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**THE EFFECTS OF TEACHING PRIMARY SCHOOL TEACHERS  
ON KNOWLEDGE AND CARING MANAGEMENT  
OF STUDENTS WITH ASTHMATIC SYMPTOMS**

**TASANEE POOLWECH**

**With compliments  
of**  
ศาสตราจารย์พิเศษ ส.พูนเลิศ

**A THESIS SUBMITTED IN PARTIAL FULFILMENT  
OF THE REQUIREMENTS FOR  
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OF STUDENTS WITH ASTHMATIC SYMPTOMS**

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Asthma is the chronic disease most found in children. Children need to be cared for inside and outside home. At home, those who care for them are parents. Because these children need to attend school, those who care for them are teachers. In this research, the object is to study the effects of teaching primary school teachers on knowledge and caring management of students with asthmatic symptoms. The sample group includes 36 primary school teachers of students with asthma. They are divided into the experimental group with 18 and the control group with 18. The experimental group is taught in group of 6 with 2 sessions. The sessions are taught with the use of a manual on care for students with asthma, and at the end they are to take these manuals back home to review. After teaching, the teachers receive visits once a month for 3 months. As for the control group, they were not formally but had taught, to learn from normal situations. Both groups were evaluated by their knowledge and behavior before and 3 months after study. The differences in knowledge and behavior of both groups was analyzed using ANCOVA. The results of the research showed, the mean scores of knowledge about asthma after studying in the experimental group was significantly more than in the control group, at the .001 level and, the mean scores of behavior of care for students with asthma in the experimental group was significantly more than in the control group, at the.001 level.

From the results of this research, in order for, teachers to have correct behavior in caring for students with asthma, they must possess knowledge about asthma and the care for these children this is especially, true to prepare students with asthma before exercise and care for students use bronchodilator.

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โรคหอบหืดเป็นโรคเรื้อรังที่พบบ่อยที่สุดในเด็ก เด็กต้องได้รับการดูแลอย่างต่อเนื่อง  
ทั้งในบ้านและนอกบ้าน ในบ้านผู้มีบทบาทสำคัญคือบิดามารดา เนื่องจากเด็กวัยเรียนจะต้องไปอยู่  
โรงเรียนผู้ที่มีบทบาทสำคัญในการดูแลเด็กวัยเรียน โรคหอบหืดคือ ครู

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลการสอนครูต่อความรู้และพฤติกรรมการ  
ดูแลเด็กวัยเรียน โรคหอบหืดในโรงเรียน กลุ่มตัวอย่างคือครูประถมศึกษาที่อยู่ในโรงเรียน ที่มีเด็ก  
วัยเรียนโรคหอบหืด จำนวน 36 คน แบ่งเป็นกลุ่มทดลอง 18 คน กลุ่มควบคุม 18 คน กลุ่มทดลอง  
จะได้รับการสอนเป็นกลุ่ม ๆ ละ 6 คน โดยใช้คู่มือการดูแลเด็กวัยเรียนโรคหอบหืดในโรงเรียน  
จำนวน 2 ครั้ง ๆ ละ 1 ชั่วโมง แต่ละครั้งห่างกัน 1 วัน และได้รับคู่มือกลับไปอ่านทบทวนที่บ้าน  
หลังสอนกลุ่มทดลองจะได้รับการติดตามเยี่ยมทุกเดือน ๆ ละ 1 ครั้ง จำนวน 3 ครั้ง ส่วนกลุ่มควบคุม  
ได้รับความรู้ปกติ ทั้งกลุ่มทดลอง และกลุ่มควบคุม ได้รับความรู้และพฤติกรรมก่อนให้  
ความรู้ และหลังให้ความรู้ 3 เดือน วิเคราะห์ความแตกต่างของความรู้และพฤติกรรมของครูในกลุ่ม  
ทดลองและกลุ่มควบคุมโดยการวิเคราะห์ความแปรปรวนร่วม (ANCOVA) ผลการวิจัยสรุปได้ดังนี้.-

1. คะแนน ความรู้เรื่องโรคหอบหืด ของกลุ่มครูที่ได้รับการสอน สูงกว่ากลุ่มครูที่ไม่  
ได้รับการสอนอย่างมีนัยสำคัญทางสถิติ ( $P < .001$ )

2. คะแนน พฤติกรรมการดูแลเด็กวัยเรียน โรคหอบหืดในโรงเรียนของกลุ่มครูที่ได้  
รับการสอนสูงกว่ากลุ่มครูที่ไม่ได้รับการสอน อย่างมีนัยสำคัญทางสถิติ ( $P < .001$ )

จากผลการวิจัยในครั้งนี้ ทำให้ได้ข้อเสนอแนะว่า การที่จะให้ครูมีพฤติกรรมการดูแล  
เด็กวัยเรียน โรคหอบหืดในโรงเรียนได้ถูกต้อง ควรจะให้ความรู้กับครูเกี่ยวกับโรคหอบหืด และความ  
รู้ในการดูแลเด็กวัยเรียนโรคหอบหืด โดยเน้นความรู้เกี่ยวกับการออกกำลังกาย และการใช้ยาขยาย  
หลอดลมเพื่อให้ครูดูแลเด็กวัยเรียนโรคหอบหืดได้อย่างถูกต้องและเหมาะสม

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## CHAPTER I

### INTRODUCTION

#### **Significance of the study**

Asthma is a chronic disease mostly found in children ( Wong , 1995 : 1416 ). In Thailand, it is found that 13 % ( Pakit Vichayanond , 1996 : 719 ) of children have suffered from asthma, and there is an indication that this figure may increase in the future . Asthma in children is the most severe classification of all allergies due to the suffering which takes place during attacks. If children are not treated properly, it will result in respiratory failure and even death. Asthma will affect children : they can not rest, they feel tired from lack of sleep, and they will have no appetite for food. Asthma is also the most common cause of school absences.( Campbell & Glasper ,1995 : 546 ). When children do attend school, they lack concentration to learn. In addition, tiredness and lack of sleep will cause the Children also studies and development of the intellect to lag behind . Children will also constantly worry about the difficulty breathing . Regarding society and culture, children are fond of doing things in groups and need acceptance among their peers. However, children with asthma tend to be limited in activities because parents and teachers fear the occurrence of an attack ( Wong , 1995 : 1424 ) . This causes the children to feel they have an inferiority complex . Self esteem will decline causing the children to isolate themselves from society and friends , especially in school children . This school age , they are ready to learn and develop in all areas, and is the age range, they start to explore new things. They need to learn outside the home. And start to meet new people beside their family , especially people close to children , teachers and friends . Without the disease, there would be no difficulty in performing these daily activities . However ,with the disease , children may have asthmatic attacks while in school . If teachers have no knowledge in caring for children with asthma such as knowledge about stimulants of asthmatic attacks, and activities and sports that are appropriate for children with asthma and support for health problem may occur, Parents are not able to care for their children while in school , teachers therefore play an important role as a substitute for parents. The study by

French and Annemaree ( 1997 : 469-475 ) about the knowledge and outlook of teachers towards children with asthma, which took place in Australia on elementary school teachers, found that 97 % of teachers were interested in the care and management for children with asthma . However 91.5 % of these teachers lacked sufficient knowledge to actually care for children . Moreover, they proposed that this knowledge should be taught so they would be able to care for children appropriately . As for Thailand, there has not been any study on this topic.

Health teams have knowledge on care for children with asthma. They can share this knowledge with the teachers. Teaching, especially, for a specific change in behavior can be done through many methods. The teachers should choose a method according to the content and learner. Teaching individually, the learner will absorb information effectively; however, it could be a waste of time and labor. Teaching in a group will create and exchange of knowledge, ideas, and experience among the learners. This will change how the learners respond and can be a guide for them in choosing behavior. Apart from this, in order for the teaching to be successful, the teaching must come from a good media so that learners will respond quickly and will absorb a amount of knowledge in short period of time.

Because of the validity of the previous research, the researcher has chosen to use the method of the teaching in groups with a manual being the media of the teaching. The chosen sample group will be from Rayong Province. Rayong is one of the provinces in the Eastern Industrial sector, with 956 heavy industrial factories (Public Health Office of Rayong, 1997), and thus Rayong is contaminated with poisonous gases and air pollution from factories, which is a factor that can exacerbate asthmatic symptoms. This is explicit in the statistics of the increasing number of asthmatic patients who are admitted to hospital ; from 826 cases in 1995 to 1,012 cases in 1997 (Public Health Office of Rayong, 1997). The researcher has therefore chosen to study Primary school teachers in schools where children with asthma attend school in the industrial sector of Rayong Province. The teachers will be given the knowledge on the care for children with asthma .

### **Conceptual frame work**

According to the theory of learning, for learning to occur, there must be a stimulus, to encourage the process of teaching, in order to lead the learner or organic person to

respond according to the concept of the relationship among the stimuli, organic person and responses (SOR theory) (Quinn, 1995:89) Teaching in a group using a manual is considered a stimulus, that will stimulate and lead the “school teachers” to learn through the manual which is a stimuli with its contents in a graded order from easy to difficult, in other words, clear and concise with illustrations. This stimulates interest and learning quickly. From a study by Hangyuth, it is found that learners have 2 types of memory, short-term which lasts for 30 minutes, after 30 minutes all is forgotten, and long-term, memory that will not be forgotten until another stimulus replaces it. Effective teaching must create long-term memory, which is an important issue that will affect teachers, actions and behavior (Oranant Hanyuth, 1989 : 117) Therefore, in this teaching , the researcher gives the teachers a manual for them to review in their spare time in order for them to have long-term memory, which will affect behavior. In addition, teaching small groups would enable the possibility of the exchange of knowledge, opinions and experiences, which will make it easier for teachers to improve their understanding. Therefore, teaching in a group using a manual which contains the factors causing asthma, the mechanism of asthma, symptoms of asthma, treatment of asthma and care for children with asthma, will be a stimulant for teachers to learn and understand. This will effect their behavior of supporting the health of children with asthma. They will be able to care for the children with asthma and assess which activities and sports are appropriate for them. Also, teachers will be able to manage children with coughs, difficulty in breathing, wheezing and asthmatic attacks appropriately.

From the initial idea, the researcher then was interested in studying the effect of teaching knowledge and management to primary school teachers of students with asthmatic symptoms, The results of the study could then be a guide in caring for students with asthma so they can have a better quality of life.

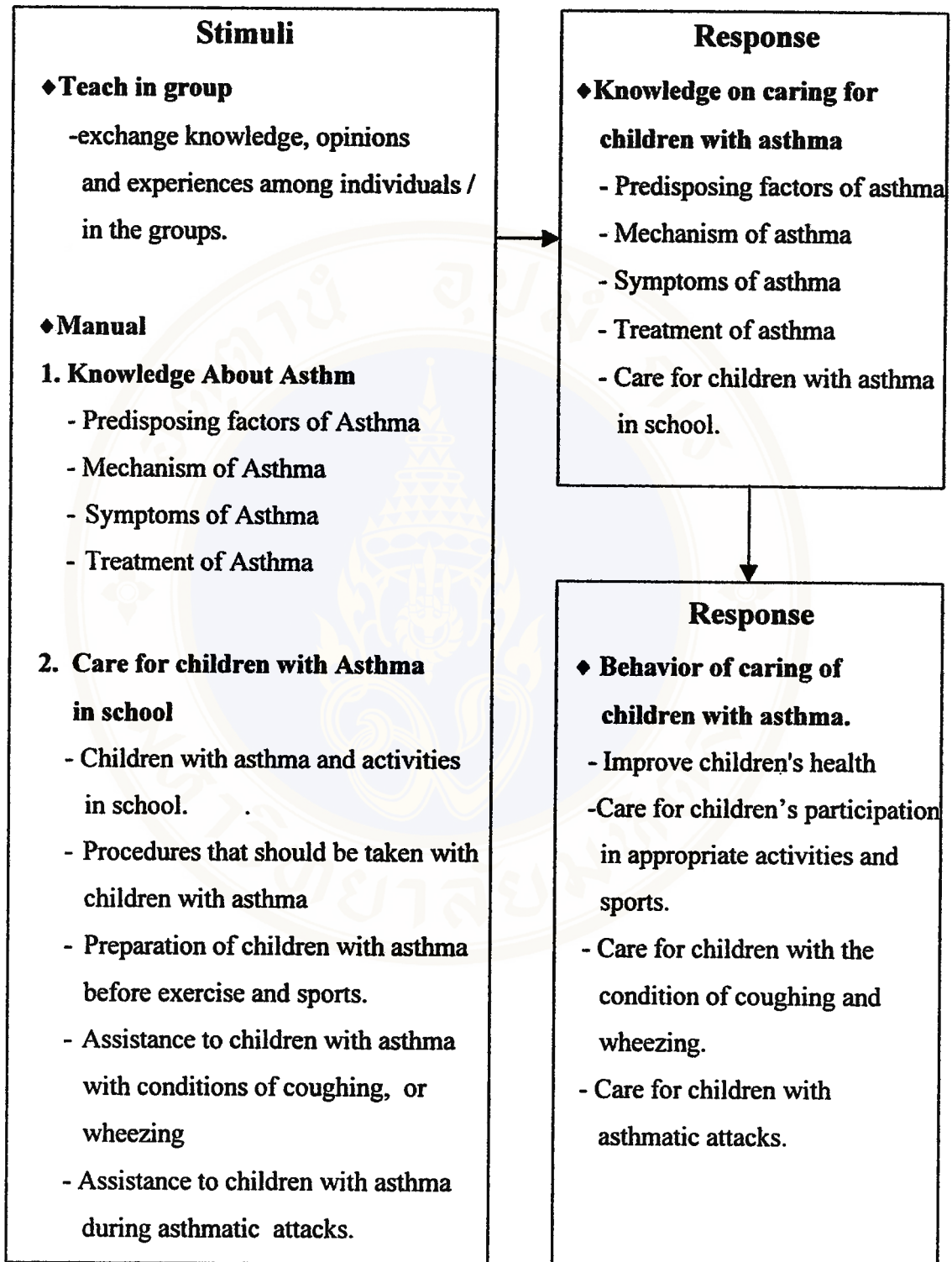


Figure 1 Conceptual Frame work

### **Objectives of this research**

1. To compare the knowledge about asthma between teachers who have been taught and those who have not.
2. To compare the behavior of caring management for students with asthma between teachers who have been taught and those who have not.

### **Hypotheses**

1. Teachers who have been taught have more knowledge about asthma than those who have not been taught.
2. Teachers who have been taught have better behavior of caring management for students with asthma than those who have not been taught.

### **Scope of this study**

This research is a study of the effects of teaching on knowledge and caring management of primary school teachers of students with asthmatic symptoms. The study involves primary school teachers in five schools, where students with asthma exist, in the industrial sector of Rayong Province.

### **Usefulness**

This research will be a guide for primary school teachers in the caring management for students with asthma, so that they will have a better quality of life and will be able to participate in activities like normal children.

### **Definition of variables**

**Teaching** means giving information about asthma and the way to care for students with asthma through using the manual, which has been modified from the manual of care for children with asthma for teachers and school nurses by Pornsri Sriussadaporn and others. The content is grouped into 2 sections. Section 1 is "Knowledge about Asthma"; and section 2 is "Care for Students with Asthma". The teaching sessions are separated into 2 intervals, each taking 1 hour. The first session teaches the content of section 1, and the second session teaches the content of section 2.

The time difference in teaching section 1 and section 2 is 1 day, so that the content taught is continued.

**Knowledge about Asthma** means the correct understanding of the predisposing factors of asthma, the mechanism of asthma, the symptoms of asthma, the treatment of asthma and the care for children with asthma in school. Measuring the level of knowledge was conducted through questionnaires that the researcher modified from the questionnaire by Pornsri Sriadsadaporn and others on Knowledge on Asthma and Care for Children with Asthma and the questionnaire about knowledge on Asthma by Davina.J. French and Anne maree Carroll.

**Behavior of care for children with asthma** means the act of caring for children with asthma by teachers reacting to the disease. These activities include caring and promoting the health of children with asthma during school time, caring for children with asthma while doing activities in school, preparing the children with asthma for exercises or sports, and caring for children with asthma when they have coughing, or wheezing and asthmatic attacks in school. This behavior can be measured through the questionnaire that the researcher modified from the questionnaire by Pornsri Sriadsadaporn and others.

## **CHAPTER II**

### **LITERATURE REVIEW**

This research is a study of the effects of teaching Primary school teachers on knowledge and caring management of students with asthmatic symptoms. The researcher has studied documents, research studies and relevant literature. It is grouped in three sections.

- Asthma in children
- Learning and teaching
- Effects of teaching on knowledge and caring management

#### **Asthma in Children**

Asthma is a chronic inflammatory disease of the airway, which results in airway hyperresponsiveness. When the airway is exposed to stimuli the airway may become swollen, constricted, and filled with mucous. The resulting airflow limitation is reversible, either spontaneously or with treatment.

#### **Signs and Symptoms**

Children will exhibit important symptoms as follows.

1. Difficulty in breathing - nostrils will flare during inspiration and wheezing will occur during expiration. This will cause tiredness, fatigue and agitation. The child may not lie down, they may sit upright and lean forward in order to breathe easily.
2. Coughing with no mucous in the first few minutes may be followed by productive coughing later.

#### **Causal factors of the disease**

##### **1. Predisposing factors**

1.1 Hereditary - In families where the father or mother has suffered from asthma, the possibility for their child to develop asthma is increased significantly. This possibility is far more common with asthmatic mother. From the study of Montri

1.2 Tuchinda (1987:26) it was found that there is upto 50 percent chances that asthmatic children could have relatives, possibly a father, mother, grandfather, grandmother or other related party that have asthma as well.

