

**SYMPTOM EXPERIENCE, SYMPTOM MANAGEMENT  
STRATEGIES AND OUTCOMES OF THE PATIENT WITH  
ALLERGIC RHINITIS**

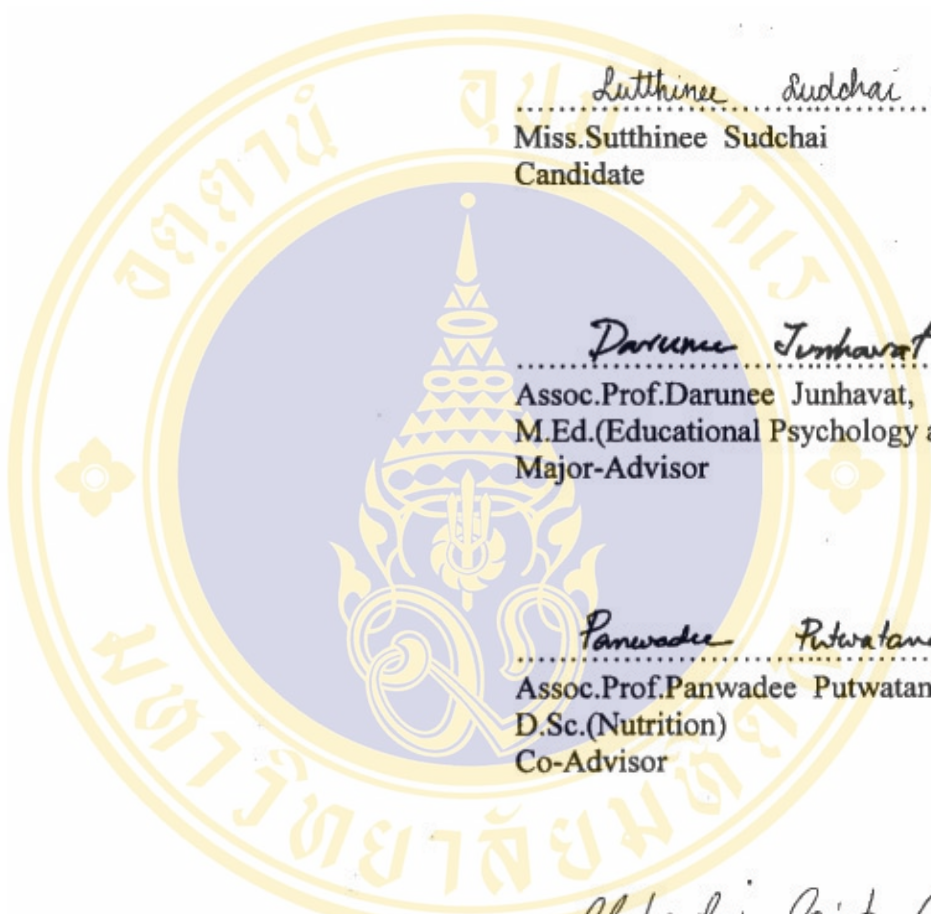


**A THESIS SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTER OF NURSING SCIENCE  
(ADULT NURSING)  
FACULTY OF GRADUATE STUDIES  
MAHIDOL UNIVERSITY  
2006**

**ISBN 974-04-6991-4  
COPYRIGHT OF MAHIDOL UNIVERSITY**

Thesis  
Entitled

**SYMPTOM EXPERIENCE, SYMPTOM MANAGEMENT  
STRATEGIES AND OUTCOMES OF THE PATIENT WITH  
ALLERGIC RHINITIS**

.....*Sutthinee Sudchai*  
Miss.Sutthinee Sudchai  
Candidate

.....*Darunee Junhvat*  
Assoc.Prof.Darunee Junhvat,  
M.Ed.(Educational Psychology and Guidance)  
Major-Advisor

.....*Panwadee Putwatana*  
Assoc.Prof.Panwadee Putwatana,  
D.Sc.(Nutrition)  
Co-Advisor

.....*Charlarmchai Chintrakarn*  
Asst.Prof.Charlarmchai Chintrakarn,  
M.D.(Dip. Thai Board of Otolaryngology)  
Co-Advisor

.....*M.R. Jisnuson Svasit*  
Prof. Dr. M.R. Jisnuson Svasit,  
Ph.D.  
Dean  
Faculty of Graduate Studies

.....*Orasa Panpakdee*  
Assoc.Prof.Orasa Panpakdee,  
DNS.  
Chair  
Master of Nursing science  
Faculty of Medicine,  
Ramathibodi Hospital

Thesis  
Entitled

**SYMPTOM EXPERIENCE, SYMPTOM MANAGEMENT  
STRATEGIES AND OUTCOMES OF THE PATIENT WITH  
ALLERGIC RHINITIS**

Was submitted to the Faculty of Graduate Studies, Mahidol University  
For the degree of Master of Nursing Science (Adult Nursing)

On

24 February, 2006

*Sutthinee Sudchai*

Miss.Sutthinee Sudchai  
Candidate

*Darunee Junhavat*

Assoc.Prof.Darunee Junhavat,  
M.Ed.(Educational Psychology and Guidance)  
Chair

*Prakong Intarasombat*

Assoc.Prof.Prakong Intarasombat,  
M.Ed.(Nursing Adm.)  
Member

*Panwadee Putwatana*

Assoc.Prof.Panwadee Putwatana,  
D.Sc.(Nutrition)  
Member

*Thongchai Luxameechanporn*

Thongchai Luxameechanporn  
M.D.(Dip. Thai Board of Otolaryngology)  
Member

*Charlormchai Chintrakarn*

Asst. Prof. Charlormchai Chintrakarn,  
M.D.(Dip. Thai Board of Otolaryngology)  
Member

*Prof. Dr. M.R. Jisnusun Svasit*

Prof. Dr. M.R. Jisnusun Svasit,  
Ph.D.  
Dean  
Faculty of Graduate Studies  
Mahidol University

*Prof. Rajata Rajatanavin*

Prof.Rajata Rajatanavin,  
M.D., F.A.C.E.  
Dean, Faculty of Medicine  
Ramathibodi Hospital,  
Mahidol University

## ACKNOWLEDGEMENTS

The success of this thesis can be attributed to the extensive support and assistance of my major advisor, Assoc. Prof. Darunee Junhavat and my co-advisors, Assoc. Prof. Panwadee Putwatana and Asst. Prof. Charlermchai Chintrakarn, M.D. I would like to express my appreciation for their valuable advice, guidance, supervision, encouragement, and support throughout the study.

My gratitude is extended to my thesis committee members, Assoc. Prof. Prakong Intarasombat and Lecturer Thongchai Luxameechanporn, M.D., for their valuable comments and supervision. Special thanks are also given to Assoc. Prof. Supawadee Prakunhungsit, Asst. Prof. Chai Euswas, Asst. Prof. Sujinda Rinsritong, Lecturer Dr. Pornthip Malathum and Ms. Suvimon Suntisuktana for their valuable suggestions and validation of the research instruments.

Special thankfulness is given to all subjects for their willingness to participate in this study. Additionally, I wish to thank all nursing staffs of the Otolaryngology Outpatient Department at the Faculty of Medicine, Ramathibodi Hospital, for their cooperation and assistance during the data collection period. In addition, I would like to offer credit to Girapong Ungkhara, M.D. for his suggestion and contribution. Very special thanks go to my higher officer and colleagues for their collaboration and support. I am grateful for the friendship and morale support from my friends and classmates at Ramathibodi School of Nursing.

Finally, I would like to express my gratefulness and sincerity to my parents and two younger sisters for their utmost care, love, encouragement, and financial support throughout the study.

Sutthinee Sudchai

# SYMPTOM EXPERIENCE, SYMPTOM MANAGEMENT STRATEGIES AND OUTCOMES OF THE PATIENT WITH ALLERGIC RHINITIS

SUTTHINEE SUDCHAI 4436620 RAAN/M

M.N.S. (ADULT NURSING)

THESIS ADVISORS: DARUNEE JUNHAVAT, M.Ed. (EDUCATIONAL PSYCHOLOGY AND GUIDANCE), PANWADEE PUTWATANA, D.Sc. (NUTRITION), CHALERMCHAI CHINTRAKARN, M.D. (DIPLOMATE THAI BOARD OF OTOLARYNGOLOGY)

## ABSTRACT

The purpose of this descriptive research was to describe symptom experience, management strategies and outcomes for patients with allergic rhinitis. The model of symptom management revised by Dodd, et al. (2001) was applied as the conceptual framework of the study. The participants included 200 adults with allergic rhinitis from the Otolaryngology Outpatient Department, Ramathibodi Hospital, from April to August, 2003. A structured interview was used to collect the data which was analyzed with descriptive statistics.

