on-one telephone sessions (Baptist et al., 2013/ Level II). The subjects watched DVDs for 15 to 20 minutes (Chen et al., 2010/Level II). One session in the asthma educational program consisted of 120 minutes applied with the collaboration of doctors and nurses (Durna & Ozcan, 2003/ Level II). Three 75-minute educational group sessions were conducted by two respiratory physicians and a physiotherapist (Perneger et al., 2002/Level II). A tailored education program consisted of four individual sessions as follows: an initial session lasting for 30 minutes, three repeated sessions of 20 minutes each and two sessions of 10 minutes each, respectively (Thoonen et al., 2002/Level II).

10) Self-management programs can help lead to effective modification of behavioral variables, improved self-care and self-efficacy as well as self-regulations (Baptist et al., 2013/ Level II; Chen et al., 2010/Level II; Palen et al., 2001/ Level II).

11) Although many outcomes were measured to assure the effectiveness of the programs concerning the specific outcomes such as self-management behaviors, rate of hospital readmission should also be considered (Baptist et al., 2013/Level II; British Thoracic Society, 2012/National Guideline; Brown et al., 2006/Level II; Chen

et al., 2010/Level II; Clark et al., 2010/Level I; Durna & Ozcan, 2003/Level II; Huang et al., 2008/Level II; Osman et al., 2002/Level II; Palen et al., 2001/ Level II; Perneger et al., 2002/Level II; Poureslami et al., 2012/Level II; Thoonen et al., 2002/level II; Tousman et al., 2011/Level II).

CHAPTER IV

CONCLUSION AND SUGGESTIONS

4.1 Conclusion

Asthma is a public health problem of global proportions that is increasing every day. Asthma has significant impact on people with the condition. Asthma patients lose their daily routines in various aspects such as physical activity, sleep style, behaviors, social and psychological activities, life-styles, health care expenditures etc. Globally the burden of this disease is growing for patients, families, and health service providers as well as governments. Asthma is a chronic disease that is neither preventable nor curable. Asthma can however, be controlled with proper treatment. Today, asthma control is the clinical focal point of asthma management. Asthma control refers to reduce symptoms, medication adherence, and potential risk of exacerbations as well as declining lung function. Asthma control can be achieved through self-management strategy. Asthma self-management strategy involves behaviors about asthma related to adequate knowledge, risk factors, medication, inhalation techniques, and proper use of peak flow meters. Inadequate literacy of asthma patients combined with deficient knowledge about asthma, and the absence of evidence-based nursing practice are significant problems in Bangladesh. There is large number of evidences that self-management strategy can improve patients' health status, quality of life; and self-efficacy as well as asthma control through behavior modification.

The purpose of this study is to summarize current evidences for self-management programs on asthma control among adult patients with asthma. The PICO Framework and electronic databases/sources of the Mahidol University library system were used to search and select evidence for systematic reviews from the Cochrane Database of Systematic Reviews. In addition, PubMed, EBSCO, Ovid Full Text, ScienceDirect, and SAGE online journals were used to search for single research studies. The author also conducted a manual search by looking for citations from

reference lists from systematic reviews, and then searched further from libraries and electronic databases. For guidelines, the author searched from the National Institute for Health and Care Excellence websites. The author searched for systematic reviews of randomized controlled trials (RCTs), high quality single randomized controlled trials, and guidelines acquired from full text studies published in English from 2001 to 2014. The keywords for the search included adult patients with asthma, adult asthma, self-management program, asthma self-management, self-efficacy, asthma education, asthma control, and quality of life. The author was able to select 13 quality evidence-based practices, in which one was systematic reviews (level I), eleven were randomized control trials (level II), and one was national guideline. The evidences were synthesized to gain knowledge and develop a self-management program for asthma control among adult patients with asthma. The findings are summarized as follows:

4.1.1 Self-management program based on teaching activities as well as small group discussions for groups of 5 – 10 patients. The sessions varied in duration from 1 to 6 sessions lasting for 30 to 120 minute each, with skills training, video presentation and telephone follow-up.

4.1.2 Teaching activities based on the pathophysiology of asthma, symptoms, triggers, medication, smoking cessation, physical exercise, and use of compliance, based on individual needs, a written asthma action plan, self-experiences, asthma-related problems, and asthma prevention strategies.

4.1.3 Skills training included techniques for inhaler use, correct use of peak flow meters (PFM), and monitoring of peak expiratory flow (PEF).

4.1.4 Most of the studies provided teaching materials and demonstrations such as video tapes, telephone calls, booklets, diaries, small group discussions, patient education guides, educational pamphlets, checklists, and written action plans for controlling asthma.

4.1.5 Significant outcomes were knowledge about asthma, symptoms, behavioral modification, self-management or self-efficacy, compliance with medication adherence, inhalation techniques, peak expiratory flow (PEF), length of hospital stays, unscheduled emergency department visits, quality of life, days of restricted activity due to asthma, and psychological support.

4.2 Suggestions

From the findings of this study, the author would like to give suggestion both on nursing practice and nursing research in order to encourage self management practice among patients with asthma in Bangladesh. Details are described as follow;

4.2.1 Implication for nursing practice

4.2.1.1 Self-management programs should be based on the recommendations derived from the evidences.

4.2.1.2 Health care personnel at all levels should be empowered by the new knowledge existing about asthma management.

4.2.1.3 Nursing personnel should be promoted on asthma control education to improve patient self-management behavior.

4.2.1.4 Asthma patients should be involved in the planning of care and allowed to set goals for improving quality of life.

4.2.1.5 Patients should be provided psychological support and as well as patients and family members motivated to ensure regular follow-up.

4.2.1.6 Education strategy should be simple and linked to patient goals as well as acceptable to patients.

4.2.1.7 Patients and caregivers should be provided easy, verbal and written orders and information on pharmacological treatment.

4.2.1.8 Asthma diary should be planned in the self-management program for patients' home follow-up and evaluation and outcome should be measured by using asthma quality of life questionnaire (AQoLQ).

4.2.1.9 Asthma education corners should be developed at medical wards for hospitalized patients and emergency or outpatient department for follow-up patients.

4.2.1.10 Communicate with all stakeholders regularly and meet together monthly and rapport building with them.

4.2.2 Implication for nursing research

4.2.2.1 The contents of self-management programs should be reviewed to ensure that the recommendations can be applied properly to deliver maximum benefits.

4.2.2.2 Research should be conducted to evaluate the outcome of asthma patients following participation in self-management programs or follow-up sessions.

4.2.2.3 A follow-up assessment of asthma control and asthma quality of life might be performed in the study group to determine improvement.

4.2.2.4 Family members can play an important role in asthma self-management. So that research should be performed to assess the caregiver's/family member's knowledge about asthma management after participating in education programs.

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