1.3 Sensitization - In cases that have some possibility to develop asthma, prolong and /or repetitive exposure to allergen would increase that chance. The important allergens are house dust mite, cockroach, grass pollen, tree pollen and animal fur. From the study of Pakit Vichyanond it was found that significant allergen in asthmatic Thai children is house dust mite (1996:720)

## 2. Precipitating factors

2.1 Respiratory tract infection - It can aggravate symptom of asthma especially viral infection.

2.2 Weather Changes : Humidity, excessive heat, sudden changes in air pressure (e.g. before rain); cold weather in the winter season are all stimuli for asthma. Usually asthma will experience difficulties in breathing at night, probably due to the cooler weather and large amounts of mucus are found in the trachea and it cannot be let out as easily as during the day time, it found that occur 70.07 % . It is found during all seasons 49.91 % . It is found during the cold season 34.98 % . It is found during rainy season 30.03 % and in the hot season 0.91% (Kreckyos Chalayondacha, 1992 : 253-262).

2.3 Exercise - In asthmatic children, exercise may induce asthmatic attack in some cases. This condition can be avoided by using bronchodilator before exercise.

2.4 Pollution - The important stimuli are particulate matter (PM10), oxide of nitrogen (NOx), ozone, hydrocarbon, cigarette smoke. These pollutants usually found in heavy traffic area, construction area and industrial factories.

2.5 Emotional factors - Emotional change such as anger, sadness, agitation can aggravate symptom of asthma.

2.6 Drug and chemical substances - Some drugs like (non-steroidal anti-inflammatory drugs)NSAIDs, beta-blocker can induce asthmatic attack in asthmatic children. Chemical substances such as insecticides, detergents can also induce asthmatic attack.

2.7 Food - Some kind of food, which can exacerbate asthmatic symptom, are egg white, sea food, chocolate, milk.

### Severity of Asthma

The severity of asthma is classified as follows (National Institutes of Health, 1997 : 8)

1. **Mild Intermittent** means that the intermittent symptoms of asthma will occur less than 1 times a week. Brief exacerbation from a few hours to a few days, Nighttime asthma symptoms occur less than 2 times a month. The lung function , the peak expiratory flow rate or FEV<sub>1</sub> is more than or equal to 80 % of the normal value and variability less than 20 %.

2. **Mild Persistent** : means that the symptoms will occur more than or equal to 1 time a week but less than 1 time per day. Exacerbation may affect activity and sleep. Nighttime asthma symptoms occur more than 2 times a month. The peak expiratory flow rate or FEV<sub>1</sub> is more than or equal to 80 % of the normal and variability 20-30 %.

3. **Moderate Persistent** means that the symptoms will occur daily. Exacerbation affect activity and sleep. Nighttime asthma symptoms occur more than 1 time a week. Daily use of inhaled short-acting B<sub>2</sub>-agonist. Peak expiratory flow rate or FEV<sub>1</sub> is more than 60 % but less than 80 % of the normal value, and variability more than 30 %.

4. **Severve Persistent** means that symptoms will occur contineously. There is frequent exacerbations. Nighttime asthma symptoms occur frequency. Daily activities and exercise must be limited. The peak expiratory flow rate or FEV<sub>1</sub> will be less than or equal to 60 % and variability is more than 30 %.

### Diagnosis of Asthma

A diagnosis of asthma can be done by the following

1. **Medical History of the Patient** : The patient will have a history of coughing at night, attack or recurrent episodes of wheezing especially breathing out, difficult breathing and chest tightness. There will be a history of the symptoms of asthma following, exercise , respratory tract infection (especially viral infections),

contact with animal fur, being in environments containing house-dust mites (pillow covers, mattresses, carpets), contact with smokers, being in environment with pollution, changes in weather. There may be family history of allergies. (National Institutes of Health, 1997 : 6)

**2. Physical examination :** Because asthma symptoms vary throughout the day, the respiratory system may appear normal during physical examination. Thus the absence of symptoms at the time of the examination does not exclude the diagnosis of asthma. However, patients will usually to see a doctor when symptoms are that are found in asthma patients are an expansion of the chest (especially in children who have had chronic disease) (National Institutes of Health, 1997 : 6).

### **3. Laboratory Examination**

**3.1 Chest X-ray -** Most chest X-rays in asymptomatic patient appear normal. In the patient with acute exacerbation and in chronic severe disease there may be hyperaeration of the lung.

**3.2 Complete blood count -** There may be eosinophilia in some cases. Rising of eosinophil does not determine that the patient has asthma but support the fact that the patient may have allergic condition.

**3.3 Sputum examination -** Eosinophil or Charcot Leyden crystal may be discovered from the sputum taken from asthmatic patient.

**3.4 Lung function test -** All asthmatic patient should be evaluated lung function by spirometry or peak flow meter if possible to assess severity of the disease.

**3.5 Provocation test -** In cases with uncertain or unreliable history of asthma, diagnosis should be confirmed by provocation test such as methacholine test or exercise test.

### **Treatment of asthma.**

#### **1. Allergen avoidance.**

It is essential to determine the specific allergenic factors and the nonspecific factors that precipitate symptoms. Specific allergens are identified by skin testing. Once the specific allergens are identified and confirmed, steps are taken to eliminate or avoid the offending allergens. Often, simply removing environment factors will provide protection from attack (e.g; removal of a dog or cat from the home of a child

sensitive to dogs or cats). House-dust mites can be controlled by removing carpets drapes, and other “dust-collecting” items, such as window blind; vaccuming floors.

## **2. Pharmacotherapy**

Drug uses in asthmatic patient have several route of administration. Currently the inhale form is popularized because of rapid onset of action and less systemic side effect. By considering method of treatment, drug for asthmatic patient can be divided in 2 groups :

### **2.1 Releiver - Drug in this group has bronchodilating effect includes**

**2.1.1 Short-acting beta-2 agonist (salbutamol, terbutaline) - This is a mainstay drug in treatment of acute asthmatic symptom. They are available in several forms such as oral syrup/tablet, injectable solution and inhale form.**

**2.1.2 Methylsanthine (theophylline) - Drawback of this group is narrow therapeutic index which increase possibility of side effect of the drugs.**

**2.1.3 Anticholinergic drug (ipratropium bromide) Available in inhale form, this is a drugs usually combine with short-acting beta-2 agonist to increase potency of bronchodilating effect.**

**2.2 Controller - Drug in this group has no bronchodilating effect but use as a prophylaxis mean. This group includes :**

**2.2.1 Corticosteroids - It has strongest potency, which available both in oral form and inhale form. Oral form has disadvantage because of systemic side effect. Inhale form has less side effect but still recommended to use under physician supervision especially in children.**

**2.2.2 Chomolyn sodium - Available in inhale form and minimal side effect, this drug is safe for young children. Major disadvantage of chomolyn sodium is its high cost.**

**2.2.3 Ketotifen - This drug provided in oral form, has less prophylactic action but good compliance.**

**2.3 Immunotherapy - This is the process for increasing tolerance to allergen that specific to individual patient. Disadvantage of this form of treatment are time consuming (at least 3 years), severe side effect and not totally successful.**

### **3. Rehabilitation Therapy.**

This is treatment to prevent and control the symptoms of asthma by muscles exercise (especially muscle of the chest) and breathing exercise.

### **4. Psychotherapy.**

Even though asthma is not a mental disease and not all asthmatic patients need to see psychotherapist, but mental abnormalities can cause asthma; Therefore, advise given to children and their families in order to reduce worry and emotional stress will help children and their families to cope with the disease.

## **Caring for Children with Asthma**

Children with asthma must care for themselves, and those who take a role in caring for these children are the parents (Who take an especially important role with small children). Children who are growing up and need to spend time outside the home and in other social setting (settings in which they spend more than 7-8 hours in include schools) still need to receive caring for their asthma. People that they interact with in these social setting are teachers and friend, and teachers take an important role in the caring of children with asthmatic attacks in school. From the study of Patcharin Wiangkaew (1997) on the quality of life of children with asthma, it was found that older children have a lower quality of life than in younger children. This is because older children go to school and their mothers are not able to care as much for them. Also, the older children will have to face many different environments that could trigger asthmatic symptom therefore, to make the quality of life of school children with asthma improve (despite the decrease care of the mothers) the people who take a role in the caring of the children in environment outside of the home (replacing the parents), namely, teachers must give the proper care needed. The proper care that teachers should give as follow :

#### **1. Nutrition and Sanitation**

School children are in a stage of growth and need to receive the right nutrition in the right amount. This will ensure that they will develop to the all most . These children should receive at least 3 meals a day and the 5 food groups. Children

that have medical history of allergies to these, milk and egg should be avoided and other supplementary foods should be given.

## **2. Body Sanitation**

Teachers should check to see if children have received the proper bodily cleaning from their homes as well as, check whether their clothering is clean and is being changed everyday. They should also check to see if the children's finger and nails are cut short. If the body is clean, there will be no area for the development of bacteria.

## **3. Rest and Sleeping**

Children with asthma usually causes its victims not to get enough sleep and rest, because asthma attack often occur at night. Therefore, when children come to school, they are often sleep tired. If the children has not had enough rest, the teacher should let the child rest during the lunch breaks so that the child receives at least 8 hours of sleep per day.

## **4. Psychosocial**

School children are an age where they need to interact with and need to be accepted by their peers, therefore, teachers should make sure that children with asthma are involved with the same activities as others children. Their activities should not be limited, but they must be take care consistently when doing some activities such as exercise. As for the emotional aspect, the children should be encouraged to be happy at all times because emotional changes can cause asthma attack.

## **5. Avoids Allergen**

### **5.1 Respiratory Tract Infection**

Respiratory tract infection are a major factor that trigger asthmatic symptom, and therefore children with asthma should be avoid from people with colds. If the children get a cold, the parents need to be notified so that the child can see a doctor for immediate treatment. While the child has a cold, the following should be done

- The child should receive enough sleep and rest. This will make the child stronger.
- Force oral fluid and eat soft diet, eat fruits with vitamin C. This will make the child stronger.

- The body should be kept warm at all times, should not be exposed to the cold weather or moist clothes.
- If the child gets a fever during school, sponge with normal water.
- Teach the child to close their mouth and nose while coughing and not to spit onto the floor, but onto a tissue that should be thrown into a trashcan.
- If the child is coughing severely, and there is a lot of mucus, he or she should drink warm water or a sweet drink in order to melt the mucus and make it easier to cough out.

### 5.2 Weather changes

When there is a change in the weather, children with asthma should not be permitted to go outside the buildings. In cold weather, the children should wear thick and warm clothing.

### 5.3 Excessive Exercise

There are some reasons why children with asthma often get asthmatic attacks after exercising. This is because too much exercise was done, no proper preparation was made, no proper assessment of the body's fitness or mental condition before the exercise. Children with asthma can participate in the same activities as other children except when they become sick or asthma can not be controlled. Teachers should give the following care to children with asthma during exercise.

#### 1. Assessment of the body and mental condition before exercise.

If there is a sickly condition of the body such as coughing, fever, runny nose, or sneezing and if the child is worried or emotionally unstable, then perhaps the child should not be allowed to participate in sport or exercise.

#### 2. History of asthmatic attacks after exercise or sports

If there is history of asthmatic attacks after exercise, appropriate prophylactic treatment with bronchodilator 5-10 minutes before the exercise. The teachers should observe a child at all times while he or she is exercising. If there are signs such as coughing, tightness of the chest, then the exercise should be stopped. Sports that don't cause asthmatic attack after exercise such as sports with short

times, don't require a lot of strength like baseball, gymnastics, swimming for a short while.

#### 5.4 Avoid Crowded Places

Such as industrial factories, traffic, movie theaters, market places, this place children should be avoided. On the other hand, children should be go to places that have fresh air like the beach, mountains.

#### 5.5 Avoid Furry Animals

Animals like dogs, cats, rabbits, as well as the remains of animals like cockroaches should be avoided by these children.

#### 5.6 Avoid Cigarette Smoke

This is as well as car fumes and fire smoke from the burning of trash should be avoided. If this is not possible, then the child should cover up his/her mouth and nose with a clean cloth.

5.7 Avoid from Drugs and chemical substance that could be allergic for example, sprays, aspirin, insecticides and detergents. (A drug that can used instead of aspirin and are safe is paracetamol).

### 6. Caring for Children with Asthma when there is Coughing or Wheezing.

The following help should be care.

#### 6.1 Calm down the child

6.2 Let the child rest in a sitting position (The child should not lay down)

6.3 Observe the situation and if the symptoms get worse, the next step should be taken to help the child.

### 7. Caring for Children with Asthmatic Attacks.

The following should be done.

7.1 Use a drug for bronchodilator (e.g.M.D.I.) that these is guideline for correct use of a metered-dose inhaler. (Wong, 1993 : 739) in the following.

1. Shake the inhaler immediately before use with the cap on the mouthpiece.

2. Hold the inhaler ready to use and remove the ca

3. With the inhaler in an upright position, insert the mouthpiece into the mouth to form an airtight seal between the lips and the inhaler mouthpiece or 2 fingers far from the mouth.

4. At the end of a normal expiration, breath in slowly and deeply while simultaneously depressing the top of the inhaler canister firmly to release the drug mist.

5. Relax the pressure on the top of the canister.

6 Hold the breath for to seconds or as long as possible

7. Remove the inhaler and breath out slowly through the nose.

7.2 If the child don't get better, wait 15 minutes and re-used bronchodilator.

7.3 Tell information to their parents.

7.4 Take the child to rest in fowler position.

7.5 Teachers should be with the child at all time and given encouragement so that the child will feel warm and secure.

7.6 Teach the child proper breathing when asthmatic attacks start to happen because this can stop the attack from happening. Proper breathing techniques are as follow. (Tasneeya Wangsachantanont, 1993 : 89-90).

- The child should sit in a chair or lie on the floor with both hands placed on the chest.

- Slowly inhaling, until the chest has expanded (when the hand move out), count 1-2-3 while inhaling so the stomach out.

- While exhaling make the mouth as if to execute a whistle and breath out the air slowly and count mentally 1-2-3 so that there is very little dead space in the lungs.

- To breath in and out is breathing exercise 1 count, and must be used the diaphragm and abdominal muscles to breath.

7.7 Make the environment peaceful, with good air ventilation, so the child get a lot of rest.

7.8 Teach the child cough to relieve the mucus, the right way of coughing is before coughing to inhale fully and hole your breath steadily and the cough out hard by using the abdominal muscles. The strength of the cough will aid in

pushing out the mucus. Teachers stimulate the child to drinking a lot of warm water, by drinking a little at one time, but drinking often, the mucus will not be so thick and stickly.

7.9 After an asthmatic attack, there will be a lot of sweat, so the child should be wiped dry and be put in dry clothes for comfortability.

Giving the proper care for students with asthma while care the children not to be limited from activities and playing. The children will be able to do the same things that their peers are doing and this will create happiness and improve the quality of life of the students in the school. The effects on the children will be lessened.

### **Effects of Asthma on Children.**

#### **1. Body Effects.**

In children who have had asthma for a long time, it is found that the trachea is become. If the child has had severe asthma since a very young age, there will be a lot of dead space retention in the lungs and the chest will expand and it is Barrel chest. If the child has status asthmaticus, it may cause the child to die from respiratory failure; or other diseases such as pneumonia atelectasis or pneumothorax . Prolonged asthma may also inhibit growth and the child may have less weight and height than a normal child. This is due to constant lack of oxygen and loss of appetie. The child may also have a very round and full face from the side effect of using steroid (Millet, 1992 : 557; Betz, Hunsberger & Wright, 1994 : 1233) In addition, the child will be constantly tired from lack of sleep and have difficulty of breathing because children will usually experience asthmatic attack or others symptoms at night or near down (Nation Institues of Health, 1997 : 7; Wong, 1995 : 1419)

#### **2. Effects on the Intellect.**

Asthma is the most common cause of school absences and is responsible for a major portion of peditric admission to emergency rooms and hospital (Later & Kicekhefer 1992 cite by Wong, 1995 : 1416; Campbell & Glasper, 1995 : 546). From the study of Cater, it was found that 1 in every 8 in children 9 years old will miss school more than 30 days in 1 year due to asthma. A survey of 200,000 in 4-17 years old students, it was found that 5% of the children surveyed not to be able to sleep at night and 60% felt sleepy and would fall asleep during school time (Action Asthma

1993 cite by Carter, 1995 : 290) These children miss a lot of school and don't have concentration while learning due to the fact that they are always tired. Often, they are unable to catch up with the other children and are slow to develop intellectually.

### **3. Emotional, Social and Personality Effects.**

Students with asthma will experience fear and worry because when children experience difficulties in breathing and associate in with staying alive. The more often they experience difficulties, the sadder the children will become. They may express this through anger, depress, behavior withdrawal (Jackson & Saunder, 1998 : 941) From the study of Similarly, et.al., it was found that children with asthma show anger and hopelessness and helplessness more often than normal children. (Lehrer.et.al ; 1993 : 6) Children with asthma are often limited from activities by their parents and teachers due to their sickness or fear that the asthma will worsen, if these children play hard and participate in a lot of activities. They often isolate themselves from their peers and don't perform well in the various activities, especially in sport. Because of these, children are often feel inferior to the other children, feel that their self-esteem is decreasing, that they are dependent on others, and that they lack the experiences that normal children have (Wong, 1995 : 1424; Larter & Kicekhefer, 1992 : 68) From the study of Hambley, et.al it was found that. Boys have a high tendency to be isolated from the society and that girls have a high tendency to experience low self-esteem. Neuhaus found that children with asthma have difficulty in adapting more than normal children (Lehrer, et.al; 1993 : 6) . In some body where children are spoiled or protected by their parents (Due to fear that if the children become frustrated, an asthmatic attack will occur), they will develop tendencies to become too dependent on the others, will be disobedient or will have difficulties in adjusting to the society when they have to go into society other than the home like school.