The results revealed that the majority of adults with allergic rhinitis experienced sneezing, nasal obstruction, rhinorrhea, post nasal drip and itching. Most of the participants perceived none severity yet this interfered with their daily lives. All participants were able to seek knowledge on allergic rhinitis by themselves. The majority acquired the knowledge from health professionals with respect to medication and dust avoidance whereas the others used medication for symptom management. The most common type of medication applied was antihistamines whilst corticosteroids were used with severe nasal symptoms.

The effective symptom management strategies for self-care management were health-risk management, exercise, and nutrition-intake management. Most of the participants evaluated the outcomes as improved. The total mean for allergic rhinitis management cost per person per month was Baht 777.12.

The results of this study should be useful for health professionals in providing curative advice to patients with allergic rhinitis to promote effective self-care management and to reduce the symptoms efficiently.

KEY WORDS: ALLERGIC RHINITIS / SYMPTOM EXPERIENCE / SYMPTOM MANAGEMENT STRATEGIES / SYMPTOM OUTCOMES

95 P. ISBN 974-04-6991-4

ประสบการณ์การมีอาการ วิธีการจัดการกับอาการ และผลจากการจัดการกับอาการของผู้ป่วย  
โรคจมูกอักเสบจากภูมิแพ้ (SYMPTOM EXPERIENCE, SYMPTOM MANAGEMENT  
STRATEGIES AND OUTCOMES OF THE PATIENT WITH ALLERGIC RHINITIS)

สุทธินิ สุคใจ 4436620 RAAN/M

พย.ม. (การพยาบาลผู้ใหญ่)

คณะกรรมการควบคุมวิทยานิพนธ์: ดร.ณิ ชุมหวัด, ค.ม. (จิตวิทยาการศึกษาและการแนะแนว),  
พรรณวดี พุฒวัฒนะ, วท.ค. (โภชนศาสตร์), เณลิมชัย ชินตระกูล, พบ.ว. (โสต ศอ นาสิกวิทยา)

#### บทคัดย่อ

การศึกษานี้เป็นการวิจัยเชิงบรรยาย เพื่อศึกษาประสบการณ์การมีอาการ วิธีการจัดการกับอาการ และ  
ผลจากการจัดการกับอาการของผู้ป่วยโรคจมูกอักเสบจากภูมิแพ้ โดยใช้กรอบแนวคิดการจัดการกับอาการของ  
คอคค์และคณะ กลุ่มตัวอย่างเป็นผู้ป่วยโรคจมูกอักเสบจากภูมิแพ้จำนวน 200 รายที่ได้รับการคัดเลือกแบบ  
เฉพาะเจาะจงจากหน่วยตรวจผู้ป่วยนอก หอ จมูก โรงพยาบาลรามารักษ์ดี ใช้เวลาเก็บข้อมูล 5 เดือน (เมษายน  
ถึง สิงหาคม 2546) เก็บข้อมูลโดยการสัมภาษณ์แบบสัมภาษณ์แบบมีโครงสร้างที่สร้างขึ้นและวิเคราะห์  
ข้อมูลโดยใช้สถิติบรรยาย

ผลการศึกษาพบว่าผู้ป่วยโรคจมูกอักเสบจากภูมิแพ้ส่วนใหญ่มีอาการจาม รongลงมาคือ คัดแน่นจมูก  
น้ำมูกไหล เสมหะลงคอ และอาการคัน กลุ่มตัวอย่างส่วนใหญ่รับรู้ความรุนแรงของโรคระดับไม่รุนแรงแต่  
กระทบต่อการทำกิจวัตรประจำวัน กลุ่มตัวอย่างทั้งหมดสามารถหาความรู้เรื่องโรคจมูกอักเสบจากภูมิแพ้  
ด้วยตนเอง ส่วนใหญ่ได้รับความรู้จากบุคลากรทางการแพทย์ในเรื่องการใช้ยาและการหลีกเลี่ยงฝุ่น  
ละออง รongลงมาจัดการกับอาการโดยการใช้น้ำยา ที่ใช้มากที่สุดได้แก่ ยาต้านฮีสตามีน และ กลุ่มคัดจมูก  
เตอร์รอยซ์ที่มักใช้เมื่อมีอาการทางจมูกรุนแรงขึ้น

วิธีการจัดการกับอาการที่กลุ่มตัวอย่างสามารถปฏิบัติได้ด้วยตนเองอย่างมีประสิทธิภาพ ได้แก่ การ  
ป้องกันสิ่งที่เป็นอันตรายต่อสุขภาพ รongลงมาคือ การออกกำลังกาย และการเลือกรับประทานอาหาร  
ค่าใช้จ่ายในการจัดการกับอาการโรคจมูกอักเสบจากภูมิแพ้ทั้งหมด เฉลี่ยคนละ 777.12 บาทต่อเดือน

ผลการศึกษาจะเป็นประโยชน์ต่อบุคลากรทางการแพทย์ ในการให้คำแนะนำที่ถูกต้อง  
แก่ประชาชนที่เป็นโรคจมูกอักเสบจากภูมิแพ้ เพื่อให้ปฏิบัติตนได้ถูกต้องและลดอาการของโรคได้อย่างมี  
ประสิทธิภาพ โดยเฉพาะการส่งเสริมให้ผู้ป่วยสามารถดูแลตนเองได้

95 P. ISBN 974-04-6991-4

## CONTENTS

|                                                         | <b>Page</b> |
|---------------------------------------------------------|-------------|
| ACKNOWLEDGEMENTS.....                                   | iii         |
| ABSTRACT.....                                           | iv          |
| LIST OF TABLES.....                                     | viii        |
| LIST OF FIGURES.....                                    | ix          |
| CHAPTER                                                 |             |
| I    INTRODUCTION.....                                  | 1           |
| Background and significance.....                        | 1           |
| Conceptual framework.....                               | 3           |
| Scope of the study.....                                 | 4           |
| Research objectives.....                                | 5           |
| Definition of terms.....                                | 5           |
| II    LITERATURE REVIEW.....                            | 7           |
| Definition of allergic rhinitis.....                    | 7           |
| Classification of allergic rhinitis.....                | 7           |
| Pathophysiology.....                                    | 8           |
| Incidence and prevalence.....                           | 10          |
| Diagnosis of allergic rhinitis.....                     | 11          |
| Model of symptom management by Dodd, et al. 2001.....   | 12          |
| Symptom experiences of allergic rhinitis.....           | 14          |
| Symptom management strategies of allergic rhinitis..... | 15          |
| Symptom outcomes of allergic rhinitis.....              | 20          |
| The health promotion model.....                         | 20          |
| III   METHODOLOGY.....                                  | 22          |
| Population and sample.....                              | 22          |
| Sample size.....                                        | 22          |
| Setting.....                                            | 23          |
| Instrument.....                                         | 23          |

## CONTENTS (cont.)

|                                              |    |
|----------------------------------------------|----|
| Protection of the Human rights subjects..... | 25 |
| Data collection.....                         | 25 |
| Data analysis.....                           | 26 |
| IV RESEARCH RESULT.....                      | 27 |
| V DISCUSSION.....                            | 58 |
| VI CONCLUSION.....                           | 70 |
| REFERENCES.....                              | 75 |
| APPENDIX.....                                | 86 |
| BIOGRAPHY.....                               | 95 |

## LIST OF TABLE

| TABLE                                                                                                     | Page |
|-----------------------------------------------------------------------------------------------------------|------|
| 1 Demographic characteristics of the participants.....                                                    | 27   |
| 2 Perception of allergic rhinitis symptoms of the participants.....                                       | 31   |
| 3 Perception of allergen or irritant induced allergic rhinitis symptoms<br>and resources of allergen..... | 32   |
| 4 Severity of allergic rhinitis symptoms and its interference with daily life<br>by general.....          | 34   |
| 5 Severity and its interference with daily life divided by each symptoms..                                | 35   |
| 6 Sources of information for allergic rhinitis symptom management.....                                    | 38   |
| 7 Number of clinic/ hospital visited for treatment of allergic rhinitis.....                              | 39   |
| 8 Medication used for management of allergic rhinitis.....                                                | 40   |
| 9 Management strategies and outcomes of allergic rhinitis symptoms<br>in general.....                     | 41   |
| 10 Management strategies to improve specific symptom and outcomes.....                                    | 45   |
| 11 Management strategies and outcomes of allergic rhinitis symptoms in<br>none severity.....              | 49   |
| 12 Management strategies and outcomes of allergic rhinitis symptoms in<br>mild severity.....              | 50   |
| 13 Management strategies and outcomes of allergic rhinitis symptoms in<br>moderate severity.....          | 51   |
| 14 Management strategies and outcomes of allergic rhinitis symptoms in<br>severe severity.....            | 52   |
| 15 Outcomes of the participants response to allergic rhinitis symptoms<br>management.....                 | 53   |
| 16 Monthly cost of allergic rhinitis management.....                                                      | 55   |
| 17 Cost of allergic rhinitis management.....                                                              | 57   |

## LIST OF FIGURE

|                                                                                            | <b>Page</b> |
|--------------------------------------------------------------------------------------------|-------------|
| <b>FIGURE</b>                                                                              |             |
| 1 The conceptual framework of symptom management of allergic rhinitis study in adults..... | 4           |
| 2 The Symptom Management Conceptual Model of Dodd, et, al. (2001).....                     | 14          |
| 3 The perception of allergic rhinitis symptoms of adult.....                               | 33          |
| 4 Management strategies of allergic rhinitis symptoms in group.....                        | 37          |

## CHAPTER I

### INTRODUCTION

#### Background and Significance

Allergic rhinitis becomes a common health problem for adult population because there are many occurrences in outpatient practice of medicine (Berger, 2003: 7) and are found in 10-25% of population (Fokkens, 2002: 469) as same as in Thailand that found 20% of adults (Chaweewan Bunnag, et al., B.E. 2538: 1027; Supawadee Prakunhungsit & Somyos Kunchak, Eds., B.E. 2544: 212; 225). Allergic rhinitis symptom is a cause for physician's visit of the patients; there were 36% of adult in the Outpatient Otolaryngology Clinic at Ramathibodi Hospital (Ramathibodi Hospital, B.E. 2544, 2545).

Allergic rhinitis is a specific allergic reaction of the nasal mucosa to allergens (Liberman & Anderson, 2000: 160; Patterson, Grammer & Greenberger, Eds., 1997: 184). It is usually multiple symptoms of specific immunologic reaction, a symptomatic disorder of the nose (Bousquest, Ed., 2002: 842). The symptoms are sneezing, rhinorrhea, nasal itching, and nasal congestion (Patterson, Grammer & Greenberger, Eds., 1997: 186). The patients often suffer from irregular breathing which reduce the sense of smell or taste flavors due to nasal congestion.

It interferes with patient's daily life, occupation life (Demoly, et al., 2002: 552), daytime function and sleeping (Bachert, Virchow & Plenker, 2002: 43). The patients complain about headache and lack of sleep at night. They feel sleepy and fatigue during the day (Hughes, et al., 2003: 380). They are embarrassed of the swollen, bloodshot eyes, runny nose, and allergic shiners (black eyes) as a result. Allergic rhinitis strongly impacts the quality of life (Lloyd & Berger, 2002). The common disease presents with allergic rhinitis is asthma (Demoly, et al., 2003: 672), sinusitis, and otitis media (Berger, 2003: 7).

Not only affect to the individual health problem, but allergic rhinitis also has a substantial economic impact (Bolin & Lindgren, 2002: 115). In Europe, the direct annual cost of allergic rhinitis is estimated to be 1.0-1.5 billion EUR, and indirect cost is 1.5-2.0 billion EUR (Fokkens, 2002: 469). The higher prevalence of allergic rhinitis could be a result of high levels of air pollution, especially from traffic, heat (Olivieri, et al., 2002: 605), tobacco smoke (Høst & Halken, 2002: 392), and occupation allergens (Patterson, Grammer & Greenberger, Eds., 1997: 191). In Thailand, allergens which induce allergic rhinitis found throughout the year. There are dust, house dust mites, pollen, kapok, cockroaches, animal dander, weed and tobacco smokes (Suwat Benjapolpituk, et al., Eds., B. E. 2544: 11, 44).

Overall allergens in the environment are difficult to control whereas the patients seek information to reduce the symptoms. The two major treatments of allergic rhinitis are medication and avoidance of specific allergens. Moreover, immunotherapy could be used in severely symptomatic patient and fall down of medications (Kupecz, 1999: 108; Salib, Drake-lee & Howarth, 2003: 296). The treatments guideline of allergic rhinitis in Thailand is the same as worldwide (Boonchu Kulapaditharom & Yupa Sumitsawan, Eds., B.E. 2544: 1-10). Antihistamines is the first medication used in allergic rhinitis (Salib, Drake-lee & Howarth, 2003: 296-97), followed by glucocorticosteroids, disodium cromoglycate (cromolyn sodium), decongestants, topical anticholinergics, and antileukotrienes. Allergic rhinitis patients can prevent and avoid allergic symptoms by closing the windows and the doors during the pollen-producing time (pollen season); covering the mattresses and pillowcase; avoiding pet or other triggers (Little, 2003; Ballenger & Snow, Eds., 1996: 139-40); and killing mites with chemical (Busse & Holgate, Eds., 1995: 1416).

Persons could prevent and decrease allergic symptoms by themselves. They are learning and seeking allergic treatment as they face the symptoms. A model of symptom management defined strategies that a person used for reducing symptoms is called a dynamic system which could be self selected. As a result, a person could find the best practice for disease control (Larson, et al., 1994: 272). Thai people often use folk therapy (Orasa Panpakdee, B.E. 2542: 28), to care for themselves and their families by using medications or alternative therapy (Nadee, 1996: 2; Nutsara

Nimnoy, B.E. 2542: 6). Muangchang (2000: 63-4) reported that allergic child's mother could practice correctly followed the advice of doctor and nurse, book sheets, and multimedia. The concerned mothers should take care of their children including avoidance of the disease etiology, result in the decreasing of symptoms and preventive of severe symptom.

Allergic rhinitis patients can develop symptoms management strategies base on their experience and health information. The knowledge from this study may be useful for health care providers to understand symptoms experience, symptoms management, and their health believe which will be use for planning interventions for this population.

### **Conceptual Framework**

This study is based on Symptom Management Model revised by Dodd, et al. (2001), the University of California, San Francisco (UCSF). The first model presented by Larson, et al. in 1994, to describe a management strategy of chronic illness. Management strategies can be changed from a new tradition of medical treatment and alternative treatment in the present. Symptoms are viewed as subject experiences reflecting in a patient bio-psychosocial functioning, sensation, or cognition after having the disease. The individual's signs and symptoms reflect disease severity, evaluation and verification of the effectiveness of management strategies. Both signs and symptoms are significant problems leading the patient to meet the clinicians. The UCSF School of Nursing Symptoms Management Model is based on the effective management and group of symptoms demand. There are three dimensions: symptoms experiences; symptoms management strategies; and symptom outcomes.

The symptoms experiences include an individual's perception of a symptom, evaluation of the meaning of symptoms and respondent. People evaluate the meaning of symptoms by making judgements on the severity, cause, treatment, and effects on their lives. The respondent of diseases induced one or more style of response. The allergic rhinitis symptoms presently are sneezing, itching, rhinorrhea, and nasal obstruction. Most of allergic rhinitis patients have multiple sensitizers through the years wherein the patients suffer from these symptoms (Demoly, et al., 2003: 673-74).

The goal of symptoms management is to delay or stop a negative outcome. The management strategies include biomedical, professional and self-care strategies. It starts from assessing symptoms experiences and planning the intervention strategies. Self-management strategies in adult with allergic rhinitis care practice differently. Patients could take medication by themselves or by medical doctors' order or took herbal (Hu, et al., 2002: 478). Simultaneously they might avoid a specific allergen. The outcomes of management strategies focuses emergence from symptoms experiences and symptoms management strategies. Symptom outcomes of adult with allergic rhinitis include cost of medication intake, cost of time loss, transportation fee, and other practice to prevent allergic rhinitis symptoms. The conceptual framework of allergic rhinitis management strategies in this study is presented in Figure 1.

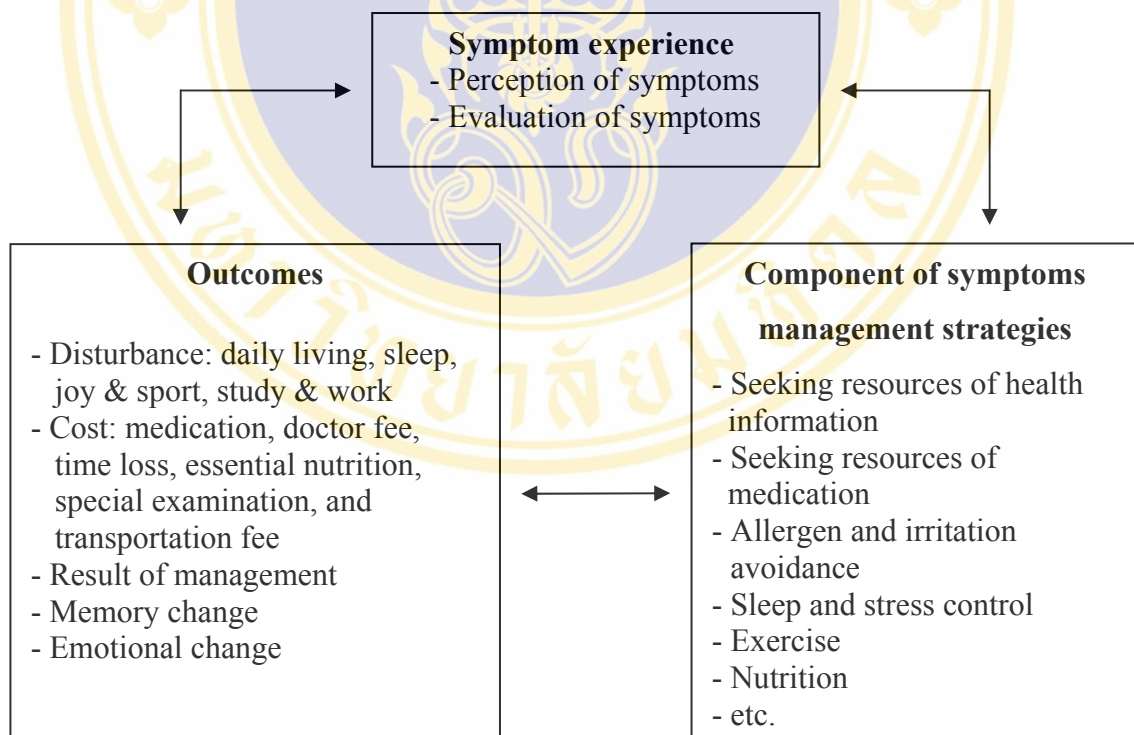


Figure 1. The conceptual framework of symptom management of allergic rhinitis study in adults.