From what has been mentioned above, can be seen that children with asthma not only have experience sickness, pain, treatment, but also have effect to bodily, intellectual, emotional, social, and personality. Presently, treatment stresses the capability to carry-on with daily activities despite the disease. Although the parents take an important role in the caring of children with asthma, school teachers also take an important role because school children spend a lot of time outside the home and in school instead. To develop teacher' knowledge on asthma and caring management for

student with asthma, advice should be given. This will also improve their skill in effectively. (Somjit Hanucharoenkul, 1994 : 45; Orem, 1995 : 19) Teaching and giving knowledge to teachers is a method of learning. In normal learning, teachers are able to adapt the basis they have learned to the experiences they have gained from other environments in order that they teaching fits the learner. This makes teaching more effective. When learning occurs, correct behavior will follow because learning is the first step and is a part of the development of skills needed in the next steps. Because of this, nurses as they are teachers should understand the following basics of learning.

## **Learning**

**Learning means the change in behavior that is a consequence of repeated experiences (Penpilai Rithakananond, 1993 : 1) .**

**Learning means the process of changing existent behavior to new behavior that is quiet permanent. This new behavior is a result of experience or practice and is not a consequence of natural response, instinct, situation, accident or coincidence (Aree Panmanee, 1991, 86).**

**In teaching, the teachers should have theoretical knowledge about learning so that it can be used to help learner to learn. The importance of learning theory to teachers is as follow (Oranant Hanyudth, 1989 : 124)**

**1. Help teachers understand the process of learning so they can provide the proper learning situation. Teachers provide the stimulating environment to make learner response behavior-wise as well as stimulate their thinking process.**

**2. Determine how the form and style of teaching should be in order to a desired behavior .**

**3. Help in explaining and analyzing the behavior of learner in order to know how to change to a desired behavior.**

**In Psychologist, learning theories are classified into different groups, and presently, learning theories are classified into 2 large groups (Dorothy & Mary, 1994 : 34-38)**

- 1. Stimuli – response association or behaviorism.**
- 2. Cognitive field theory.**

Hull, an American psychologist, who is a behaviorist has developed the learning theory known as Hull's reinforcement theory. This theory stresses the association of stimuli and response with addition of a factor organic (S-O-R Theory, Stimulus – organism – Response Theory) S-O-R are important factor in learning process (Stephen, 1991 : 30; Ouinn, 1995 : 89)

1. Stimulus means different things or situations that surround the learner (such as lessons, slides, activities, textbook) this things will stimulate through the sensory organ such as the skin, eyes, nose, ears, tongue of the learner that cause the learner to respond to the stimuli. Therefore teaching must plan ahead to determine which stimuli will elicit the desired response in the learning process.

In this study, manual were given as a stimuli for learning and were considered the right stimuli because they could be re-read and reviewed.

2. Organism means the learner or the respondent to the stimuli who responses after the stimuli is intercepted by the sensory organs. The respondent must interpret the stimuli by analysis, synthesizing and defining. It is hard to explain the intricate process of learning but, in conclusion, while learning a process will develop based on acknowledgement, inspiration, skill, intellectual, knowledge and past experience.

3. Response means action on behavior that a learner exhibits when receiving stimuli. The responses can be classified into 3 types which are (Chalermopol Tansakul, 1998 : 17; Dorothy & Mary, 1994 : 22-24).

3.1 Response in the form of thought, knowledge analysis, synthesis, and criticism which are exhibit by speech, informing or conclusions.

3.2 Response in the form of feeling, values, which are exhibit through facial expression (such as smiling , or showing interest in that which is being taught).

3.3 Response in the form of the exhibition of skill or movement which is exhibit by action (such as running or reading).

In this study, response in the form of knowledge about asthma and the psychomotor domain or practice was in caring of students with asthma by their teachers. In the learning, three important factors must be present, if one factor is missing, learning will not occur. Therefore, teachers must give importance to these three factors which are.

- Preparing a stimulating environment by determining form and style of teaching, activities, documents and instruction media.
- Preparing the learner by getting to know them and arranging the matching teaching material, learning experience and activities with the need of the learner.
- The teacher determine desired response from the learner after lesson.

### **The Learning Process.**

Contains the following stage (Oranant Hanyudh, 1989 : 117-118)

1. Perception is the perceive of different things that are intercepted by the learner through the sensory organs. The learner will selectively acknowledge and show interest in things according to their the objects eye-catching ability interests and immediate needs. At the same time, there will be classification and interpretation by the use of the inteclect and past experiences. Therefore, acknowledgement by each individual can be different, depending upon the functioning and condition of the sensory organs, the connect interpretation, and effort which the teachers should take into consideration.

2. Receiving of Knowledge. After the learner has interpreted the things that were acknowledged, they will be received as new knowledge by changing behavior in the form of understanding but not in the form of actual executed behavior. The changed behavior will be executed only when a change occurs, such as when asked a questions, there is the ability to answers.

3. The storing of Knowledge. Knowledge received is stored as memory and can be retrieved for use at any time. There is short-term memory which can stored information for up to 30 minutes before forgetting (the information) occurs. There is also long-term memory, where knowledge can stored for an unlimited period of times, and from which knowledge can retrieved at all times. The stored knowledge may fade when other stimuli or other knowledge is acquired in its place. Good teaching should make the learner develop the long term memory because it will be an important factor in the actions or behavior.

4. The Retrieving of Knowledge. After knowledge has been stored as memory, it is retrieved by remembrance. The ability to inform or execute behavior about things that have been learnt, is considered a sign of a complete learning process.

Learning can occur in many ways, it can be directly or indirectly, by oneself or by the guidance. Giving advise or teaching is an important way of direct learning. Teaching is also a duty and a role of nurses. Teaching activities are activities that nurses an also freely, with unique way of decision making. Nurses should take this seriously. (Puangrat Bunganurak, 1989 : 44) In teaching nurses should choose the appropriate teaching style for each disease, condition and the learners' situation so that the objective of teaching is achieved.

### **Form of Teaching**

From of teaching are often classified into two large groups as follows :

1. Individual Teaching. Individual teaching is teaching on a one-on-one basis which can be classified as (Srinual Poomcharoen, 1989 : 327-328; Nancy, et.al, 1992 : 263)

#### **1.1 Individual Teaching by Face to Face.**

Is a very effective way of teaching because the teachers can correct and advise the learner about problems more than others ways. The teachers can notice facial expression and feeling. The teachers can teach skills and can open-up opportunities for the learner to ask additional questions. At the same times it stimulates change in behavior in the desired direction. The disadvantage of this method is that it takes up time, use a lot of human and expensive.

#### **1.2 Individual Teaching not Confront.**

Is a way of teaching in which the learner has no chance to ask questions or respond on a face to face basis. Instruction media is an important learning device here such as teaching by using ready-made lessons and independent study.

### **2. Group Teaching.**

Means that there are 2 or more learners present. Learning occurs as a result of contact between the teachers and the learners in a group. Because learner in a group can learn from each others, group teaching can be classified into 2 groups (Jintana Yunipan, 2532 : 383)

#### **2.1 Small group. There are 2-35 learners.**

2.2 Medium to large group. There are 35-60 learners or more than 60 learners.

The advantages of group teaching are plenty. There can have an exchange of ideas among the members of a groups. This stimulates an exchange of opinions which stimulates change in behavior. Many learners can be taught at once. The disadvantage is that if it is a big group, it will be hard to assess the effectiveness of the teaching in each individual, and their problems cannot be dealt accordingly.

In this study, group teaching was used with small groups of about 3-15 persons so that learners which are teachers were able to exchange experience about caring management for students with asthma. It was also supposed to change viewpoints, knowledge and behavior in one direction on a larger scale than with individual teaching.

An important factor that will help the teaching reach goal is instruction media to utilize the instruction media to make illustration of abstract ideas to concrete.

### **Instruction Media**

Instruction media is the middle channel between the teachers and learner and helps the learning and teaching to go in the desired direction.

Each type of instruction media has different purpose and different methods dependent on the teaching material, the teacher, learner, time place and different situation. Instruction media have many types such as actual objects, advertising, documents, slides, tapes, manual,etc. There is no one instruction media that can be classified as good and complete. Each type of instruction media has its own unique characteristics. Reason and above –metioned basics should be used when choosing a particular instruction media.

In this study, the instruction media that was chosen was the manual so that the teacher would acquire knowledge and behavior associated with caring management for student with asthma.

### **Effects of Teaching by Manual on Knowledge and Behavior.**

Manuals are printed material to make things easier to understand and to enable self-study. It can be used both as a major or supporting teaching media. It enable self-study without limiting time because a person can read it anytime and can even re-read again and again. If read often, it can enable a more detailed understanding so it is

used both as a major and a supporting media. For example, in the study of Nitaya Worachasriyanond (1988), The result of Teaching by Manual on Knowledge Attitude and Behavior in the Patients with COPD. It was found that self-study led to an increased knowledge of self-care, the patient of COPD can breathe by using the abdominal muscles, diaphragm and coughing to relieve mucus in the right way. Similarly, the study of Varin Binhosen (1993) studied the effects of Learning by Handbook on Knowledge and Practice of Epileptic Patients. It was found that the patient who use handbook have more knowledge and better behavior than patients who received knowledge as usual. There are also studies that use manual as supporting media such as the study of Malai TanTani (1984). Which studies The Effects of Planned Instruction on Feeling Sadness, Image, General Behavior and Sexual Behavior in Patient who had an Operation to Remove Uterus and both Ovaries. It was found that the patient who received knowledge by planned teaching and read the manual had more knowledge and better behavior than people who advised as usual. And the study of Sunee Sunthornmeesathien (1988) studies the Effects of Teaching on Knowledge, Health Belief, and Behavior of Pregnancy with Syphilis and husband. It was found that the Pregnancy with Syphilis who received knowledge by manual had more knowledge and better behavior than Pregnancy with Syphilis who received as usual. There is the study of Somjai Putapitakpol (1989) which studies the Effects of Planned Instruction on Knowledge and Health Belief in Thalassemia carrier. It was found that Pregnancy with couple who received knowledge from researcher and manual had more knowledge, health belief than Pregnancy and couple who received as usual from other health staff.

From these mentioned research, it can be seen that the effects of using a manual as a teaching instruction media; as a major or a supporting one, are that the patients will have a higher knowledge level, correct behavior than patients who received the normal as usual. In past research, associated with studying the effects of the learning process, a lot of emphasis has been given to the self-care. Little research has been dedicated to studying the teaching and advising of those people who must care for the patients, however-research similar in theme to this is the study of Jinarut Srepatarapinyo (1997) which studies the Effects of Teaching Skill Training for Caring of Cerebrovascular Patient on Care givers' Caring Ability and Patients' Health Status.

The study was conducted in 2 groups, the control and experimental group. The experimental group received teaching and training by the researcher by using manual . The control group received normal advise from doctors and nurses. The result of this study found that the ability to care for patients with cerebrovascular disease in the experimental group was higher than in the control group (Significant in.001), when patients go home for 1 month. The patients that are cared by experimental group received higher health status than the patients who cared by control group.

From all of this, it can be seen that the result of teaching by using manual are that the patient himself, or the caregiver have a better ability to care for themselves or others. Although little research has study on the effects of using a manual as a teaching media on people who care for patients, the results should be similar to the research on the self-care by using manual. There is an interest for using a manual as a instruction media for primary school who care for students with asthma. It is hope that knowledge and understanding about the caring of student with asthma will develop. This will help to improve the quality of life of student with asthma while they are in school.

## CHAPTER III

### MATERIALS AND METHODS

This research is a quasi-experimental research : Pre test - post test control groups, to study the effects of teaching on knowledge and caring management to primary school teachers of student with asthmatic symptoms.

#### **Population and Samples**

The population is the teachers of primary school students with asthma in the industrial areas of Rayong Province.

Samples are primary school teachers with 3 or more students with asthma.

#### **Sampling**

1. A method survey of children with asthma in the age group of 10 – 12 years old that had been admitted for treatment of asthma in the Pediatric unit at Rayong Hospital between year 1996 – 1998 .Showed that a total of 67 children with asthma had been admitted. Record data were names, age, and address which were used to classify them into groups based on their tambon of residence. There are 3 Tambons with the highest number of children with asthma; Tambon Banlang, Tambon Chuegnune, Tambon Tapong

Most children in the industrial areas of Rayong will attend school according to the Tambon in which they reside, thus the schools selected for the study are as follow;

- Tambon Tapong - Wat Tapong Nok School
- Tambon Banlang - Chumchon Wat Banlang School
- Tambon Chuegnuen - Ban Nong Jok School
- Wat Plauk Ked School
- Wat Kao Klow School

2. Survey the selected school to determine the number of students with asthma in each school.

3. It was discovered that the number of students with asthma in each school are as follows;

Wat Tapong Nok	25	students
Chumchon Wat Banlang School	5	students
Ban Nong Jok School	8	students
Wat Plauk Ked School	3	students
Wat Kao Klow School	9	students

4. Teachers are selecten who are involved with asthmatic students , to include homeroom teachers, school nurses, and physical education teachers in each school . The total number involved are as follows;

Wat Tapong Nok School	15	teachers
Chumchon Wat Banlang School	6	teachers
Ban Nong Jok School	6	teachers
Wat Plauk Ked School	3	teachers
Wat Kao Klow School	6	teachers

5. The schools are divided into two groups, group A and group B with equal numbers of teachers in each group. They are divided as follow;

- Group A - Composed of Wat Tapong Nok School and Wat Plauk Ked School with a total number of 18 teachers.
- Group B - Composed of Wat Banlang School, Ban Nong Jok School and Wat Kao Klow School with a total number of 18 teachers.

6. A draw is made between the 2 groups to determine which will be the control and which will be the experimental group. The one that is drawn first will be the experimental group while the remaining will be groups the control group. The result is

- Group B - Experimental group
- Group A - Control group

## **Instruments**

### **1. Instruments used in Conducting the Research**

A manual was given to each teacher with advice on how to care for students with asthma. It is divided into 2 parts, part 1 gives knowledge about asthma; what it

is, how it occurs, what causes it, its symptoms, and how to treat it. Part 2 includes caring for students with asthma in school, indicating the activities they can do, how to prepare them for exercise and how to manage when students with asthma have coughing, or wheezing, and when chest tightness and difficult breathing occurs. This manual was adapted from a manual for teachers and school nurses to care for and manage students with asthma written by Pomsri Sriadsadapon and others in the research project of Efficiency of School – Based Asthma Intervention Program and Quality of Life of Students with Asthma

### **Checking validity of instruments used in the research**

The researcher took the manual to experts in the field for review of its precision of to content validity, sequence of information, appropriateness of pictures and words used. The review panel consists up of 3 participants as follows;

Two Pediatricians with expertise in the field of asthmatic disease

One Instructor nurse with expertise in caring for children with asthma

After the review and suggestions, researcher made corrections according to the suggestions and distributed it to 5 teachers with the same qualification as the sample in order to test the clarity of the choice of words. If there are no further deficiencies, the sample manual is then printed and later distributed to teachers who care for students with asthma

## **2. Instruments used in collecting data**

### **2.1 Questionnaires used in evaluating knowledge about asthma and how to care for students with asthma in school**

The questionnaires were adapted from the questionnaires of Pornsri Sriussadaporn and others in the research project of Efficiency of School Based Asthma Intervention Program and Quality of Life of Student with Asthma, and from a questionnaire about asthma knowledge of Davina J.French and Annemaree Carroll in their research on knowledge on asthma and knowledge on caring to student with asthma. There was a total of 58 questions. Each question can be answered yes, no, or do not know.

#### **Criteria for awarding points**

If the answer is yes and the sample answers yes

1 point

If the answer is yes but the sample answer no or don't know 0 point

If the answer is no but the sample answers yes or do not know 0 point

If the answer is no and the sample answers no 1 point

There are 49 questions with "a yes" answer. They are numbers 1-16,18 - 23, 25,28 - 36,38-40,42 - 46,48 - 51,53 - 54,56 - 58

There are 9 questions with "a no" answer. They are numbers 17, 24,26 - 27,37,41,47,52,55

The maximum points obtainable from the questionnaire is 58 while the minimum scores is 0.

A score of 80 % or more ( 47 points and above ) means that the teacher has a high knowledge on asthma and caring for to students with asthma.

A score of 60 - 80 % ( 35 - 46 points ) means that the teacher has an intermediate knowledge on asthma and caring for students with asthma.

A score of lower than 60 % ( 0 - 34 points ) means that the teacher has little knowledge on asthma and caring for students with asthma.

## **2.2 Questionnaire about caring management of primary school teachers of student with asthma**

The researcher also adapted this from the questionnaire of Pornsri Sriussadaporn and others .

The questionnaire is divided into 2 parts.

Part 1. Daily care for students with asthma 19 questions

Part 2. How to care for and manage students having  
asthmatic attacks in school 12 questions

### **Type of Question**

The questions are about teachers' behavior in caring for students with asthma.

### **Type of Answers**

The answers have a 3 point. These are .

Never - Meaning that the teacher has never applied the indicated behavior.

Sometimes - Meaning that the teacher applies the indicated behavior  
On some days or sometimes when the incident occurred

**Often / Always** - Meaning that the teacher applies the indicated behavior everyday or every time that the incident occurred.

In the questions, if the indicated incident such as coughing wheezing or asthmatic attack never occur, the sample should mark in the space never occur and he/she will then be eliminated from the sample for this research.

### **Criteria for Awarding Points**

Never	1	point
Sometimes	2	points
Often / Always	3	points

The points for behavior in caring management are totaled in 2 parts.

Part 1 A total of 57 points with a minimum of 19 and a maximum of 57

Part 2 A total of 36 points with a minimum of 12 and a maximum of 36

**The results from part 1 and part 2 are analyzed as follows;**

#### **Part 1. Daily care for student with asthma**

A score of 80 % or more ( 46 points and above ) shows that the teacher's daily care for student with asthma is highly correct.

A score of 60 – 80 % ( 35 - 45 points ) shows that the teacher's daily care for student with asthma is intermediately correct.

A score of lower than 60 % ( 19 - 34 points ) shows that the teacher's daily care for student with asthma is highly incorrect.

#### **Part 2. How to care for and manage students with asthmatic attacks.**

A score of 80 % or more ( 29 points and above ) shows that the teacher's care for and management of students with asthmatic attacks is highly correct.

A score of 60 – 80 % ( 22 - 28 points ) shows that the teacher's care for and management of students with asthmatic attacks is intermediately correct.

A score of lower than 60 % ( 12 - 21 points ) shows that the teacher's care for and management of students with asthmatic attacks is highly incorrect.

### **Testing the Quality of Instruments Used in Collecting Data**

#### **1. Validity**

The researcher took the 2 questionnaires to the same experts who evaluated the manual, to check for the precision of the information.

The same process was followed where by corrections are made and more precise information is provided.

## 2. Reliability

### 2.1 Questionnaire Used in Evaluating Knowledge about Asthma

The researcher tested the finalized questionnaires on teachers with similar characteristics to the sample. Ten teachers were selected and the results were tested according to the formula of Kuder- Richardson K-R-20 to check its reliability.

$$\text{K-R-20} : r = (n / n-1) (1 - \sum pq / S_t^2)$$

Where  $r$  is the composite for precision of the equation.  
 $n$  is the total number of questions.  
 $p$  is the proportion of the teachers with the correct answers.  
 $q$  is the proportion of the teachers with wrong answers  
 and  $S_t^2$  is the deviation of the point for the total number of participants in the questionnaires.

The reliability of the questionnaire = 0.87[sample of 10 teachers]  
 = 0.89 [sample of 36 teachers]

### 2.2 Questionnaire about caring Management of Primary School Teachers of Students with Asthma

A similar process to the above is followed, except this time the results are tested using Cronbach's Alpha Coefficient formula.

$$\text{Where } \alpha = (n / n-1) (1 - \sum si^2 / S_t^2)$$

$\alpha$  is the composite for reliability  
 $n$  is the total number of questions in the questionnaire  
 $\sum si^2$  is the summation of item variance  
 and  $s_t^2$  is the total test variance

The reliability of the questionnaire = 0.84 [sample of 10 teachers]  
 = 0.84 [sample of 36 teachers]

## **Method of Collecting Data**

The researcher was responsible for collecting data. First a permit slip and recommendation letter from faculty of Graduate Studies, Mahidol University was obtained to the headmaster or principal of each of the primary schools in the study to ask for their cooperation and sent assistance in the research.

### **The experimental group**

1. The researcher requested a meeting with the teachers, who are involved in the care of and interaction with students with asthma, and asked for their cooperation to participate in the sample. Details about the rules and rights of participants are pointed out and the desertion to withdraw from the research is available the participants without any adverse effect.

2. Then the process of collecting data from Monday to Friday between the time of 8.00 AM – 4.00 PM commenced. The teachers were requested to fill in their personal information on a record file before they begin to answer the questionnaires. “The questionnaire about caring management for students with Asthma” is completed first before answering “The questionnaire on Knowledge about Asthma”. This was to prevent the answers from the asthma knowledge questionnaire having an effect on the answer for the caring management questionnaire. The total time for completing the whole questionnaire is about 30 minutes.

3. After the questionnaires are handed in the researcher checks for completeness of the answer. If there are any questions unanswered, the researcher will ask the teachers to complete the questionnaire fully.

4. After evaluating the results, the researcher will then proceed to educate the teachers as a group, 1 group for each school, by using the manual. The process of educating the teachers is divided in 2 sessions

Session 1 - teach general knowledge about asthma.

Session 2 - teach teachers about caring and management for students with asthma in school.

Each session takes 1 hour and is on consecutive days to foster consecutive knowledge.

5. After the learning sessions, the teachers are requested to answer the questionnaire about knowledge of asthma immediately, and a manual is handed out to



each teacher, so that it can be used it as a guideline on how to handle students with asthma in school.

6. A follow-up visit of the 3 schools (experimental group) in the study to track the progress of teachers in caring for their student with asthma is convened once a month. Then, during those visits, recommendations and suggestions are given to overcome some obstacles or rectify some problems. The follow-up visits are as follow.

February 1 time

March 1 time

May 1 time

Note : 1<sup>st</sup> April to 15<sup>th</sup> of May is during the summer vacation period

7. After the completion of 3 months of educating the teachers appointments are made with the teachers (during the school term) to reevaluate their knowledge about asthma and caring management of students with asthma. This is again evaluated through the questionnaire, with the questionnaires given in the same order as before.

8. The teachers who participated in the research were thanked by researchers.

9. The researcher completed the collection of all the necessary information from the 3 schools.

#### **The control group.**

Steps number 1-3 are undertaken in the same way as the experimental group.

4. After 3 months, another meeting is set with the teachers to complete the questionnaire in its specified order again the same, as the experimental group.

5. After the completion of data collection, the control group are given knowledge and training by using the same manual as the experimental group. The manual are handed out to each teacher so that they can use it as a guideline on how to handle students with asthma in school.

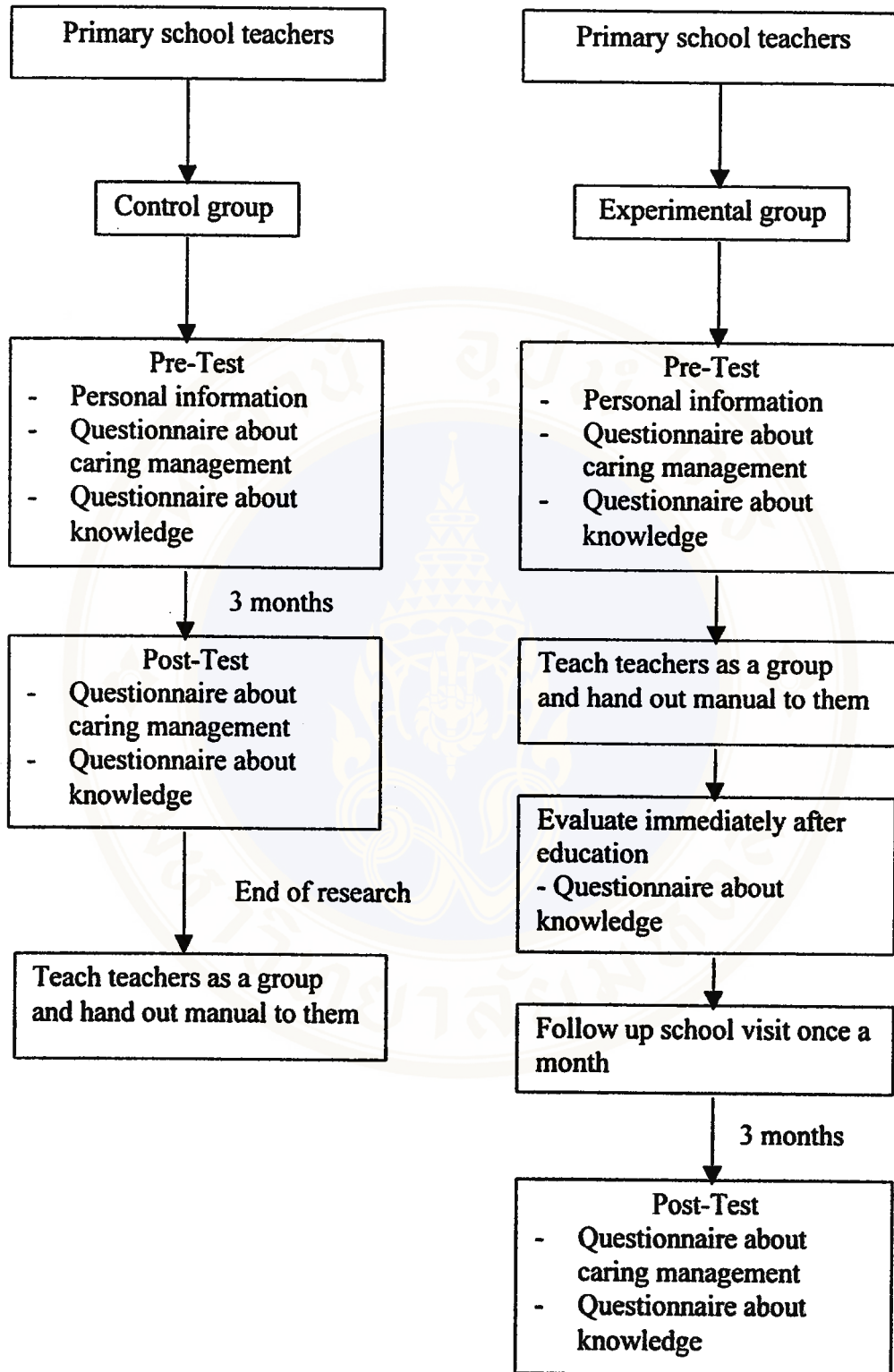
6. The teachers are thanked by the researcher

7. All the data are prepare into statistics in order for it to be analyzed.

#### **Analysis of Data.**

The collected data were analyzed by computer, using the SPSS (Statistical Package for the Social Sciences) program with the details of analysis as follow.

1. Frequency and percentage for the sample group, determine by the information given were measured.
2. Arithmetic mean and standard deviation of the total points on teachers's knowledge about asthma and caring management for students with asthma in school were calculated. This was done at three stayed for the control and experimental group : pre education, immediately post education and 3 month after education,
3. The mean scores between the control and experimental group on knowledge about asthma, on daily care for students with asthma, and on management of students with asthmatic attacks in school were compare. This was done by ANCOVA using the points from asthma knowledge and caring management before the education and training as a covariate.



Steps in collecting data in the control group

Steps in collecting data in the experimental group

Figure 2. Steps in Collecting Data

## CHAPTER IV

### RESULTS

#### Results.

The purpose of this research was to study the effect of teaching primary school teachers on knowledge and caring management of students with asthmatic symptoms. The sample group is composed of primary school teachers having contact with and interacting with asthmatic students in their school. The sample of teachers were divided into experimental and control group, each having 18 members .

**Experimental group** - were taught as a group by the the researcher using a manual as a guideline, and manuals are handed out to each participating teacher to use for review after the teaching.

**Control group** - Were not taught and, have to learn from normal situations.

The results of the findings are presented in the tables as follows.

**Part 1. Characteristics of sample group.**

**Part 2. Results of the analysis on level of knowledge about asthma and behavior of caring for students with asthma in school of teachers before and after study.**

**Part 3. Results of comparing the mean scores of knowledge of teachers about asthma and caring management for students with asthma .**

**Part 1** Characteristic of sample group.**Table 1.** Number and percentage of the sample groups classified by education and status in school.

Characteristics of sample group	Experimental Group (n = 18)		Control Group (n = 18)		Total	
	Number	%	Number	%	Number	%
	<b>Level of Education</b>					
Below Bachelor degree	1	5.56	4	22.22	5	13.59
Bachelor degree	17	94.44	14	77.78	31	86.11
<b>Status in School</b>						
Homeroom Teachers	16	88.89	14	77.78	30	83.33
School nurse	0	0	1	5.55	1	2.87
Physical educating instructor	2	11.11	3	16.67	5	13.89

**From table 1 .** It was found that in both the experimental and control group most had finished their education in the bachelor level and were homeroom teachers.

**Table 2.** Number and percentage of sample group classified by the level of knowledge they received about asthma, history of asthma, family history of asthma, awareness that there are students with asthma and opinions in receiving knowledge about asthma and capability in caring for students with asthmatic attacks in school.

Characteristics of sample group	Experimental Group (n = 18)		Control Group (n = 18)		Total	
	Number	%	Number	%	Number	%
<b>Level of knowledge about asthma</b>						
Have received	5	27.78	6	33.33	11	30.56
Have never received	13	72.22	12	66.67	25	69.44
<b>History of asthma</b>						
Yes	2	11.11	2	11.11	4	11.11
No	16	88.89	16	88.89	32	88.89
<b>Family history of Asthma</b>						
Yes	3	16.67	4	22.22	7	19.44
No	15	83.33	14	77.78	29	80.56
<b>Known that there are students with asthma</b>						
Known of all students with asthma	4	22.22	4	22.22	8	22.22
Known of some students with asthma	6	33.33	10	55.56	16	44.45
Not known of students with asthma	8	44.45	4	22.22	12	33.33
<b>From whom was this awareness made apparent.(answer more than 1).</b>						
Parents of the students	5	27.78	9	50.0	14	38.89

**Table 2.** Number and percentage of sample group classified by the level of knowledge they received about asthma, history of asthma, family history of asthma, awareness that there are students with asthma and opinions in receiving knowledge about asthma and capability in caring for students with asthmatic attacks in school.(Continued.)

Characteristics of sample group	Experimental Group (n = 18)		Control Group (n = 18)		Total	
	Number	%	Number	%	Number	%
	The students themselves	6	33.33	11	61.11	17
Student's health card.	0	0	11	61.11	11	30.55
The opinion about all teachers should receive knowledge about asthma in children						
Agree	18	100	18	100	36	100
Disagree	0	0	0	0	0	0
The opinion about most teachers are Capable of caring for students with asthmatic attack in school						
Agree	17	94.44	18	100	35	97.22
Disagree	1	5.56	0	0	1	2.78

**From table 2.** It was found that most of in both the experimental and control group were never received knowledge asthma, did not have history of asthma, and did not have family history of asthma. Most of the experimental group are not aware about students with asthma. As the control group, most were aware about some students with asthma through the students themselves. Most of the experimental and control group agree that teachers should receive knowledge about asthma in children. Also, they agree that teachers are capable of caring for students with asthma attack in school.

**Table 3.** Number and percentage of sample group classified by experience in caring asthmatic children, having students with asthmatic attack in school and caring management when there are student with asthmatic attack in school.

Characteristics of sample group	Experimental Group (n = 18)		Control Group (n = 18)		Total	
	Number	%	Number	%	Number	%
	Experience in caring asthmatic children					
Yes	4	22.22	3	16.67	7	19.44
No	14	77.78	15	83.33	29	80.56
Have experience met students with asthmatic attack in school						
Yes	2	11.11	6	33.33	8	22.22
No	16	88.89	12	66.67	28	77.78
How do you manage when they met students with asthmatic attack in school (answer more than 1)						
Let them rest and if they get better, let them resume the class as usual	1	50.0	5	83.33	6	75.0
Give them the medicine they always used.	1	50.0	1	16.67	2	75.0
Inform parents	0	0	1	16.67	1	12.50
Bring them to the hospital	0	0	1	16.67	1	12.50

**From table 3.** It was found that in both experimental and control group most have not experienced in caring asthmatic children, have not experience in having students with asthmatic attack in school and experience in management when have students with asthmatic attack by let them rest and if they get better let them resume the class as usual.

**Part 2** Results of the analysis on level of knowledge about asthma and behavior of caring for students with asthma in school of teachers before and after study.

**Table 4** Number of sample in experimental group classified by level of knowledge about asthma, level of behavior of daily care for students with asthma in school and behavior of care when students have asthmatic attacks in school before, immediately after and 3 months after study.

Variables	Experimental group (n = 18)			
	n	Before	Immediately	After 3 months
<b>Level of knowledge on asthma</b>	<b>18</b>			
High		2	18	16
Moderate		9	0	2
Low		7	0	0
<b>Level behavior of caring</b>				
<b>Daily care in school</b>	<b>18</b>			
Highly correct		4	-	13
Moderate correct		10	-	5
Lowly correct		4	-	0
<b>Caring when students have asthmatic attack in school</b>	<b>12</b>			
Highly correct		1	-	9
Moderate correct		1	-	3
Lowly correct		10	-	0

**From table 4.** It was found that in the experimental group before study, most had knowledge about asthma in a medium level. Immediately after study and 3 months after study, most had knowledge about asthma in a high level. Before study, most had behavior of daily care for students with asthma of an moderate correct level. Three months after study, most had behavior of daily care for students with asthma in highly correct level. Before study, most had behavior of care when students have asthma attack in school of lowly correct level. Three months after study, most had behavior of care when students have asthma attack in school of highly correct level.

**Table 5.** Number of sample in control group classified by level of knowledge about asthma, level of behavior of daily care for students with asthma in school and level of behavior of care when students have asthmatic attack in school before, and 3 months after study.

Variables	n	Control group (n = 18)	
		Before	After 3 months
<b>Level of knowledge about asthma</b>	<b>18</b>		
High		2	6
Medium		10	4
Low		6	8
<b>Level behavior of caring</b>			
<b>Daily care in school</b>	<b>18</b>		
Highly correct		5	3
Moderate correct		8	9
Lowly correct		5	6
<b>Caring when students with asthmatic attack in school</b>	<b>14</b>		
Highly correct		0	0
Moderate correct		5	3
Lowly correct		9	11

From table 5. It was found that in control group before study, most had knowledge about asthma of medium level. Three months after study, most had knowledge about asthma in low level. Before study, most had behavior of daily care for students with asthma in moderate correct level. Three months after study, most had behavior of daily care for students with asthma of intermediately correct level. Before study, most had behavior of care when students have asthmatic attack in school in lowly correct level. Three months after study, most had behavior of care when students have asthmatic attack in school in lowly correct level.

**Table 6** Number of sample group that answered right and wrong, knowledge about asthma classified by characteristic of asthma, mechanism of asthma before and 3 months after study.

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before	After 3 months	Before	After 3 months
	r/w	r/w	r/w	r/w
<b>Characteristic of asthma</b>				
Is a respiratory disease	6/12	13/5	6/12	5/13
There is chronic inflammation of the airways	13/5	17/1	9/9	7/11
Is more sensitive or hyperresponsive to stimuli	16/2	18/0	11/7	12/6
Using inhaler can relief airflow limitation	15/3	18/0	16/2	16/2
When there is severe airflow limitation and proper treatment is not given at once, it may cause death.	11/7	18/0	16/2	15/3
<b>Mechanism of asthma</b>				
Bronchoconstriction	12/6	18/0	16/2	10/8
Increased mucus secretion	13/5	18/0	13/5	10/8
Swelling of the airway wall.	8/10	14/4	10/8	6/12

From table 6. It was found in the experimental group, three months after study the number of sample, who answers right about the characteristic of asthma and mechanism of asthma, increased in every question. For the the control group, the number of sample who answers right did not increased, while for some questions it decreased.