## Scope of the study

This study is aimed to describe symptoms, management strategies and outcomes of allergic rhinitis in adult patients. The populations are adult patients, age over 20 years old, attending the Otolaryngology Outpatient Department at Ramathibodi Hospital during April to August 2003. The participants would be structure interviewed by the researcher.

## Research Questions: In adult patients with allergic rhinitis;

1. What is the perception of their symptoms?
2. What is the degree of the severity of their illness?
3. What are their management strategies?
4. What is the cost of care spent to manage their symptoms?

## Research Objectives

1. To describe the symptoms experiences and severity of symptoms in adults with allergic rhinitis.
2. To describe management strategies in adults with allergic rhinitis.
3. To explore symptoms management outcomes and the cost of care for management of allergic rhinitis in adults with allergic rhinitis.

## Definition of terms

**Symptom experiences** were defined as the perception of symptom and severity of symptom of allergic rhinitis.

- **Perception of symptom** refers to the participants' conscious, cognitive interpretation of symptoms related to disease and treatment of allergic rhinitis. It includes sneezing, nasal obstruction, rhinorrhea, post nasal drip, itching, cough, sore throat, headache, hoarse voice, hearing loss, watery eye, anosmia, fever, etc.

- **Perception of severity** refers to the participants' judgment of severity of symptoms, which includes none, mild, moderate, and severe.

### **Management strategies**

Management strategies were defined as the act that the participants used for prevention and relief of allergic rhinitis symptoms in addition to other self-prevention strategy. The management strategies include seeking a resource of health information; medication intake; exercise; increase or decrease various food intakes; sleep and stress control; allergen and irritation avoidance, etc. The data of management strategies were grouped by exercise, nutrition-intake management, health-risk management, stress management and health-beliefs management.

### **Symptom outcomes**

The outcomes in this study were focused on responsive of symptoms; level of disturbance on daily living, sleep, joy and sport; study and work; memory and emotional changed, as they assessed the outcomes of symptoms from the individual's perception. Moreover, the outcomes included the results of the symptoms management in term of improvement, unchanged, and critical; cost of management per month included cost of medication, doctor fee, and food supplement; special examination; time loss; and cost of transportation fee based on actual expenses per month.

## **CHAPTER II**

### **LITERATURE REVIEW**

This research is a descriptive study on symptom experience, symptom management strategies and symptom outcomes of adults with allergic rhinitis. A literature related to symptom experience, symptom management, and symptom outcome are presented in sequence as follows:

1. Allergic rhinitis definition, classification, pathophysiology, incidence, symptoms, diagnosis, and treatment (management strategies).
2. Model of symptom management.
3. Factors facilitating symptom management strategies of adults with allergic rhinitis; grouped in health promotion modeled by Pender and symptom outcome.

#### **Definition of allergic rhinitis**

Allergic rhinitis (or hay fever) is clinically defined as a symptomatic disorder of the nose. It is induced by an immunoglobulin E (IgE) mediated inflammation of nasal mucous membranes after exposure to allergens. (Middleton, et al., Eds., 1998: 30; Bousquet, Ed., 2001: 5). The typical characteristics of allergic rhinitis are composed of a period of sneezing, nasal discharge, nasal congestion, and nasal itching giving rise to difficulty in breathing through the nose (Howarth, Salagean & Dokic, 2000: 7; Salib, Drake-lee & Howarth, 2003: 294).

#### **Classification of allergic rhinitis**

Allergic rhinitis is classified by duration of symptoms and quality of life parameters. If the duration of symptoms is less than four days a week, and continues not longer than four weeks per year, it is called intermittent. When the duration is longer, it is called persistent allergic rhinitis. According to the impact of symptoms to quality of life, allergic rhinitis is classified as mild and moderate to severe. The

patients with mild severity of symptoms have normal sleep, normal daily activities, sport and leisure, normal work and school, and no troublesome symptoms. Patients with moderate to severe allergic rhinitis have one or more items of abnormal sleep, impaired daily activities of sport and leisure, work or school problem, and troublesome symptoms (Bousquet, Ed., 2001: 7).

The classification of allergic rhinitis should be assessed in order to guide effective therapeutic prescriptions (Bunnag & Muntarbhorn, Eds., 1997: 38; Hayden, 2004: 36).

### **Pathophysiology**

Allergic rhinitis is an immunologic process that involves the production of Ig E (Donald, Gluckman & Rice, Eds., 1995: 111), to sensitize individual undergoing a type I hypersensitivity reaction in the nasal mucosa. The allergen binds to IgE on the surface of mast cell within the mucosa, causing mast cell degranulation and releasing of two kinds of allergic mediators. An early mediator such as histamine causes vascular dilatation, mucosa edema, mucosal irritation, hypersecretion, and reflex stimulation of parasympathetic nerves perpetuates the nasal congestion. The early allergic reaction present with blockage of the nose, watery and proteinic discharge, sneezes and nasal itching. Late mediators such as leukotrienes promote releasing of eosinophils into the mucosa which effect the persistent nasal congestion (CAJ Prescott, 1998: 103; Busse & Holgate, Eds., 1995: 146). Chronic allergic inflammation of the nasal mucosa develops subsequently with cellular infiltration and vascular mucosal engorgement producing nasal obstruction (Horak, et al., 2003: 481).

### **Sign and Symptoms of allergic rhinitis**

The results of antigen crosslinking of adjacent IgE molecules bound to mast cell and effect the explosive degranulation of mast cell that leads to allergic rhinitis symptoms. Those are characterized by repetitive sneezing, rhinorrhea, nasal obstruction, watery eyes, itchy nose or eye, post nasal drip, impaired taste and loss of sense of smell. These uncomfortable and subjectively irritating symptoms can be more than a minor nuisance (Noonan, et al., 2003: 351; Salib, Drake-Lee & Howarth, 2003: 291-303). Histamine leads to nasal challenge which induced sneezing, nasal itching, nasal discharge and nasal blockage (Salib, Drake-Lee & Howarth, 2003: 294).

Sneezing is a common symptom of allergic rhinitis (Cooper, 2001). Sneezing present on awakening or in the early morning hours (Dhillon & East, 1999: 32; Petterson, Grammer & Greenberger, Eds., 1997: 192), 10-12 sneezes in rapid succession (Petterson, Grammer & Greenberger, Eds., 1997: 186). Nasal obstruction is a common symptom related to allergic rhinitis, a reflex stimulation of parasympathetic nerves perpetuates the nasal congestion. Late mediators promote migration of eosinophils into the mucosa and these release substances such as leukotrienes which are responsible for the persistence of nasal congestion. Pressure on the middle turbinate and septum may be cause of pain (CAJ Prescott, 1998: 103, 121). Nasal obstruction is often associated with poor sleep quality, leading to decreased learning ability, productivity at work or school, and reduced quality of life (Craig, et al., 2004: S139). Rhinorrhea appear after exposure to specific trigger allergen or irritation (Alper, Myers & Eibling, Eds., 2001: 86). It is typically a thin discharge that may be profuse and continuous (Patterson, Grammer & Greenberger, Eds., 1997: 187). Post nasal drip, allergic rhinitis patient have nasal mucus more than 750 ml. per day (CAJ Prescott, 1998: 117).

The study of Gautrin, et al. (2003) found that allergic rhinitis symptoms in study of the university student (mean age 21, SD  $\pm$  6.8 years) are sneezing, a runny and stuffy nose, itchy or watery eyes on exposure to house dust or pets. Allergic symptoms usually occur in the pollen season, itching and runny nose present after exposure to dog dander. Furthermore, episodes of shortness of breath, cough, wheezing and chest tightness were found (Gautrin, Ghezzi & Malo, 2003: 609).

Cough is reflexes of the body's defense mechanisms, post-nasal drip often induce the cough reflex (Kotton, 2002). Sore throat is throat discomfort, pain or scratchiness in the throat. Nasal obstruction leads to sore in the throat in the morning (Bierman, et. al., Eds., 1996: 401). Breathing through the mouth lead to sore throat because dry air irritate throat (Greene, 2001). Headache is the result of the negative pressure when air is absorbed from the obstructive sinus (Patterson, Grammer & Greenberger, Eds., 1997: 187). The nasal mucosa responds with inflammatory swelling (nasal obstruction), irritation (sneezing) and excessive mucus production with impaired ciliary functions predisposes to obstruction of the drainage passages of the sinuses with accumulation of exudates in sinuses that lead to feeling of stuffiness

in the head and headache (CAJ Prescott, 1998:101). Aural symptoms may also cause direct eustachian tube (ET) inflammation or may merely obstruct the orifice of the ET due to edema. It leads to impairment of ear (Bierman, et. al., Eds., 1996: 413; Lazo-Sáenz, 2005: 626-9). Hearing loss is caused by a middle ear effusion secondary to ET dysfunction (Dhillon & East, 1999: 32). Anosmia/smell-impaired is a total loss of the sense of smell (CAJ Prescott, 1998: 203; Dhillon & East, 1999: 32). It is usually an insignificant result of nasal congestion or obstruction. Temporary loss of the sense of smell is common with nasal allergies (Kacker, 2002).

The accumulated cells are in an activated state, and the mediators released by the cells are the factors that lead to symptom generation through stimulating specific receptors on sensory nerves and blood vessels within the nasal mucosa. The mediators generated will have direct effects on the nasal vasculature through their interaction with specific receptors and will induce nasal blockage and plasma protein extravasation. Plasma protein exudation is an important hallmark of the airway inflammation in allergic rhinitis. Furthermore, the nasal itching, sneezing, and rhinorrhea are completely abolished by the H1 receptor antagonists, indicating the involvement of H1 receptor stimulation in the initiation of the response (Adkinson, et al., Eds., 2003: 1404).

In the study of Braunstahl, et al. (2003: 584) found that a similar inflammatory change in upper and lower airways of allergic rhinitis inflammation was generally related to clinical expression of allergic rhinitis and tended to be more severe in rhinitis patients with concomitant asthma.

## **Incidence and prevalence**

Allergic rhinitis represent between 10% to 25% of the world population and increasing prevalence in adults (Adkinson, et al., Eds., 2003: 1393; Borish, 2003: 1021; Salib, Drake-lee & Howarth, 2003: 291). In Europe, an incidence rate of allergic rhinitis is from 9.5% to 40.9% in adults' age 20 – 40 years old (Demoly, et al., 2002: 546). In Italy, allergic rhinitis screening in population age 20 – 40 years old found 15.9% among adults population. It is slightly higher in male (16.3%) than in female (15.5%) and it is the highest in urban area. In a mailed survey in London found the prevalence of allergic rhinitis is 24% of the population (Olivieri, et al.,

2002: 600). The prevalence of allergic rhinitis in Tallinn, Estonia study found that 19.6% of them had allergic rhinitis (Raukas-Kivioja, et al., 2003: 1345). The prevalence of allergic rhinitis in rural area in Greece found 40.8% are in grape farmers and 26% in other population (Chatzi, et al., 2005: 372). In Thailand, Chaweewan Bunnag, et al. (B.E. 2538: 1027) found the incidence of allergic rhinitis in adults is 22.78%. Moreover, Vichyanond, et al. (2002: 34) found prevalence of allergic rhinitis is 26.3% among university students in Bangkok.

Nguyen (2004) found that allergic rhinitis present fairly equal in both males and females and it affected individuals ages younger than 45 years. However, the prevalence may increase slightly in the elderly. The incidence of symptoms is high in people who have family allergic history, 29% in one parent that has allergy, and 47% in both parents (Ballenger & Snow, Eds., 1996: 135).

### **Diagnosis of allergic rhinitis**

The diagnosis of allergic rhinitis usually based on the patient's history and confirmed by the physical examination (Krouse & Krouse, 1999: 13).

#### **History of symptoms**

The patients' histories of the symptoms are sneezing, rhinorrhea, nasal blockage and itching. The history of allergens exposure must be assessed; for example, pollen, household pet, dust mites and mold in addition to family's history of allergic condition (asthma, eczema, etc), and the severity of symptoms (evaluated interference with daily activities) (Arshad, 2002: 70).

#### **The physical examination**

The physical examination is focused on the nasal mucosa that appears pale, swollen, moist, turbinate hypertrophy and boggy. The patients' appearances are dark circles around the eyes (allergic shiners) and transverse nasal crease resulting from upward rubbing of the nose (allergic salute) (Arshad, 2002: 70).

#### **Investigations**

The most common investigation in allergic rhinitis is skin test and total plasma IgE test (Adkinson, et al., Eds., 2003: 633; Arshad, 2002: 24–7; 30–1; Kemp & Lockey, 2000: 61; Roland, et al., 1995: 17).

1. Skin test is a simple technique performed by a well-trained allergist with expertise. The epidermal pick test (skin-pick test) and the intradermal injection test can be done by placing an allergen on the skin of the flexor aspect of the forearm. If the patient has allergy to the particular allergen then a wheal and flare will come up within 20 minutes.

1.1. The skin-pick test uses standardized vaccines are 10,000 allergy units per milliliter (AU/mL) and about 3 millimeters in diameter of wheal shows the positive response.

1.2. Intradermal injection used allergen (dosage of standardized vaccines are 100 AU/mL, dilution factor results in a 1: 1000 w/v or 1: 2000 w/v) 0.05 ml. and 20 minutes after injection estimated diameter of wheal size is 5 - 10 mm. or flare size of 10 – 30 mm. indicates positive response.

2. Blood test. Total plasma IgE level may be measured in the plasma radioimmunosorbent test (PRIST) and IgE to specific allergens in the radio allergosorbent tests (RAST). Total IgE is elevated in patients with allergic conditions such as atopic asthma, eczema and rhinitis. Normal range for adult patients is 0 – 100 IU/ml.

### **Model of symptom management by Dodd, et al. 2001**

The Symptom Management Model is based on the effective management of symptom or group of the symptoms, developed by the University of California, San Francisco (UCSF). The first model present by Larson, et al. in 1994; the model present is designed to ensure a comprehensive approach to symptom management by encompassing the symptom experience, integrated symptom management strategies, and symptom outcomes. Three dimensions are interrelated to effectively manage a symptom (Larson, et al., 1994: 275).

The model test and revise by UCSF, presented by Dodd, et al. in 2001. The dimension of the symptom management model has conceptualized relationship to the domain of nursing science. The domain of nursing science; nursing, person, health/illness and environment are contextual variables influencing all three dimensions of the Larson, et al. model; symptom experience, management strategies and outcomes.

Person variables include demographic, psychological, sociological and physiological are individual views and responds to the symptom experience. Health and illness are risk factors, injuries or disabilities. In addition, environment refers to the aggregate of conditions or the context of a symptom occurs that include physical, social and cultural variables.

The symptom experience includes an individual's perception of a symptom, evaluation of the meaning of a symptom and response to symptom. Perception of symptoms refers to whether an individual notices a change from the way that they usually feel or behave. Evaluation of symptom is making judgments about the severity, cause, treatability and the effect of symptoms on their lives. Responses to symptoms include physiological, psychological, sociocultural and behavioural components. The components of the symptom experience are interacted if symptoms are to be effectively managed.

The goal of symptom management is to avert or delay a negative outcome through biomedical, professional and self care strategies. Management begins with assessment of symptom experience from the individual's perspective. Symptom management is a dynamic process, often requiring changes in strategies over time or in response to acceptance or lack of acceptance of the strategies devised. The revised model includes the specifications of what, when, where, why, how much (intervention dose), to whom (recipient of intervention) and how (delivered). Researchers and clinicians consider these questions as they design, develop and prescribe symptom management strategies.

Outcomes emerge from symptom management strategies as well as from the symptom experience, financial status and health services. The outcomes dimension focuses on functional status, self-care, costs, quality of life, morbidity/co-morbidity, mortality and emotional status. The revised model has no arrows indicating directionality between the multidimensional indicators and symptom status. However, all outcomes may be related to each other as well as to symptom status.

The duration of symptom evaluation depends upon its persistence, need for continued intervention and response to treatment. When a symptom is successfully treated and completely resolved, the model is no longer relevant. But, if continued intervention is necessary to control recurring symptom, then the model continues to

be applicable and direct management and measurement of outcomes continues. The symptom management model of Dodd, et al. presented in Figure 2.