**Table 7.** Number of sample that answered right and wrong knowledge about asthma classified by factor that causes asthma before and 3 months after study.

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before	After 3 months	Before	After 3 months
	r/w	r/w	r/w	r/w
<b>Factors that cause asthma</b>				
Respiratory tract Infection, especially viral infection	12/6	18/0	13/5	12/6
Weather changes such as too hot, or too cold, raining.	17/1	18/0	17/1	17/1
Emotional changes such as anger, sorry, surprise.	6/12	18/0	9/9	11/7
Exercise strenuous	9/9	16/2	15/3	15/3
Irritants such as cigarette smoke	14/4	18/0	13/5	14/4
Allergens such as house dust mite, animal furs	14/4	18/0	16/2	17/1
Foods such as seafood, eggs, milk.	8/10	15/3	8/10	10/8
Drugs such as aspirin.	5/13	14/4	3/15	5/13

**From table 7.** It was found that 3 months after study the number of sample in the experimental group who answered right about factor that cause asthma increased in every question. As for the control group; the number of sample who answered right increased in a small amount for some questions and decreased in some questions.

**Table 8.** Number of sample that answered right and wrong about knowledge on asthma classified by symptoms of asthma and asthma medication before and 3 months after study.

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before r/w	After 3 months r/w	Before r/w	After 3 months r/w
<b>Symptoms of asthma</b>				
Dry cough	5/13	11/7	4/14	6/12
Chest tightness, difficulty breathing.	15/3	18/0	15/3	16/2
Hyperventilation	18/0	18/0	15/3	16/2
Dry cough the bigining, later productive cough	12/6	18/0	7/11	8/10
Expiratory wheezing.	12/6	18/0	9/9	12/6
Asthma can not be completely cure but can be control.	13/5	18/0	15/3	14/4
<b>Asthma medications.</b>				
Bronchodilator	15/3	18/0	14/4	14/4
Antithistamine	3/15	12/6	2/16	3/15
Preventive medication to control symptoms of asthma	11/7	17/1	9/9	11/7
Antibiotic	2/16	7/11	3/15	5/13
Preventive medication is the most effective during asthmatic attack.	2/16	5/13	8/10	3/15
Inhaler works faster for bronchodilator than oral medication	16/2	18/0	11/7	2/16

**Table 8.** Number of sample that answered right and wrong about knowledge on asthma classified by symptoms of asthma and asthma medication before and 3 months after study. (Continued.)

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before	After 3 months	Before	After 3 months
	r/w	r/w	r/w	r/w
The inhaler should be press at top of medication while inhaling deeply and hold breath as long as possible (at least 10 seconds) then breath out slowly.	8/10	17/1	5/13	10/8
Side effect of bronchodilator are nausea, vomiting, palpitation.	3/15	13/5	4/14	6/12

**From table 8.** It was found that 3 months after study, the number of sample in the experimental group who answered right about symptoms of asthma and asthma medication increased greatly for all questions, except for the questions about antibiotic and preventive medication is the most effective during asthmatic attack; which more than 10 sample answered wrong. For the control group, the number of sample, who answered right slightly increased in some questions while slightly decreased in the others.

**Table 9.** Number of sample that answered right and wrong about knowledge on caring to student with asthma in school. Classified by prevention of asthmatic attack and caring for student with asthma in school before and 3 months after study.

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before r/w	After 3 months r/w	Before r/w	After 3 months r/w
<b>Prevention of asthmatic attack</b>				
Avoids allergen such as dust, pollen.	17/1	18/0	15/3	15/3
Take medication according to doctor's recommendation .	17/1	18/0	15/3	17/1
Sleep at least 8-10 hrs.	17/1	18/0	14/4	16/2
Take care of emotional stability, avoid stress.	16/2	18/0	13/5	15/3
Take care to avoid respiratory tract infection.	16/2	18/0	14/4	14/4
Avoid going to crowded places such as department store.	13/5	17/1	11/7	14/4
Don't exercise.	5/13	14/4	12/6	14/4
<b>Caring for students with asthma in school</b>				
Don't exercise.	10/8	16/2	13/5	16/2
Join activities like normal students.	7/11	17/1	6/12	10/8
Avoid assigning activity such as board cleaning that will expose them to dust.	13/5	18/0	4/14	14/4

**Table 9.** Number of sample that answered right and wrong about knowledge on caring to student with asthma in school. Classified by prevention of asthmatic attack and caring for student with asthma in school before and 3 months after study. (Continued.)

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before r/w	After 3 months r/w	Before r/w	After 3 months r/w
Should require that all student with asthma use broncholilator before activity.	4/14	12/6	9/9	7/11
Evaluate emotional status before exercise.	10/8	16/2	8/10	12/6
Evaluate physical status before exercise.	11/7	17/1	10/8	13/5
Should allow students with asthma to rest periodically when experiencing extreme weakness while exercising.	13/5	17/1	15/3	15/3

From table 9. It was found that 3 months after study, the number of sample in the experimental group who answered right about prevention of asthmatic attack and caring for students with asthma in school greatly increased in all questions. For the control group, the number of sample who answered right increased in some questions and increased slightly, except for the question about avoid them to dust such as board cleaning, which increased greatly.

**Table 10.** Number of sample that answered right and wrong about knowledge on caring to students with asthma in school classified by caring for students with controlling asthma and caring for students with asthmatic attack before and 3 months after study.

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before r/w	After 3 months r/w	Before r/w	After 3 months r/w
<b>Caring for students with controlling asthma</b>				
Rest a lot and don't exercise.	2/16	7/11	3/15	4/14
Exercise like normal children.	8/12	16/2	10/8	11/7
Breathing exercise every morning and evening.	9/9	13/5	10/8	13/5
Eat food that are nutritious to body .	14/4	17/1	14/4	15/3
Don't running and playing too much that caused extreme weakness .	15/3	17/1	13/5	14/4
<b>Caring for students with asthma attacks.</b>				
Rest and excluded from all activities.	14/4	16/2	15/3	15/3
Take medication according to doctor's order.	15/3	18/0	15/3	15/3
Drink a lot of warm water.	12/6	18/0	14/4	11/7
Lie down with head flat.	3/15	10/8	3/15	5/13
Lie down with fowler's position.	5/13	16/2	5/13	6/12

**Table 10.** Number of sample that answered right and wrong about knowledge on caring to students with asthma in school classified by caring for students with controlling asthma and caring for students with asthmatic attack before and 3 months after study. (Continued)

Text	Experimental Group (n =18)		Control Group (n =18)	
	Before	After 3 months	Before	After 3 months
	r/w	r/w	r/w	r/w
Clam down.	12/6	18/0	14/4	14/4
When medication is given, but symptoms still persist, then repeat medication.	3/15	15/3	10/8	3/15
Breathing exercise.	7/11	18/0	8/10	12/6
Observe symptoms that signs of increased asthma attack.	2/16	18/0	16/2	12/6

**From table 10.** It was found that 3 months after study, the number of sample in the experimental group who answered right about caring for students with controlling asthma and caring for students with asthmatic attack greatly increased for all question, except for the question about to rest a lot and don't exercise, which most of sample answered wrong. For the control group, the number of sample who answered right increased in some questions and increased slightly, some questions answered right decreased and some question were the same.

**Table 11.** Number of sample in the experimental group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants and exercise before and 3 months after study.

Behavior	Experimental group (n = 18)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
<b>Caring about food and water.</b>			
Care or remind students to drink milk or soymilk	5/0	3/2	10/16
Care or remind students to drink clean water.	3/0	2/1	13/17
Care or remind students to eat nutritious food of five groups.	3/0	2/2	13/16
<b>Caring about avoidance Stimulants.</b>			
Care or remind students to avoid area with smoke.	3/1	8/5	7/12
Care or remind students to avoid area with exhaust fumes.	3/0	8/3	7/15
Care or remind students to avoid cigarette smoke.	5/1	9/2	4/15
Care or remind students to avoid playing with furry animals.	4/0	9/5	5/13
Care or remind students to avoid from friends with cold.	3/0	5/3	10/15

**Table 11** Number of sample in the experimental group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants and exercise before and 3 months after study. (Continued.)

Behavior	Experimental group (n = 18)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
Care or remind students to care for their health when weather changes.	3/0	3/4	12/14
Care or remind students to wear warm clothes when cold air.	3/0	4/3	11/15
Care or remind students not to be exposed to the rain.	3/0	4/5	11/13
Caring about exercise.			
Care students not exhaust themselves too much from playing and exercise.	3/0	8/5	7/13
Care students to play in appropriate exercise.	4/1	9/7	5/10
Care students to drink clean water before exercise.	13/2	3/8	2/8
Evaluated mental condition before exercise.	10/2	4/4	4/12
Evaluated physical condition before exercise.	8/1	3/1	7/16
Students with history of asthmatic attack after exercise, use bronchodilator before exercise.	15/7	0/3	3/8

**Table 11.** Number of sample in the experimental group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants and exercise before and 3 months after study. (Continued.)

Behavior	Experimental group (n = 18)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
Observe symptoms during exercise.	9/10	7/4	2/14
Care and check medication that that students must bring to school.	16/7	0/1	2/10

**From table 11.** It was found that, before study, most of the experimental group had always behavior in daily care for students with asthma in school about food and water, , three months after study, they still had always behavior but number were increased. About avoiding stimulants, before study, most had sometimes behaviors; except behavior about avoid from friends with cold, care for their health when weather change, wear warm clothes when there is cold air and not exposed to the rain, most had always behavior. Three months after study, most had always in all behavior. About exercise, before study, most had never behavior, except, about care students not exhaust themselves too much from playing and exercise and care students to play in appropriate exercise that most had sometimes behavior. Three months after study, most had always in all behavior.

**Table 12.** Number of sample in the control group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants, and exercise before and 3 months after study.

Behavior	Control group (n = 18)		
	Never Before/After 3 months	Sometimes Before/After 3 months	Always Before/After 3 months
<b>Caring about food and water.</b>			
Care or remind students to drink milk or soymilk	3/1	5/7	10/10
Care or remind students to drink clean water.	2/1	4/5	12/12
Care or remind students to eat nutritious food of five groups.	2/1	6/5	10/12
<b>Caring about avoidance stimulants.</b>			
Care or remind students to avoid area with smoke.	4/3	9/10	5/5
Care or remind students to avoid area with exhaust fumes.	2/3	9/9	7/6
Care or remind students to avoid cigarette smoke.	3/3	8/8	7/7
Care or remind students to avoid playing with furry animals.	2/4	10/12	6/2
Care or remind students to avoid from friends with cold.	2/2	10/9	6/7

**Table 12.** Number of sample in the control group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants, and exercise before and 3 months after study. (Continued.)

Behavior	Control group (n = 18)		
	Never Before/After 3 months	Sometimes Before/After 3 months	Always Before/After 3 months
Care or remind students to care for their health when weather changes.	2/1	7/11	9/6
Care or remind students to wear warm clothes when cold air.	2/1	6/7	10/10
Care or remind students not to be exposed to the rain.	2/1	5/6	11/11
Caring about exercise.			
Care students not exhaust themselves too much from playing and exercising.	2/1	6/8	10/9
Care students to play in appropriate exercise.	2/3	8/11	8/4
Care students to drink clean water before exercise.	14/12	4/6	0/0
Evaluated mental condition before exercise.	9/12	8/3	1/3
Evaluated physical condition before exercise.	7/10	8/5	3/3
Students with history of asthmatic attack after exercise, use bronchodilator before exercise.	16/15	2/3	0/0

**Table 12.** Number of sample in the control group classified by behavior of daily care for students with asthma in school about food and water, avoid stimulants, and exercise before and 3 months after study.(Continued.)

Behavior	Control group (n = 18)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
Observe symptoms during exercise.	6/3	8/9	4/6
Care and check medication that student must bring to school.	16/15	1/2	1/1

**From table 12.** It was found that before study, most of the control group had always behavior in daily care for students with asthma in school about food and water, three months after study, most had always behavior. About avoiding stimulants, before study, most had sometimes behavior, except behavior about care for their health when weather changes, wear warm clothes when cold air and not to be exposed to the rain, that most had always behavior. Three months after study, most behavior did not change.

**Table 13.** Number of sample in the experimental group classified by behavior of care when students had asthmatic attack in school about caring students with asthma when there is coughing, and when there is difficult breathing and chest tightness before and 3 months after study.

Behavior	Experimental group (n = 12)		
	Never Before/After 3 months	Sometimes Before/After 3 months	Always Before/After 3 months
<b>Caring students with asthma</b>			
<b>When there is coughing.</b>			
Rest	8/0	1/1	3/11
Drink warm water.	8/1	3/4	1/7
Stimulate coughing to excrete secretion	8/1	3/2	1/9
<b>Caring students with asthma when there is difficult breathing and chest tightness.</b>			
Rest.	7/0	4/0	1/12
Drink warm water.	7/0	4/2	1/10
Observe symptoms.	7/0	4/1	1/11
Take oral bronchodilator.	10/1	1/5	1/7
Let them use inhaler.	10/1	1/4	1/7
Spray inhaler for the students.	11/3	0/8	1/1

**Table 13.** Number of sample in the experimental group classified by behavior of care when students had asthmatic attack in school about caring students with asthma when there is coughing, and when there is difficult breathing and chest tightness before and 3 months after study. (Continued.)

Behavior	Experimental group (n = 12)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
Breathing exercise.	11/1	0/1	1/10
Clam down.	9/1	1/3	2/8
Take students to hospital	9/6	1/6	2/0

From table 13. It was found that, before study, most of the experimental group had never behavior in caring when students had asthmatic attack in school about caring students with asthma when there is coughing and when there is difficult breathing and chest tightness, three months after study, most had always behavior, except behavior about spray inhaler for the students and take students to hospitals, that most had sometimes behaviors.

**Table 14.** Number of sample in the control group classified by behavior of care when students had asthmatic attack in school about caring students with asthma when there is coughing and when there is difficult breathing and chest tightness before and 3 months after study.

Behavior	Control group (n = 14)		
	Never	Sometimes	Always
	Before/After 3 months	Before/After 3 months	Before/After 3 months
<b>Caring students with asthma when there is coughing.</b>			
Rest	4/4	4/4	6/6
Drink warm water.	8/9	4/4	2/1
Stimulate coughing to excrete secretion	7/10	7/3	0/1
<b>Caring students with asthma when there is difficult breathing and chest tightness.</b>			
Rest.	5/2	2/4	7/8
Drink warm water.	8/11	5/2	1/1
Observe symptoms.	5/5	6/4	3/5
Take oral bronchodilator	11/11	2/3	1/0
Let them use inhaler	13/11	0/2	1/1
Spray inhaler for the students.	14/13	0/1	0/0

**Table 14.** Number of sample in the control group classified by behavior of care when students had asthmatic attack in school about caring students with asthma when there is coughing and when there is difficult breathing and chest tightness before and 3 months after study.(Continued)

Behavior	Control group (n = 14)		
	Never Before/After 3 months	Sometimes Before/After 3 months	Always Before/After 3 months
Breathing exercise.	12/8	1/5	1/1
Clam down.	4/3	8/9	2/2
Take students to hospital.	12/11	1/3	1/0

**From table 14.** It was found that before study, most of the control group had never behavior of care when students had asthmatic attack in school about caring students with asthma when there is coughing, except behavior about to rest, that had always behavior. Three months after study, behavior did not changes. About caring students with asthma when there is difficult breathing and chest tightness, before study, most had never behavior, except behavior about observe symptoms and clam down, that had sometimes behaviors and behavior about to rest that had always behavior. Three months after study, behavior did not changes.

**Table 15.** Mean and standard deviation stratified by categories of the score of knowledge about asthma, the score of behavior of daily care for students with asthma in school and the score of behavior of care when students had asthmatic attack in school, before study, immediately after study and three months after study.

Variables	n	Experimental group		n	Control group	
		$\bar{X}$	SD		$\bar{X}$	SD
<b>Knowledge about asthma</b>						
Before study.	18	35.17	9.79	18	35.33	11.84
Immediately after study.	18	52.56	1.76	-	-	-
three months after study.	18	51.50	3.15	18	36.44	13.07
<b>Behavior of daily care for students with asthma in school.</b>						
Before study.	18	39.28	11.42	18	39.28	8.86
three months after study.	18	50.50	6.73	18	39.22	8.13
<b>Behavior of care when students had asthmatic attack in school.</b>						
Before study.	12	16.58	6.59	14	18.57	5.26
three months after study.	12	30.58	3.32	14	18.93	4.70

**From table 15.** In the experimental group, mean scores of knowledge about asthma immediately after study and 3 months after study were both more than the mean scores before study. The mean scores of knowledge about asthma immediately after study and 3 months after study were very close. Mean score of behavior of daily care for students with asthma in school and mean scores of behavior of care when students had asthmatic attack in school 3 months after study were both more than the mean scores of before study. For the control group mean scores of knowledge about asthma, mean scores of behavior of daily care for students with asthma and mean score of behavior of care when students had asthmatic attack in school before study and 3 months after study were very close.

**Part 3.** Results from comparison of the differential scores of knowledge of teachers about asthma and caring management for students with asthma.

**Table 16.** Comparison of mean scores of knowledge about asthma in the experimental group before study and immediately after study.

Characteristics of sample group	n	$\bar{X}$	SD	t
Before study	18	35.17	9.79	
Immediately after study	18	52.56	1.76	7.98***

\*\*\* P < .001

**From table 16.** It was found that mean scores of knowledge about asthma before study significantly different from immediately after study with a statistical level of .001.