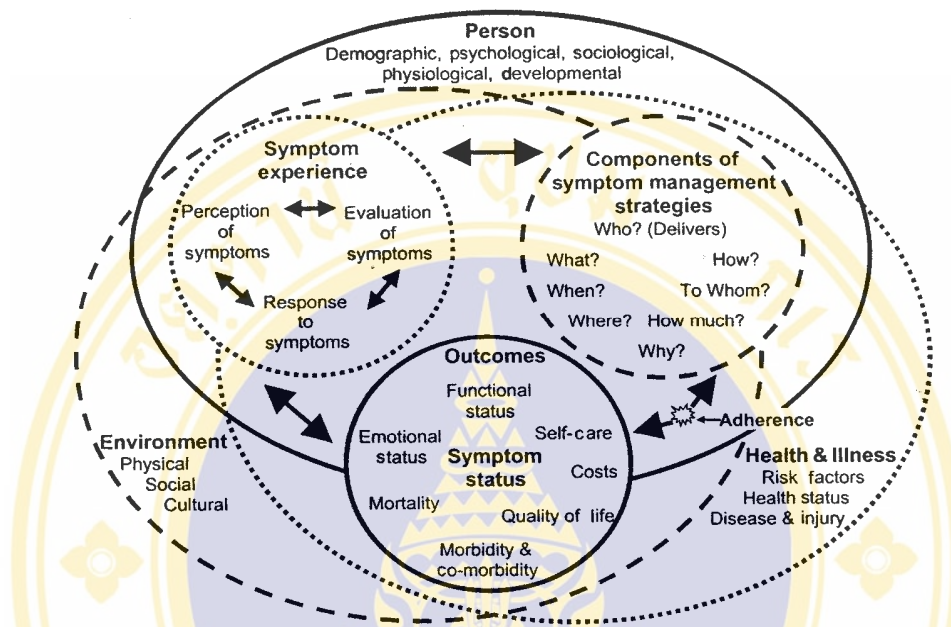


Figure 2. The Symptom Management Conceptual Model of Dodd, et al. (2001)

Allergic rhinitis patients have experience on multiple allergic symptoms. They knew the symptoms suffered their lives but they could manage the allergic symptoms by themselves. The patients perceived severity of allergic symptoms and outcomes of management strategies. They managed symptoms by seeking management strategies from people, media, and documents.

## Symptom Experiences of allergic rhinitis

### Symptom perception of allergic rhinitis

Allergic rhinitis symptoms have multiple sensitizations: sneezing, runny nose/rhinorrhea or stuffy nose, itchy, watery eyes, nasal obstruction, post nasal drip or impaired test or smell. Furthermore, episodes of shortness of breath, cough, wheezing and or chests tighter. Allergic symptoms usually occur in the pollen season, after expose to allergen or throughout the year (Demoly, et al., 2003: 673-4; Gautrin, Ghezze & Malo, 2003: 609; Noonan, et al., 2003: 351).

### **Symptom Evaluation of allergic rhinitis**

The allergic rhinitis condition is characterized by repetitive sneezing, rhinorrhea, nasal obstruction, watery eyes, itchy nose or eye, post nasal drip, and impaired taste or smell. These uncomfortable and subjectively irritating symptoms can be more than a minor nuisance (Noonan, et al., 2003: 351).

### **Symptom management strategies of allergic rhinitis**

Allergic rhinitis treatment is avoidance first, medication second, then allergic immunotherapy (Kupecz, 1999: 109), and others. Avoidance is always the simplest method to prevent the occurrence of symptoms. It is necessary for the practitioner to be aware of the environmental and occupational surroundings of the individual that might lead to allergic rhinitis (Donald, Gluckman & Rice, Eds., 1995: 116). Subsequently, a quick combine treatment with antihistamines and topical nasal corticosteroid are suggested (Kupecz, 1999: 110). Immunotherapy is used for severe allergic rhinitis patients who failed to respond to conventional treatment (Salib, Drake-Lee & Howarth, 2003: 297). Other modalities are herbals, exercise and surgery (Middleton, et al., Eds., 1998: 1010-13).

#### **Avoidance**

Allergic rhinitis patients cannot avoid expose to all allergens but they should minimize expose to allergens and irritants known to exacerbate symptom. They should be kept out of immediate environment (Middleton, et al., Eds., 1998: 1010; Roland, McRae, & McCombe, 1995: 18). Dust mites are microscopic that usually live in human bed. The patients should change the filters on the furnace, remove dust-catching surfaces, cover mattress and pillow with vinyl or special vapor permeable fabrics, wash the bedding with hot water (higher than 130° F) every week, vacuum surface of carpet or use Benzyl benzoate (acarosan) and tannic acid solution for wash (Bierman, et al., Eds., 1996: 197-120; Donald, Gluckman & Rice, Eds., 1995: 116). Saliva and dander of pet at home is a source of allergen so the animal should be washed or bathed as necessary and limit them away from the bedroom. Cockroach allergens can be washed with specific chemicals. Molds are often found in air conditioning room so the patients should use high-efficiency particulate air filters, electrostatic filters, and frequently clean the filters. Patients with severe sensitivity to

pollen and mold should keep the windows closed, do not grow plants in bedroom, or cutting down trees around a house (Ballenger & Snow, Eds., 1996: 139-145). Both physician and patient should be aware of the specific allergens in their area and other area in which travel is planned (Middleton, et al., Eds., 1998: 1010).

## **Medications**

### **Antihistamine**

Antihistamines are the most common drug use in allergic rhinitis. Blocking of H<sub>1</sub>-receptors shall prevent and relive sneezing, itching and rhinorrhea but less effective for nasal blockage. First generation antihistamines such as chlorpheniramine is easily bought over the counter but having side effects; i.e., sleepiness, impaired performance, and anticholinergic effects such as dry mouth and exacerbate narrow-angle glaucoma. The other drugs were brompheniramine, diphenhydramine and dimethindane. Second-generation antihistamine is better in terms of prolonged half-life, which can be given only once daily. Examples of this group of medications are cetirizine HCL, desloratadine, loratadine, fexofenadine, levocetirizine and terfenadine (Alper, Myers & Eibling, Eds., 2001: 112; Arshad, 2002: 72; Borish, 2003: 1026; Bunnag & Muntarbhorn, Eds., 1997: 35; Ferguson, 2004: 617, 624; Hayden, 2004: 30).

### **Chromones:** cromolyn sodium and nedocromil sodium

Cromolyn sodium is the first compound show to prevent the antigen-induce release of histamine and leukotrienes from passively sensitized human lung (Adkinson, et al., Eds., 2003: 917). Cromolyn sodium and nedocromil sodium inhibits IgE mediate allergic reaction. It needs to administer three to four times a day (Alper, Myers & Eibling, Eds., 2001: 112; Arshad, 2002: 72 – 3).

### **Decongestants**

Decongestants are available in oral and topical preparations. These drugs act on alpha-adrenergic receptors in the nasal mucosal, causing vasoconstriction that concomitantly reduces turbinate edema and rhinorrhea. It needs to be administered two times a day (Nguyen, 2004). Nasal decongestants are phynylephrine, oxymetazoline, xylometazoline and naphazoline. Those are used for decrease the swelling of the nasal mucosa. Oral decongestants are pseudoephedrine, and

phenylephrin which may cause sleeplessness and jitteriness (Alper, Myers & Eibling, Eds., 2001: 112; Ferguson, 2004: 617, 623; Middleton, et al., Eds., 1998: 1011).

### **Combination antihistamines and decongestants**

Combination of antihistamines and decongestants drugs reduce rhinitis symptom in short-term with minimal side effect. They contain newer non-sedative antihistamines being combination products that are more effective than individual components alone. It is simply used by the patients before visiting the physician. (Alper, Myers & Eibling, Eds., 2001: 112; Ferguson, 2004: 624; Middleton, et al., Eds., 1998: 1011).

### **Corticosteroids**

The topical corticosteroids are probably the most effective medication for allergic rhinitis. Its action is within the nasal mucosa that includes both anti-inflammatory and anti-allergic activities. It inhibits both early and late phase nasal responses. It is usually used in topical form to reduce the risk of side effect. The oral corticosteroids are sometimes used in case of severe rhinitis. Topical corticosteroids are beclomethasone, dipropionate, budesonide and fluticasone (Bunnag & Muntarbhorn, Eds., 1997: 37). Oral steroids such as prednisolone usually are used in short course, less than one to three weeks before changing to intranasal therapy (Arshad, 2002: 44; Bunnag & Muntarbhorn, Eds., 1997: 35-6). Adverse effects associated with systemic glucocorticoid are hypokalemia, hyperglycemia, hyperlipidemia, adrenal suppression, cushinoid stigmata, diabetes mellitus, and increase risk of opportunistic infection, acne, striae, osteoporosis, hypertension, and depression (Adkinson, et al., 2003: 891).

### **Allergen immunotherapy**

Immunotherapy is used in patients whose symptoms are not controlled by medication and avoidance measure (Arshad, 2002: 73). It is also appropriate for those with symptoms lasting more than 1 season and documented allergen-specific IgE antibodies. Furthermore, the exact mechanisms of immunotherapy are not known, they are associated with decreased allergen-specific IgE levels and increased allergen-specific immunoglobulin G (IgG) level. IgG are important in impending allergic reaction (Nguyen, 2004).