**Table 17.** Comparison of mean scores of knowledge about asthma in the experimental group before study and 3 months after study.

Characteristics of sample group	n	$\bar{X}$	SD	t
Before study	18	35.17	9.79	
Three month after study	18	51.50	3.15	6.354***

\*\*\* P < .001

**From table 17.** It was found that mean scores of knowledge about asthma before study significantly different from 3 months after study of the .001 level.



**Table 18.** The result of analysis ANCOVA of score of knowledge about asthma in the experimental group and control group from after study, using scores of knowledge about asthma before study being a covariate.

Source of Variation	df	SS'y	MS'y	F
Covariate	1	1,316.876	1,316.876	
Between group	1	2,065.843	2,065.843	38.777***
Within group	33	1,758.068	53.275	
Total	35	5,114.972	146.142	

\*\*\* P < .001

**From table 18.** It was found that the mean score of knowledge about asthma, after study in the experimental group was significantly more than in the control group, with a statistical level of .001. This support hypothesis 1 that teachers, who are teach, have more knowledge about asthma and knowledge about caring for students with asthma than teachers who aren't teach.

**Table 19.** The result of analysis ANCOVA of scores of behavior of daily care for students with asthma in school in the experimental group and control group after study, using scores of behavior of daily care for students with asthma in school before study being a covariate.

Source of Variation	df	SS'y	MS'y	F
Covariate	1	828.605	828.605	
Between group	1	1,144.694	1,144.695	35.469***
Within group	33	1,065.007	32.273	
Total	35	3,037.306	86.809	

\*\*\* P < .001

**From table 19.** It was found that mean score of behavior of daily care for students with asthma in school after study in the experimental group was significantly higher than in the control group, at the .001 level. This support hypothesis 2, that teachers who are teach, have better behavior of care for students with asthma than teachers who aren't teach.

**Table 20.** The result of analysis ANCOVA of scores of behavior of care when students asthmatic attack in school in the experimental group and control group after study, using scores of behavior of care when students had asthmatic attack in school before study being a covariate.

Source of Variation	df	SS'y	MS'y	F
Covariate	1	78.109	78.109	
Between group	1	785.081	785.081	54.95***
Within group	19	271.458	271.458	
Total	21	1,079.318	51.396	

\*\*\* P < .001

**From table 20.** It was found that mean scores of behavior of care when students had asthmatic attack in school after study in the experimental group was significantly higher than in the control group, at the .001 level. This support hypothesis 2, that teachers who are teach, have better behavior of care for students with asthma than teachers who aren't teach.

## **CHAPTER V**

### **DISCUSSION**

The purpose of this research is to study the effects of teaching Primary school teachers on knowledge and caring management of students with asthmatic symptoms. Discussion will be based on the following hypothesis.

**Hypothesis 1 : From the results of the study it was found that the scores of knowledge about asthma of teachers with teaching were significantly higher than those without teaching, at the .001 level, which can be explained as the following.**

**1. Method of Teaching :** Teachers of the experimental group were taught by the researcher in groups of 6 person. The instruction media was the manual in caring children with asthma, which consisted of both general and specific objectives. This is essential for teachers to know that often education, they must possess the knowledge and ability in any are, according to the target and direction of the teaching, as how Van Hoozer.et.al;(1987 : 80) had stated. In order to provide effective advice, a target and direction must be set, in order to limit the objectives, the content, method of teaching and direction. The content of the manual has been divided into 2 parts, starting from easy to hard : Part I, Knowledge about Asthma includes Factors causing Asthma, the Mechanism of Asthma, Signs and Symptoms of Asthma, and Treatment for Asthma, Part II Knowledge about Caring for Children with Asthma in School includes, Caring for Children's Activities, Care in Promoting Children's Health, Preparation of Students with Asthma before Exercise and Sports, Care for Students with Asthma when there is Coughing and Wheezing and Care for Students with Asthma when there is Asthmatic Attacks. This is similar to Varee Rakiti (1991 : 692-693) who stated that lessons and activities should always be arranged from easy to hard and the content should always be related, with the early contents being a fundamental for the later content. The researcher divided the teaching into 2 sessions of 1 hour each in order to avoid information overload. Suren (1997 : 428) had stated

that effective educating should not exceed 1 hour. The researcher had set session 1 and 2 in 1 day apart in order to provide consistent information.

After completing the sessions, the researcher gave a manual to the teachers to review at home and guide the teachers for caring students with asthma. This way it would help in prolonging their memory of the knowledge. The teachers would go home and review the content over and over which would be beneficial and important. Oranant Hanyuth (1989 : 118) had stated that effective education is educating the people in order for them to be able to store that information in the long-term. As for this research, from the questionnaires, it was found that teachers in the experimental group had reviewed the manual at least 2 times. Therefore, it knowledge on can said teacher gain knowledge and enhance their memory by reviewing the manual, This is similar to the study by Somjai Putapitakpol (1989) that which found that pregnant women and their husbands, who were advised by the researcher along with manuals about Thalasemia had more knowledge than the pregnant women and their husbands who were advised by other staff members. The study by Varin Binhosen (1993) found that the patients with epilepsy who received handbook have more knowledge than patients who received knowledge as usual. In the research by Prakaiyrat Shiawanit (1993) it was found that married couples who were educated by handbook had a higher average score of knowledge about sex during pregnancy after their education compared with before in which significant at the .001 level. In Sukonta Padungvat's research (1994), it was found that patient with fracture bones who were educated by planed instruction and given manuals to review at home possessed better knowledge about procedures before, during and after operation compared with patients who were given normal advice. In Pramern Nuantet's research (1994), it was foud that endemic goiter patients who were educated in groups and those who were given manual possessed better knowledge about endemic goiter compared with those who were given normal advice from others health staff.

After the sessions, the researcher had visited the teachers in the experimental group once a month, totaling 3 times, in order to find out their problems and obstacles in caring for students with asthma. This was a way to boost the teachers confidence in learning. Moreover, during the visits, teachers would usually ask for advice about their problems and obstacles in caring for the students with asthma. This created

opportunity for other teachers to express their ideas while reviewing the knowledge they have learnt. They had expressed that after the sessions and reading the manuals they feel more confident about caring for students with asthma and possess more knowledge than before.

As for the control group, they were not received manuals and visit. Two teachers got their knowledge about asthma from health staff and 16 teachers, were not got knowledge about asthma at all. Knowledge about asthma of the teachers in control group did not change.

**2. Interaction among teacher in the experimental group.** Because the session were in small group of 6 teacher, sessions althering to different schools, the teachers in the experimental group are quite acquainted with each other. They understand and have experience situation similar to one another, which results in exchanges of ideas and knowledge, making the atmosphere interesting and informal. As Barbara (1992 : 262) had stated, educating people in groups of 6 –8 peoples is an appropriate number for members to exchange ideas and knowledge. Also, the researcher created an the important areas in caring for students with asthma, instead of teaching them. Van Hoozer et.al; (1987 : 72) stated that relationships, whether among the learner, or between learner and teacher, enhances the process of learning due to the fact that learner directly participate in the process and receive immediate and correct feedback.

Therefore it can be concluded that teachers in the experimental group possess a higher level of knowledge compared to the teachers in the control group. This is because teachers in the experimental group were taught in groups by using manual about care for children with asthma in school. The objective of the manual was limited and its content arranged from easy to hard. Teaching sessions were set appropriately. Sessions per one school consisted of 6 teachers, resulting in good relationships, enabling exchange of ideas and knowledge. The researcher and teachers also had good interactions with each other. After educating, teachers were given manual to review at home. Moreover, the researcher paid monthly visits to the teachers. The control group was given regular knowledge, absent from the researcher's sessions, manuals, visit and idea exchanges which barely effected their knowledge on asthma. Teachers in the

experimental group, therefore, possess a higher level of knowledge compared to the control group.

**Hypothesis 2 : From the result of the study, it was found that the score of behavior of care for students with asthma were significantly higher in the group of teachers who were taught compared to the group who were not taught with a statistical level of .001. This can be explained as follow.**

Increased knowledge is not the only expected result of teaching but also, change in behavior. Knowledge is a critical factor that will create understanding which will induce a response through change in behavior, and will enable one to perform certain behaviors, resulting from the appropriate knowledge they possess. Increase in knowledge promotes appropriate behavior (Fabiya, 1985 : 154) . Those who possess good knowledge will cause them to have good behavior , and being able to perform and act out what is taught is considered effective learning. (Oranant Hanyuth, 1989 : 118)

From the research results, it is found that teachers in the experimental group had higher score than in the control group. As teachers in the experimental group possess knowledge, especially learnt from the researcher, they are able to understand, to better act or perform behavior in caring to students with asthma knowledge gained from the researcher is the knowledge needed to promote behavior. For example, in order to care for a students to avoid stimulants, the teacher must know what the stimulants are. Therefore, they must possess the knowledge, before performing. From the results, it was found in the experimental group that before teaching about the care for students with asthma more than 5 teachers [from table 5] answers incorrectly about the care for students with asthma before exercise and sports, in which their behavior is supported by their knowledge that more than 8 teachers [from table 11] had never performed behavior on caring for students with asthma before exercise, such as having them drink 1 glass of water before exercise, estimating their mental and physical condition before exercise, observing their conditions, and having them use their inhaler before exercise, 3 months later, these teachers had better knowledge as less than 5 teachers [from table 9] answered incorrectly. Their change in knowledge resulted in change in behavior. More than 8 teachers [from table 11] had behavior of

daily care for students with asthma before exercise and sports, such as having them drink water, estimating their mental and physical status, observing their condition during exercise, and having them use their inhaler before exercise. In the control group, teacher's knowledge slightly changed 3 months after the study due to lack of stimulants as in the experimental group. Before the study, more than 5 teachers [from table 9] answered incorrectly on the care for students with asthma before exercise, and more than 8 teachers [from table 11] had never performed behavior such as having them use their inhaler before exercise, 3 months later, more than 5 teachers [from table 9] still answered incorrectly. And as knowledge and behavior go together, more than 10 teachers [from table 11] still never perform behavior on caring for students with asthma.

Therefore, the experimental group possess more correct behavior in caring for students with asthma daily and also during asthmatic attacks. This is because the experimental group have gained more knowledge about asthma and the care for students with asthma because the researcher had stimulated these, teachers to learn through group sessions and the manual. These resulted in knowledge, understanding, and long-term memory, and the knowledge gained will be reacted out in the form of correct behavior in caring for students with asthma better than in the control group, whose knowledge before and after the study were unchanged resulting in no change in behavior. This is similar to study of Sunee Sunthornmeesathien (1988) found that the pregnant women with syphilis who were advised by manual had better score of knowledge and behavior than pregnancy with syphilis who received as usual. The research by Varin Binhosen (1993) found that SLE patients who were taught by planned teaching had better knowledge on SLD and behavior than these who were taught normally. The research by Supanee Lertpadungkulchai (1995) found that Pregnancy with diabetes mellitus taught by planned teaching had better knowledge on the disease and self-care behavior than those who were not taught.

From this study, it can be concluded that the results of teaching teachers results in the teachers in the experimental group having better knowledge on asthma and behavior of care for students with asthma than in the control group. This points out one importance of knowledge, it has the result or objective being appropriate behavior concerning health.

## **CHAPTER VI**

### **CONCLUSION AND RECOMMENDATIONS.**

#### **Conclusion**

This research was a quasi-experimental research of pre-post test control group design to studying the effects of teaching primary school teacher, on knowledge and caring management of students with asthmatic symptoms.

The sample group in this research is primary school teachers in schools with 3 or more students with asthma in the industrial areas of Amphor Muang, Rayong. The sample group is divided into 2 groups : the experimental group of 18 teachers from 2 schools and the control group of 18 teachers from 3 schools.

The researcher gathered the information by herself, by having the sample group fill out personal questionnaires, questionnaires about behavior of caring for students with asthma, and knowledge about asthma and caring for students with asthma. After that, the experimental group was taught by using a manual about caring for students with asthma for 2 sessions of 1 hour each at a 1 day interval. After the classes, manuals were distributed to teachers in order for them to review at home. Three visits to the experimental group were implemented, each visit being 1 month apart. After 3 months, the experimental group filled out questionnaires on the behavior of caring for students with asthma and questionnaires on knowledge about asthma and caring for students with asthma, respectively. The control group, before the study, had filled out personal questionnaires, questionnaires About behavior and questionnaires on knowledge as the experimental group. Three months later, the control group had filled out questionnaires about behavior of caring for students with asthma, and knowledge about asthma again. After this was completed, the scores of knowledge about asthma, behavior of daily care for students with asthma, and behavior of care for students with asthma during asthmatic attacks were analyzed and compared between teachers in the experimental and control group. The analysis was done using ANCOVA with the scores of knowledge and scores of behavior before the study being the covariate.

**The results of the research are concluded as follows.**

1. Most of the sample group, both experimental and control group, have complete their education at the bachelor degree level. Their status in schools are mostly homeroom teachers, and have never received knowledge about asthma, have no history of asthma, and have no family history of asthma; have no experience in caring for children with asthma. Most of the sample group agreed that teachers should possess knowledge about asthma in children and agree that most teachers would be able to help students during asthmatic attacks in school.

2. Regarding knowledge about Asthma, it was found that ;

In the experimental group before the study, the teachers possessed knowledge about asthma at a moderate level. Immediately after the study, most, (18 teachers) possessed knowledge about asthma at a high level. Three months after study, most, (16 teachers) possessed knowledge about asthma at a high level.

In the control group, before the study, most teachers possessed knowledge about asthma at a moderate level. Three months after the study, many, (8 teachers) possessed knowledge about asthma at a low level.

3. Regarding behavior of daily care for students with asthma, It was found that ;

In the experimental group before the study, most, (10 teachers) possessed behavior of daily care for students with asthma at a moderate level. Three months after study, most, (13 teachers) possessed behavior of daily care for students with asthma at a high level.

In the control group before study, many, (8 teachers) possessed behavior of daily care for students with asthma at a moderate level. Three months after study, many, (9 teachers) possessed behavior of daily care for students with asthma at a moderate level

4. Regarding behavior of care for students with asthma when during is asthmatic attack in school, it was found that ;

In the experimental group before study, most, (10 teachers) possessed behavior of care for students with asthma during asthmatic attacks at a highly incorrect level. Three months after study, many (9 teachers) possessed behavior of care for students with asthma during asthmatic attacks at a highly correct level.

In the control group, before study, most, 9 teachers possessed behavior of care for students with asthma when there is asthmatic attack of highly incorrect level. Three month after study, most, (11 teachers) possessed behavior of caring for students with asthma during asthmatic attacks at a highly incorrect level.

5. The results of a comparison of the difference in scores of knowledge about asthma and scores of behavior of care for students with asthma are as follow :

Teachers had a significantly higher mean score of knowledge about asthma after being taught than those who were not taught, at the .001 level.

Teachers who were taught had a significantly higher mean score of behavior of daily care for students with asthma , and higher mean score of behavior of care for students with asthma during is asthmatic attacks than those who were not taught, at the .001 level.

### **Recommendation**

From this study, it was found that the important factor affecting teachers behavior of care for students with asthma is the fact that they must possess knowledge about asthma, and knowledge of care for students with asthma. This factor is the basic, and recommendations on it are as follow :

1. In teaching teachers about the care for students with asthma, knowledge about caring for students with asthma who have controlling asthma should be emphasized. Especially knowledge about allowing students with asthma to participate in activities when they can control asthma; breathing exercise every morning and evening, and the drug used in treating asthma, the side effects, and the type of medicine and on demonstration of the application of an inhaler should be emphasized.

2. A manual of caring for students with asthma should be distributed to teachers who have students with asthma in schools. Parents or the students with asthma could distribute it to their teachers to use as a guide for caring for students with asthma.

3. Pediatric nurses should find out which schools have students with asthma. The nurses should contact the teachers for a meeting in order to teach teachers to care for students with asthma by using a manual of care for students with asthma as a guideline.

### **Recommendations for further research**

1. In further research on teacher's behaviors of caring for students with asthma when during asthmatic attacks, the sample group should be increased. In this research, the sample group was decreased because no incident occurred.

2. A study of the success of the teaching in the long term, should be undertaken through follow up of estimating the results of knowledge and behavior of teachers in the experimental group. This should be for a period of 6 months to 1 year to keep track of changes in knowledge and behavior.

3. The quality of life of students with asthma concerning their health condition, various activities done in school, and their feeling towards participating in activities with class mates, should be undertaken in order to evaluate their quality of life.

4. Various methods of teaching should be studied in order to compare each method in the following area.

- Teaching in person only without a manual
- Using a manual for self education.
- Learning by watching a VDO of knowledge about asthma and having a manual to read at home

5. The health of students in the sample groups should be followed up.

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## APPENDIX



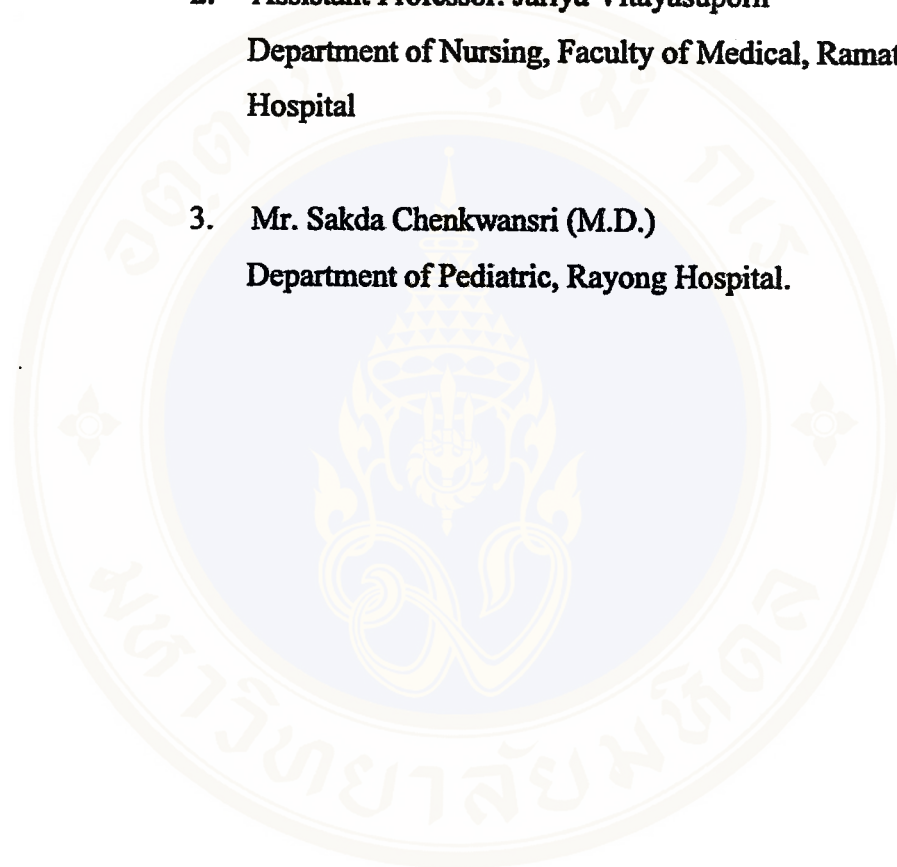
## APPENDIX A

### NAME OF VALIDATORS



**Name of Validator who validate of instruments use in research**

1. **Professor. Suparee Suvanjuta. (M.D.)**  
**Faculty of Medical, Ramathibadee Hospital**
  
2. **Assistant Professor. Jariya Vitayasuporn**  
**Department of Nursing, Faculty of Medical, Ramathibadee**  
**Hospital**
  
3. **Mr. Sakda Chenkwansri (M.D.)**  
**Department of Pediatric, Rayong Hospital.**



## APPENDIX B

### CONSENT FORM



**Consent Form**

Faculty of Nursing  
Mahidol University.

February, 1999

To whom it may be concern.

My name is Tasanee Poolwech. I am a master student at the Faculty of Nursing, Mahidol University. My research is "The effects of Teaching on Knowledge and caring Management to Primary School Teachers of Students with Asthmatic Symptoms". I need your help in this study.

If you decided to participate, please answer the questionnaires. Your answer are usefulness in health service.

Your decision to participate in the study is absolutely voluntary and you may withdraw from the study at any time. Your refusal will have no effect the legality.

Thank you for considering my request.

Sincerely

Tasanee Poolwech.

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For the sample.

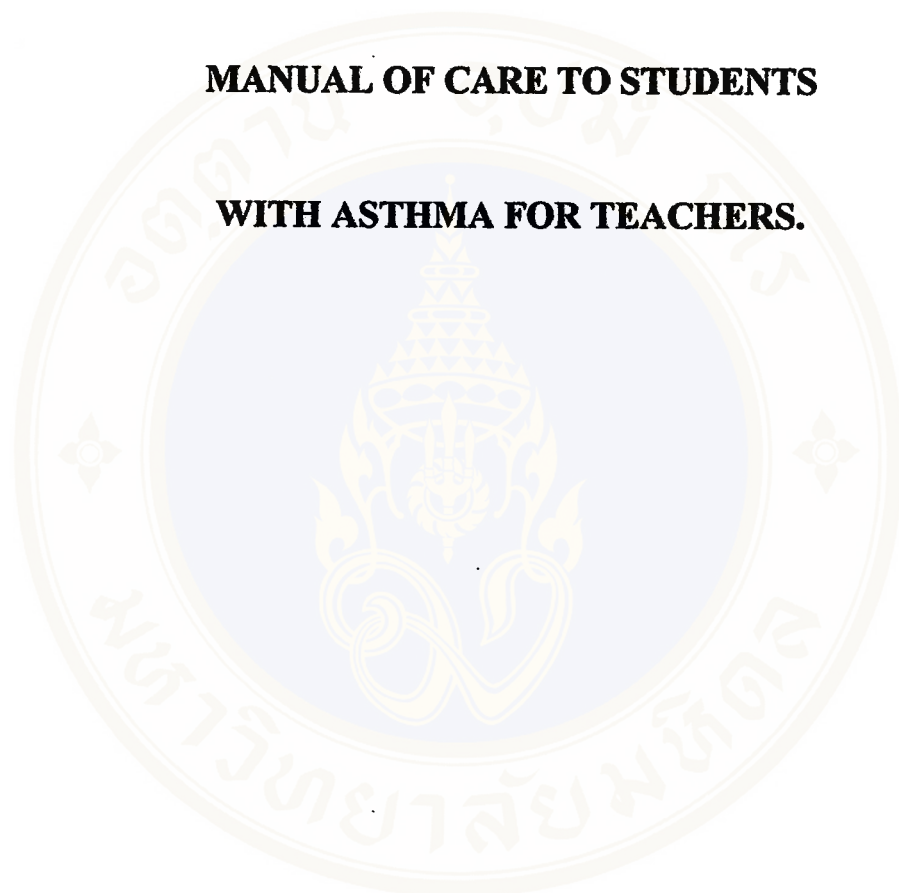
I read information above, my decision is to participate in the study.

Signature .....

## APPENDIX C

### MANUAL OF CARE TO STUDENTS

### WITH ASTHMA FOR TEACHERS.



**MANUAL OF CARING STUDENTS WITH ASTHMA**  
**FOR TEACHERS**



## Preface

This manual is a part of this study “ Caring management to students with asthma in school for Primary school teachers ” The manual has modified from the manual of care for students with asthma in school for teachers and school nurse by Pornsri Sriussadaporn and group in the program “ The Effective of school – Based Asthma Intervention Program and Quality of life of School Children with Asthma ”

I hopes this manual will be beneficial to all teachers in caring for students with asthma.

Tasanee Poolwech

Researcher

**List of tables**

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Treatment of asthma	7
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Care for students with asthma when coughing, wheezing	15
Care for students with asthma when there is asthmatic attack in school	17

**General objectives of manual of caring students with asthma for teachers.**

1. Provides teachers with knowledge and understanding of asthma
2. Guide for teachers in caring for students with asthma
3. Provides teachers with understanding and acceptance of students with asthma when participating in activities.
4. Guide of teachers in first aid for students with asthma when there is asthmatic attack in school.
5. Gives improve quality of life in school of asthmatic students and allows them to participate in activities as others children.

**Specific objective of manual of caring students with asthma for teachers.**

1. Teachers are able to explain what asthma is, mechanism of asthma, cause of asthma, symptoms of asthma, and treatment of asthma.
2. Teachers are able to care and advise students with asthma in promoting their health.
3. Teachers are able to prepare students with asthma before exercise and sport appropriately.
4. Teachers are able to care and manage students with asthma when there is coughing, wheezing and asthmatic attack in school appropriately.

**SECTION I**  
**KNOWLEDGE ABOUT ASTHMA**



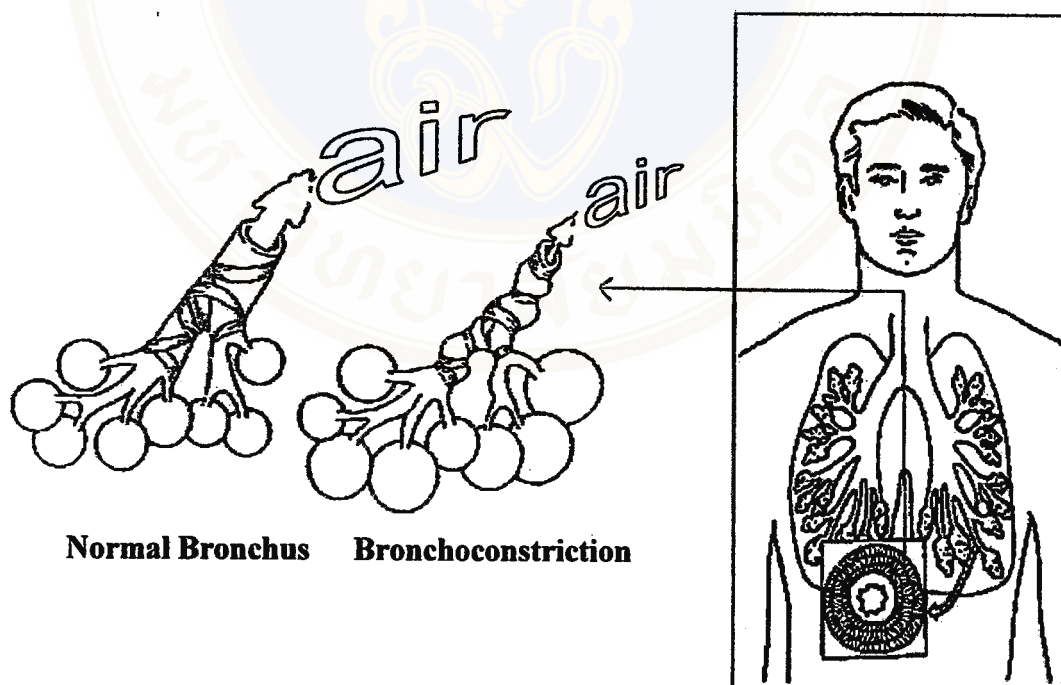
## What is Asthma ?

Asthma is a chronic inflammatory disorder of the airways. Inflammation makes the airways sensitive to stimuli. In susceptible individual this inflammation causes recurrent episodes of coughing, wheezing, chest tightness and difficult breathing. The resulting airflow limitation is reversible, either spontaneously or with treatment.

### The Mechanism of Asthma.

There are 3 mechanism

1. Bronchoconstriction causing difficult breath and dead space in the lungs.



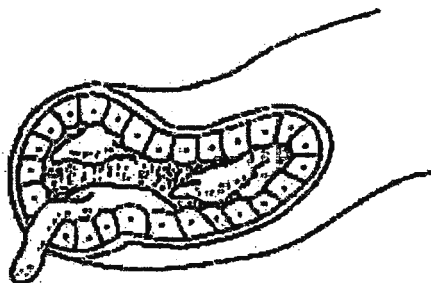
2. Swelling of the airway wall



Normal of airway wall

Swelling of the airway wall

3. Increases mucus secretion, and airway remodeling leading to coughing, chest tightness



## Causes of Asthma

Symptoms of asthma are induced by the body being exposed to various stimuli, which will cause trachea to change. Various stimuli are as follows.

### 1. Allergen

Allergen may enter the body through breathing or eating

- **Through Breathing** such as dust, house-dust mites, flower pollen, animal fur, cockroach ,three pollen



- **Through Eating** such as seafoods, milk, eggs, Aspirin, monosodium glutamates.



Eggs.

**2. Irritable thing**

That directly cause the symptoms such as chemical odor, car exhaust fumes, cigarette smoke, fire smoke, gasoline fumes



**3. Respiratory tract infections especially viral infection such as cold, bronchiolitis, etc.**



**Sinus, Cough, Pneumonia**

**4. Weather change such as too cold, too hot, near raining.**



**Too cold**



**Too hot**

**5. Exercise**



**Running**

**6. Change in emotions such as anger, sadness, worry, excitement, etc.**



**Anger**

### Symptoms of Asthma

1. Cough, initially, there is no mucus. However, afterwards, there is mucus.
2. Chest tightness.
3. Wheezing.
4. Difficult breathing
5. Cyanosis.



## **Treatment of Asthma**

**Objectives of treatment of asthma are.**

1. Reduce severe symptoms of asthma
2. Reduce the rate of emergency treatment due to asthmatic attack.
3. To be able to exercise and play sport regularly.
4. Reduce the use of bronchodilator and prevent side effect from medication.

### **Treatment of Asthma**

1. Avoidance of Allergen
2. Pharmacotherapy
3. Immunotherapy
4. Chest Physiotherapy
5. Psychotherapy

### **Pharmacotherapy**

In the present, pharmacotherapy for asthma has been effective and has enabled the control of asthma through not entirely. It divided in 2 group.

Quick – relief medication

Long – term preventive medication

#### **1. Quick – Relief Medication**

That work quickly to stop symptoms, attacks and relaxes bronchial smooth muscles. ( bronchodilator )

### 1.1 Short - acting theophylline

Theophylline is short – acting medication. It is being suitable for chronic asthma. It can be injected, taken orally, such as Aminophylline, Thcodur, Quibron for example side effects of theophylline are nausea, vomiting, headaches, no appetite, abdominal cramps, and tachycardia. If there is an overdose of theophylline. There is also a possibility of death.

### 1.2 $\beta_2$ –Agonist

$\beta_2$  -Agonist is a drug that takes effect quickly especially injection and nebulizer. It should be taken in acute severe asthma. There are in form injection, nebulizer or oral such as Ventolin, Bricanyl for example.

## 2. Long –Term Preventive Medications.

Long-term preventive medications help get and keep, persistent asthma symptoms under control and prevent attacks, it has no effect of bronchodilator. They are used daily on a long-term basis. It divided in 2 groups.

### 2.1 Corticosteroids.

Corticosteroids are anti-inflammatory medication that can reverse and prevent the inflammation . These include tablets or syrup such as Prednisolone, and inhaled such as Pumeicort. Long term used of corticosteroids may lead to osteoporosis, diabetes, obesity, proximal muscle weakness or children's growth may be affected. Therefore, corticosteroids should be taken as doctors prescribe.

### 2.2 Non-Steroid

Ketotifen is an antiallergic tablet or syrup and Intal is an preventive medication in inhaled form. Side effect of these drugs are sedation, headaches, dried mouth, and sore throat for example.

Aerosol is effective drug for treatment of asthma because the aerosol goes directly to the alveoli. This takes effect quickly without having much side effects.

There are 3 types of ways to use the aerosol for children who can independently breathe.

1. Inhaler. (MDI)
2. Inhaler with spacer (MDI with spacer)
3. Dry powder inhaler (Turbuhaler, Diskhaler)

As of now, there will be an explanation of the different methods mostly used.

### **MDI (Metered-Dose Inhaler)**

Guidelines for correct use of a metered-dose inhaler

1. Shake the inhaler immediately 5 –6 times.



2. Hold the inhaler ready to use and breathing out fully.



3. Hold the mouthpiece from the child's mouth about the length of 2 finger and at the end of a normal expiration, breathe in slowly and deeply while simultaneously depress the top of the inhaler canister firmly to release the drug mist.



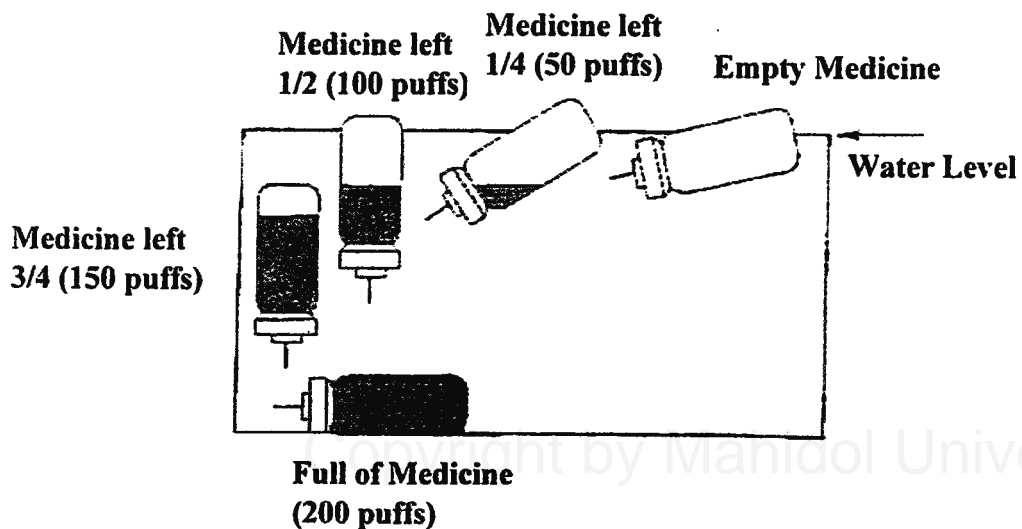
4. Hold the breathe for 10 seconds or as long as possible before breathe out slowly through the nose.



Repeat in 1 minutes following the previous time used .

The method of checking whether medication in the canister is finished or not is as follow.

Pull the canister out of the plastic tube. Place it in water and approximate the amount left as in the diagram.



**SECTION II**  
**CARING FOR STUDENTS**  
**WITH ASTHMA**



### **Students with asthma and activities in school.**

Students with asthma are capable of studying and participating in various activities in school like normal children except when they feel sick or can not control their disease.

Some activities in school may result in asthma due to interaction with dust particles such as cleaning classroom and erasing the chalkboard. These chores can be altered to different children and exchanges with other chores such as lining up desks, in order for students with asthma to responsible for the same chores as normal children.

As activities in the school, for example physical education, sport competitions, students with asthma will be able to participate only when asthma is under control. Students with asthma who have difficult breathing, coughing, wheezing after exercise are able to prevent this condition by use bronchodilator before exercise. During the exercise, teachers may want to observe the student's symptoms and advise them to rest if they do not feel well or if they are coughing, difficult breathing or chest tightness.

Students with asthma who not feeling well, or can't control disease such as having coughing, difficult breathing should avoid all kinds of exercise until they feel better.



### **Procedures that should be taken for students with asthma**

Teachers should advise students with asthma to do the following.

1. Avoid any stimulants that are allcrgics or irritants.
2. Being Cheerful and happy can help control asthma.
3. Exercise regularly. Swimming is an appropriate sport.
4. Take medication as doctors ordered.
5. Wear cloth in according to weather. If the weather is cold, then students should wear a jacket. They should not be embarassed about wearing a jacket or raincoat or holding an umbrella, because these items will prevent clothing from getting damp, which can promote asthma symptoms.
6. Self care to avoid the flue, coughs or sore throats.
7. Avoid travelling to crowded places, which the body can contact bacteria, virus in respiratory system easily.
8. Breathing Exercise as the doctor advise every morning and evening. It should not be forced.
9. Get enough sleep at night, at least 8 hours.
10. Eat foods that are nutritions such as eggs, milk, meat, vegetables, and fruits.