Immunotherapy involves regular injections (every 5 – 7 day) of increasing amounts of each reacting allergen until the symptoms are relieved or the maximum tolerated dose is reached, at which time a maintenance dose is given every 2 – 4 weeks. This dose is maintained until symptoms are controlled for 2 – 3 seasons and then tapered (Nguyen, 2004).

Immunotherapy involves subcutaneous administration of standardized and purified allergen extract. The extract is diluted to 1:100,000 weight by volume (w/v) concentration, and weekly injections are given. Increasing dose and concentration until a maintenance dose is achieved. It should be considered only in the patients who can comply with weekly injections for approximately 3 years. This dose is then continued monthly for three to five years where short-term therapy can be given for seasonal rhinitis. Local reactions are common and potentially life-threatening anaphylaxis dose occasionally occur. Local nasal immunotherapy, which freeze-dried extract applied to the nasal mucosa, has been shown to be effective and safe in recent studies (Arshad, 2002: 73; Nguyen, 2004).

### **Surgery**

The surgery is not used directly for allergic mechanism just for control of the symptom, especially nasal obstruction. The significant surgery procedure to reduce the size of turbinate and deviated septum procedure are intranasal sphenoethmoidectomy, septoplasty, polypectomy, or partial turbinectomy, cryocautery of inferior turbinates, vidian nerve section, and rhinoplasty (Arshad, 2002: 73; Dhillon & East, 1999: 35; Middleton, et al., Eds., 1998: 1013; Roland, et al., 1995: 19).

### **Other management methods**

#### **Steam and saline**

Steam and saline are used in short-term relief for nasal congestion. Steam produces increase airflow whilst saline acts as a mild decongestant that reduces nasal blood flow. Steam and saline prevent crusting of dried nasal secretion (Middleton, et al., Eds., 1998: 1010).

**Exercise**

Exercise improves respiratory function, cardiovascular, decreased anxiety, depression, and enhanced feeling of wellbeing (Franklin, 2000: 6–7). Vigorous exercise effects nasal decongestion caused by I-adrenergic-mediated mechanisms, and decreases nasal airway resistance (Middleton, et al., Eds., 1998: 1013).

**Aromatics**

Aromatics and astringents, such as, eucalyptus oil and pine oil produce the build up of nasal airflow. They do not associate with decrease nasal airflow resistance (Middleton, et al., Eds., 1998: 1010).

**Sleep**

Sleep is important for human because sleep is a less active state than wakefulness; cerebral metabolism decreases during sleep (Rippe, Ed., 1999: 1226). In allergic rhinitis patients, there are many factors that effect sleep which are associated with increased allergic symptoms. Allergic rhinitis patients have nasal symptoms in the first few hours after awakening (Krouse, Davis & Krouse, 2002: 607-13). Sneezing could delay onset of sleep. Nasal itching and runny nose worsen sleep quality. Nasal congestion leads to sleep disorder breathing. Sleep disorder increases in daytime somnolence, fatigue, irritability, and absenteeism and performance impairment. (Ferguson, 2004: 617; Storms, 2004: S146).

**Complementary and Alternative Medicine**

Complementary and Alternative Medicine (CAM) treatment is growing and being included in the framework of the western health care system. Alternative medicine might be of interest in patients with chronic non life-threatening illness. It is increased in allergic and asthma treatment because its concept of the putative harmlessness of ‘natural’, ‘soft’ or ‘holistic’ approaches. Generally, alternative therapies are acupuncture, herbs and homeopathy. These drugs or method is less known about possible side-effects and the outcomes are reported mainly from experiences. Furthermore, CAM induces side effect and injury and the cost of treatment effect health care system and health policy (Bielory, 2002: 655;

Niggemann & Grüber, 2003: 707; George Wong, 2001: 192-5; Schäfer, et al., 2002: 694). Acupuncture may lead to infection, pneumothorax, cardiac tamponade and bleeding (Niggemann & Grüber, 2003: 709). Herbs contain a wide variety of substances. There are 20 kinds of Chinese herbs for allergic rhinitis that is called 'Pe Min Kan Wan' which claims to cure and bears no side effect (George Wong, 2001: 195). Furthermore, herbs have incident of heavy metal exposure and toxic reaction; such as, arsenic, cadmium, mercury, lead and thallium. Hepatotoxic effects of herbal medicine may lead to fulminated exacerbation of autoimmune hepatitis (Niggemann & Grüber, 2003: 709-10; George Wong, 2001: 195). In any case, the result of CAM in adults with allergic rhinitis is limited.

In Thailand, leading herbs found in clinic for treatment of allergic rhinitis are andrographis paniculata nees (Fa-ta-lay-jon) and solanum tribolatum linn (Ma-wang-chrue), use for decrease cough and mucus (Veerasingh Mungmun, B.E. 2543, 60-1). Citrus aurantifolia swing or lime use for decrease mucus (Malee Bunchub, et al., B.E. 2543: 7; Vondee Kidsapun, B.E. 2538, 77-9).

### **Symptom outcomes of allergic rhinitis**

The allergic rhinitis and related condition have an impact on health care expenditures and lost productivity. Furthermore, allergic rhinitis is also evidenced on linking with mental health condition and migraines (Crystal-Peters, et al., 2002: 457; 461). These acute-phase responses are associated with central nervous system symptoms of lethargy, fatigue, and diminished cognition and systemic symptoms of arthralgia and myalgia. Allergic rhinitis is also associated with cognitive impairment of school-children and adults (Borish, 2003: 1023). Allergic rhinitis patients face life-threatening from allergic rhinitis symptoms, for example, interfere night sleep and awaken, functional impairment, headache from nocturnal sleep disturbance and it is often combining with asthma (over 20 – 40% of allergic rhinitis patients) (Van Adelsberg, et al., 2003: 219-20).

### **The health promotion model**

The health promotion model (HPM) of Pender is used for grouping data of self-management of allergic rhinitis patients. This model presents the process of

framework for integrating nursing behavioral science perspective on factors influencing health behavior. The framework is offered as guidelines for exploration of the complex biopsychosocial process that motivate individuals to engage in behaviors directed toward the enhancement of health. The desire to promote personal health and wellbeing induce high level of wellness and behavioral change. The health promotion model is potentially applied across the life span as a person is seeking the source of health behavior motivation for themselves. The components of health assessment are used for assessing activities and summarizing qualitative data (Pender, et al., 2001: 118 - 236). In this study, the researcher collected the data that focus on five parts: 1) health-risk management (health-risk avoidance appraisal); 2) exercise (physical fitness evaluation); 3) nutrition-intake management (nutritional assessment); 4) stress management (life-stress review); and 5) health-beliefs management (health beliefs review)

The model of Pender expands detail of health-risk avoidance as the greater number of risk factors that increases disease. Hence, they concerned and decreased the symptoms. The patients can adopt positive behavior if they concern about their mortality profile (achievable or target age). Physical fitness evaluation is focus on physical activity that can improve health. Exercise is leisure-time physical activity to develop physical fitness. Maintaining physical fitness can be enjoyable and rewarding for person whilst improving the quality of life. Nutritional assessment is necessary because good nutrition and eating patterns are a major role in preventing disease and increasing the capacity for energetic and productive living. Life-stress review is a situation where they are concerned about stress development and usage of different coping strategies. Stress-related illnesses decrease immunologic function and cancer; moreover, it often occurs before negative outcome present. Health beliefs review or health-beliefs management can be classified as health specific or behavior specific. The health beliefs assessment with the patients will depend on the areas of health and health behavior of most concern (Pender, et al., 2001: 118 - 236). Almost all of the components are necessary for evaluation and grouping data of self-management in this study.

## CHAPTER III

### METHODOLOGY

The objectives of this descriptive research are to study symptoms experience, symptoms management and outcomes of the patients having allergic rhinitis.

#### Population and sample

The target population of this study was the allergic rhinitis patients who visited the Otolaryngology Outpatient Department, Faculty of Medicine, Ramathibodi Hospital, Mahidol University during a five-month period, from April to August, 2003.

Study samples were purposively selected from the allergic rhinitis patients who met the following inclusion criteria:

1. Having symptoms of allergic rhinitis off and on for more than six months and have been clinically diagnosed as allergic rhinitis by the physician at the Otolaryngology Outpatient Department, Faculty of Medicine, Ramathibodi Hospital.
2. Age of twenty years old or older.
3. Able to communicate Thai language verbally.
4. Agree to participate in this study.

#### Sample size

A sample size of this study was calculated according to Yamane providing a simplified formula to calculate the sample size (Yamane, 1967. edited by Israel, No Data).

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size, and e is the level of precision.