### **Preparing students with asthma before exercise and sports.**

Before exercise or playing sports, teachers should do the following thing to students with asthma.

1. Evaluate physical and mental status.

Physical Status - Fever, cold, runny nose, cough, sneeze.

Mental Status - Worrisome, moodswings.

If these physical and mental signs are apparent, teachers should consider to stop exercise.

2. Enquire history of asthma symptom after exercise or sports. If the students has a history, then use bronchodilator or preventing medication on the doctors orders, 5 –10 minutes before exercise

While the students with asthma exercise or play sports, teachers should observe their symptoms. If there is coughing, tiredness, students should rest until they feel better.



### **Caring management to students with asthma with coughing and wheezing.**

Before an asthmatic attack, there are usually early signs that are able to notice or the students themselves are aware of. These early signs include the following

- Itchiness on the chest
- Restlessness, tiredness
- Headache, Lips paleness and dryness
- sneezing, runny nose
- strange feeling in the chest
- Irregular Breathing.

When a student with asthma is found with the symptoms of severe coughing, starting to have chest tightness and wheezing, it means an asthmatic attack is starting.

Teachers should help by.

1. Calm the students down.
2. Let the students sit and rest, should not lie down.
3. Teach the students breathing exercise by .(See Figure A).
  - 3.1 Lie on back with both knees up and place both feet on the ground.
  - 3.2 Place both hands on the abdomen lower than the sternum.
  - 3.3 Inspire deeply, slowly through the nose while relaxing abdominal muscles until the chest and abdomen are expanded enough that both hands feel pushed.
    - 1.4 After inspiration deeply, relaxing of chest and shoulders muscles.
    - 3.5 Expiration by blowing air out slowly through the mouth. Expiration should take 2 –3 times as long as inspiration. Blow with lips tight and small until the arms return to their original position. Breathing in and out should be done very gently, not vigorously and aggressively.

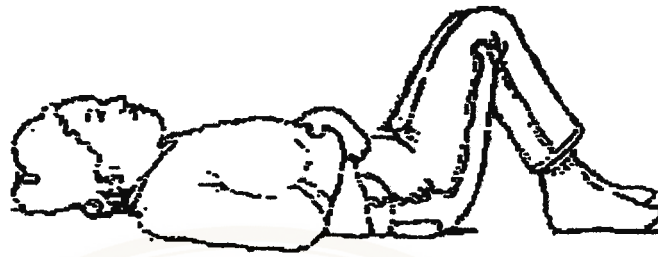


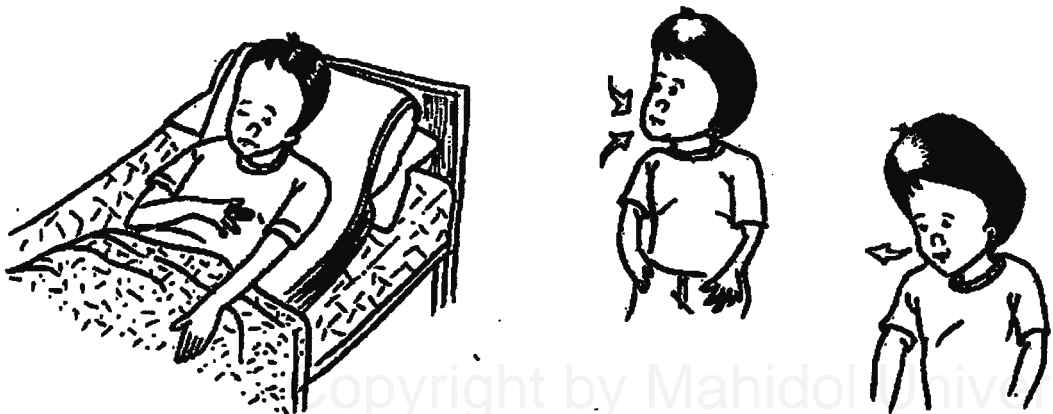
Figure A.

2. Observe the student's symptoms, if the coughing or wheezing has disappeared or worsened. If the latter, the students will need further caring management.

### **Caring management to students with asthmatic attack.**

Teachers should be taken by.-

1. Care the students to used bronchodilator (Bronchodilator should be what the a students has used before and carried on with the students.)
2. Observe the student's symptoms 15 minutes after using bronchodilator. If the student's symptoms has not improved repeat another dose bronchodilator and get him or her to a hospital.
3. Give information to their's parents.
4. The students should lie down with fowler's position. Use a towel to place underneath the student's neck and shoulder or let the student sit on a chair with armrests. This will allow the student to breath more easily.
5. Stay with the student and calm the child down.
6. Teach the student breathing exercise with lessen the severe of asthmatic attack. The correct way of breathing is using diaphragm and abdominal muscles and exhaling the air from the lungs as much as possible. This can be notices. When inhaling the abdomen will inflate; in contrast, when exhaling the abdomi will deflate.
7. Create a clam environment where there is circulation of the air so students can fully rest.



8. If the students have sputum, the students should cough it out. The correct method of coughing is before coughing, inhale deeply and hold, then cough really hard by using the abdominal muscles. The powerfullness of the cough will eject the sputum out. Teachers should encourage student to drink warm water frequently but in small amounts, which will help to liquidate sputum.

9. After an asthmatic attack, the student will have a lot of sweat. Teachers should sponge the student's body and put dry clothing on the students.

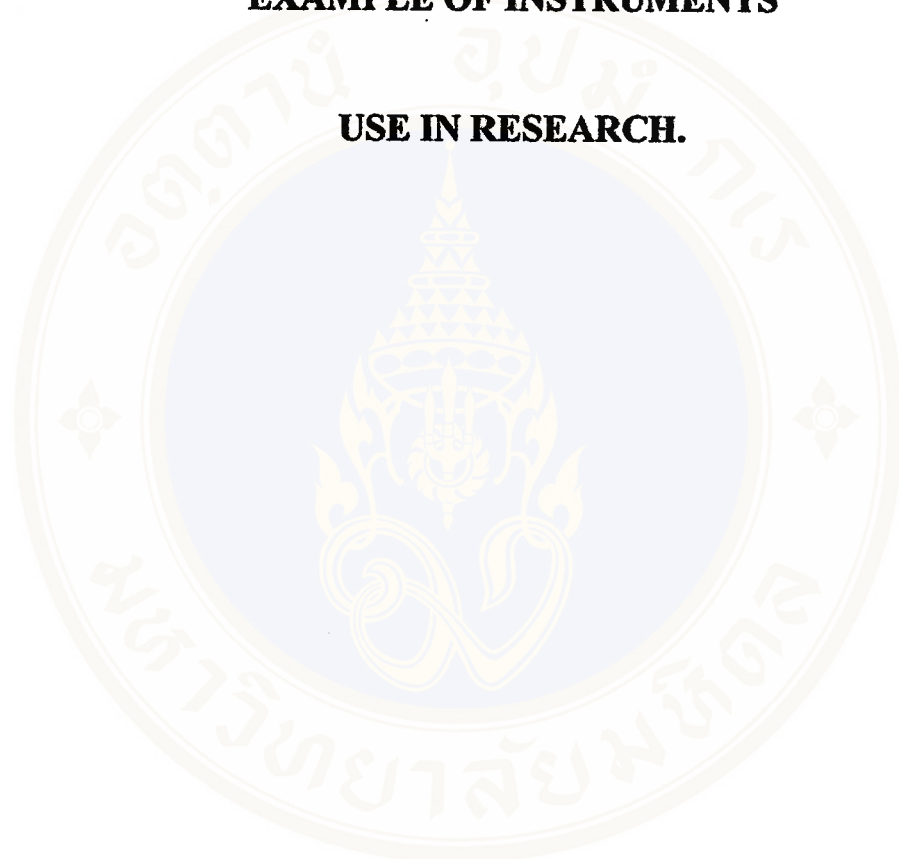
Caring management to students with asthma correctly will not exclude them from doing any activities or playing sports. These students will be able to do the same things as their friends, with will result in happiness and a good quality of life while in school.



## APPENDIX D

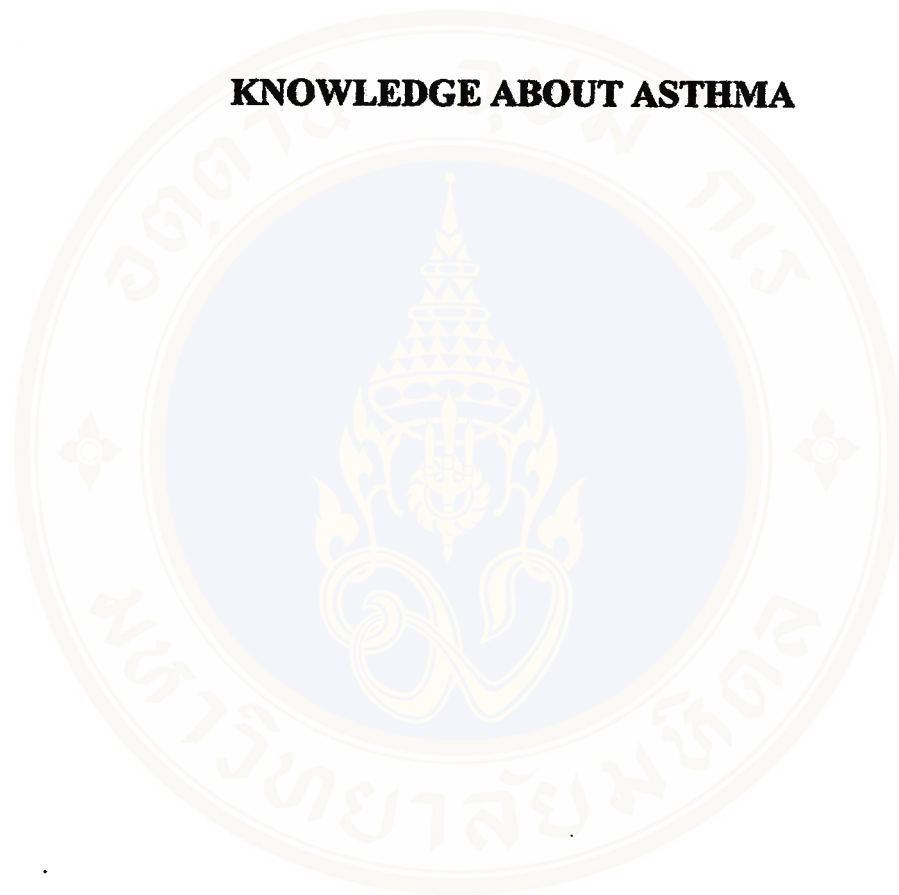
### EXAMPLE OF INSTRUMENTS

#### USE IN RESEARCH.



## **QUESTIONNAIRE**

### **KNOWLEDGE ABOUT ASTHMA**



No.□□□

### Questionnaire of Knowledge about Asthma.

The objective of questionnaire is question about teacher's knowledge on asthma and caring management to students with asthma.

\* If questionnaire.

Right            you mark        ✓        in space right

Wrong           you mark        ✓        in space wrong

Don't know you mark        ✓        in space don't know

\* Please answer total questionnaire. When you have doubt, please answer in don't know.

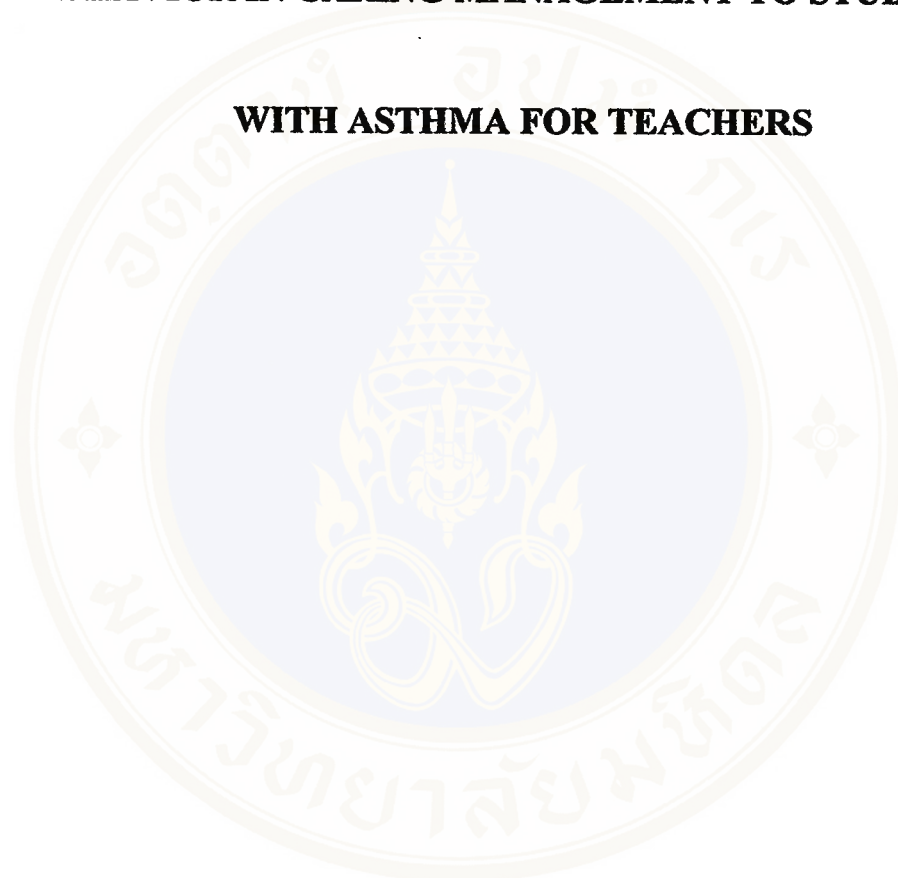
Questions	Right	Wrong	Don't know
<ul style="list-style-type: none"> <li>• Characteristics of Asthma               <ol style="list-style-type: none"> <li>1. Is a respiratory disease</li> <li>2. There is cronic inflammation of the airway</li> <li>3. Is more sensitive or hyperresponsive to the airway.</li> <li>2. When there is airflow limitation using inhaler will relief the symptoms.</li> <li>3. When there is severe airflow limitation and proper treatment is not given at once, it may cause death.</li> </ol> </li> <li>• Factors that Cause Asthmatic Attack               <ol style="list-style-type: none"> <li>4. Respiratory tract infection , especially viral infection</li> <li>5. Weather Changes such as too hot too cold, raining</li> <li>6. Emotional change such as anger sorry, surprise</li> </ol> </li> </ul>			

<p>7. Exercise strenuous</p> <p>8. Irritants such as cigarette smoke</p> <p>9. Allergens such as dust, house-dust mite, animal furs.</p> <p>10. Foods such as seafood, eggs, milk</p> <p>11. Drugs such as aspirin</p>			
<p>14.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p> <p>58. Teachers should let students to rest when they feel tired.</p>			

**QUESTIONNAIRE ABOUT**

**BEHAVIOR IN CARING MANAGEMENT TO STUDENTS**

**WITH ASTHMA FOR TEACHERS**



No.

**Questionnaire.**

**Behavior in caring Management to Students with Asthma for Teachers.**

The objective of this questionnaire is to survey that how you care the students with asthma. How do you care when students have asthmatic attack in school.

The questionnaire provide into 3 parts.

Part 1. Personal Information.

Part 2. Questions about Daily care for Students with Asthma.

Part 3. Questions about Caring Management when Student have Asthmatic Attack in School.

Please answers total questions with truthful answers, because the reason of this study is to develop program for teaching to teachers about caring management students with asthma. This questionnaire has no effect to you. Thank you for your answers.

## Questionnaire.

### Behavior in Caring Management to Students with Asthma for Teachers.

#### Part 1.

1. Level of Education

Below Bachelor Degree

Bechelor Degree

Master Degree

Other...

2. Status in School

Homeroom Teacher

School Nurse

Physical Educating Instructor

Other ...

3.

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12. How do you manage when you have students with asthmatic attack in school (answers more than 1.)

Let them lest and if they get better, let them resume the class as usual.

Give them the medicine they always used.

Inform parents.

Bring them to the hospital.

**Part 2. Daily Care to Students with asthma.**

The content in left column are about behavior that teachers do every days.How often do you take care students with asthma how often.

If you care students with asthma everyday, or every time that the incident occurred. Please ✓ in space of always.

If you care students with asthma someday or sometime that the incident occurred . Please ✓ in space of sometimes.

If you never do it. Please ✓ in space of never.

Behaviors	Always	Sometimes	Never
1. Care or remind students to drink milk or soy milk.			
2. Care or remind students to drink clean water.			
3. . . . . . .			
19. Students with history of asthmatic attack after exercise, use bronchodilator before exercising			

**Part 3. Caring Management when Students have Asthmatic Attack in School.**

Content in left column are about behavior in caring management to students with asthmatic attack in school

If you care or do it every times when the incident occurred .Please ✓ in space always.

If you care or do it sometimes when the incident occurred . Please ✓ in space sometimes.

If you never care or do it when the incident occurred. Please ✓ in space never.

If you never care because the incident never occurred. Please ✓ in space never occurred.

Behavior	Always	Sometimes	Never	Never occurred
Care for students with asthman when there is coughing, haveing secretion 1. Sit and rest 2. Drink warm water				
3. . . . . . .				
12. Take students to the hospital.				

## BIOGRAPHY

**NAME** Mrs.Tasanee Poolwech

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**INSTITUTIONS ATTENDED** Phrapokklao Nursing College, 1987 - 1991:  
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Mahidol University, 1997 – 1999 :  
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