There were 8,980 allergic rhinitis patients visited the Otolaryngology Outpatient Department, Ramathibodi Hospital during January to December, 2003. In

normal distribution value, approximately 95% of the sample values are within standard deviations of the true population value. The result of 95% confidence interval,  $e = 0.05$  and  $N = 8,980$  were used.

$$\begin{aligned} \text{Using formula above: } n &= \frac{8,980}{1 + 8,980 (.05)^2} \\ n &= 382.94 \end{aligned}$$

Therefore, the sample size representing the patient population in a year should be about 400 cases. In this study, data collection was limited to six months period, and 200 cases were used as the sample size.

### Setting

The setting was the Otolaryngology Outpatient Department at the Faculty of Medicine, Ramathibodi Hospital. This clinic operated everyday from Monday to Friday for patients with ear, nose, or throat problem. The patients who visited the clinic could see a resident or staff of Otolaryngology Department whilst received health education from a nurse or a physician.

### Instrument

The research instruments were composed of three parts of the structure interviewed form, as follows:

Part I: The demographic characteristics data; compose of closed-end, open-end and rating scale structure interviewed form was developed by the researcher. The demographic data relating to the characteristic of the patients consisted of the information about the patients' gender, age, marital status, hometown, education, occupation, economic status, source of hospital payment, family history of allergic disease, co-morbidity, resource of information, cigarette smoking and alcohol drinking habit. The data in this part was collected by filling in the blanks or check list of each item. (Appendix A).

Part II: The symptom experience; compose of closed-end, open-end and rating scale structure interviewed form was developed by the researcher based on literature review. This part contained 11 items involving the basic information about allergic rhinitis symptoms, duration, severity, and factors related to the symptom. The

symptoms experience composed of eleven items: 1) the duration of symptom, 2) times, 3) season, 4) calculate continuing times, 5) type of specific allergens, 6) specific allergens at home, 7) specific allergens at work place, 8) specific allergens in the environment, 9) severity of symptoms, 10) cause of attendance, 11) the present symptoms of allergic rhinitis including frequency of symptoms, severity of symptom and interference of daily life. The data in this part was collected by filling in the blanks or check list of each item.

The perception of severity of allergic rhinitis in the past was judged by measuring on a 4-point rating scale from level 0 to 3; level 0 = non-severity, level 1 = mild severity, level 2 = moderate severity, and level 3 = severe. The data in this part was collected by filling in the blanks or check list of each item. (Appendix B).

Part III: Symptom management and outcomes; compose of closed-end, open-end and rating scale structure interviewed form was developed by the researcher based on literature review. This part contained 8 items relating to each symptoms management strategies and outcomes of each allergic rhinitis management, the symptom management and outcomes were individual's perception. The third part composed of: 1) the strategies to manage each symptom, outcomes of the symptom management, continuing and cause of discontinuing, 2) the perception of interference of daily life on sleep, joy and sport, study and work, boredom and others, 3) the perception of emotional changed, 4) the perception of memory changed, 5) cost of management, 6) satisfaction, 7) times loss and cost of time absent, and 8) cost of medications used. The data in this part was collected by filling in the blanks or check list of each item. (Appendix C).

### **Development of the instruments**

The instruments used in this study were developed by the researcher based on the Model of Symptoms Management (revised by Dodd, et al, 2001) and the literature review about allergic rhinitis. There were three parts of structure interviewed forms included; Part I) the demographic characteristics data; Part II) the symptoms experience; Part III) the symptoms management strategies and outcomes. These instruments and content were validated by five experts. They were two Otolaryngologists specialized in allergic rhinitis, one nursing instructor in the area of

Eye, Ear, Nose and Throat, one instructor in Adult Nursing (expert in Model of Dodd, et al.), and one clinical nurse specialist in the Otolaryngology Outpatients Department (nurse educator in allergic rhinitis clinic).

The content and wording of the instruments were improved according to the expertise suggestions. Some words were further modified after the questionnaires were tried out with ten adult patients with allergic rhinitis having similar characteristics to the participants in this study.

### **Protection of the Human Right Subjects**

This study was conducted based on the protection of human rights. The research proposal was approved by The Ethical Clearance Committee on Human Rights Related to Researches Involving Human Subjects of the Faculty of Medicine, Ramathibodi Hospital. (Appendix D) Thus, eligible subjects were asked to participate in the study. After they were examined by the physician, the researcher explained the purpose and time required to complete the interview, benefit of the study, and their rights to join or refuse. The subject who agreed to participate in the study was thus asked to sign the consent form and received assurance that all data shall be kept strictly confidential and reported only as group.

### **Data Collection**

Data collection was done by the researcher after receiving the permission from the Faculty of Medicine, Ramathibodi Hospital. The researcher then had a meeting with the director of Otolaryngology Department and the head nurse of the Otolaryngology Outpatient Department at Ramathibodi Hospital, to explain the objectives of the project and requested for their cooperation in data collection.

Data collection was performed during Monday to Friday from 9:00 a.m. to 12:00 p.m. First, the researcher introduced herself, explained the purpose, and time required for the interview (25 – 30 min.). The subjects who agreed to participate were invited to a private room nearby the Outpatients Clinic for the interview by the researcher. Second, the researcher further explained the benefit of this study, human rights, consent form, and assured that data would be kept strictly confidential and reported only as group data. The researcher asked the participant to recall the

symptoms experience, symptom management strategies and symptom outcomes of his/her allergic rhinitis during the past six months. The following structure interviewed form instruments were used: the demographic characteristics data, the symptoms experience, the symptoms management strategies and the outcomes. The researcher then approached the participants and completed data collection in a one time interview. Each case took approximately 25 - 30 minutes whereas the researcher would interview five to eight adults with allergic rhinitis per day.

### **Data analysis**

The data was the demographic data, symptoms experiences, symptoms management, and outcomes. Descriptive statistics were used in frequency, percentage, range, mean, mode, and median. Answers of the open-end questions were categorized or grouping according to the contents.

The research classified the participants' symptom management in 7 groups of strategies as follow; 1) seeking information, 2) medication management, 3) health-risk avoidance, 4) exercise, 5) nutrition-intake management, 6) stress management, and 7) health-beliefs management. Descriptive statistics were used in frequency and percentage. The categorized group was modified from the model of Pender. This model presents the process of framework for integrating nursing behavioral science perspective on factors influencing health behavior.

## CHAPTER IV

### RESEARCH RESULTS

The results of the study of two hundred adult patients with allergic rhinitis are presented in this chapter. There are demographic characteristic, symptom management experience, symptom management strategies, and outcome of symptom management of adult participants who had allergic rhinitis over six months, and attended the Otolaryngology Outpatient Department of Ramathibodi Hospital. The findings of this study are presented in four parts as follows:

1. Demographic characteristics
2. Symptoms experience, perception of symptoms and severity of symptom
3. Symptoms management strategies
4. Symptoms outcomes of the patients with allergic rhinitis

#### Demographic characteristics

**Table 1. Demographic characteristics of the participants (N = 200)**

| Variables                                                     | n   | %    |
|---------------------------------------------------------------|-----|------|
| <b>Gender</b>                                                 |     |      |
| Female                                                        | 152 | 76.0 |
| Male                                                          | 48  | 24.0 |
| <b>Age (years) (mean = 42.76, SD = 13.42, range = 20-82 )</b> |     |      |
| 20 – 40                                                       | 91  | 45.5 |
| 41 – 60                                                       | 86  | 43.0 |
| > 60                                                          | 23  | 11.5 |

**Table 1. Demographic characteristics of the participants (N = 200) (Contd.)**

| Variables                                       | n   | %    |
|-------------------------------------------------|-----|------|
| <b>Marital status</b>                           |     |      |
| Married                                         | 108 | 54.0 |
| Single                                          | 72  | 36.0 |
| Widow/ Divorced                                 | 20  | 10.0 |
| <b>Hometown</b>                                 |     |      |
| Bangkok                                         | 118 | 59.0 |
| Suburban                                        | 48  | 24.0 |
| Other provinces                                 | 34  | 17.0 |
| <b>Education (years) (mean=11.54, SD=5.86 )</b> |     |      |
| Non formal education                            | 1   | 0.5  |
| Primary school                                  | 62  | 31.0 |
| Secondary/ High school/ Diploma                 | 66  | 33.0 |
| Bachelor's degree                               | 59  | 29.5 |
| Master's degree                                 | 12  | 6.0  |
| <b>Occupation</b>                               |     |      |
| Unemployed                                      | 31  | 15.5 |
| Employed                                        | 169 | 84.5 |
| - government officer                            | 66  | 39.0 |
| - employee                                      | 65  | 38.5 |
| - merchant                                      | 28  | 16.6 |
| - farmer                                        | 6   | 3.5  |
| - student                                       | 4   | 2.4  |
| <b>Economic status</b>                          |     |      |
| Balance                                         | 136 | 68.0 |
| Save                                            | 64  | 32.0 |
| <b>Source of hospital payment</b>               |     |      |
| Reimbursement                                   | 127 | 63.5 |
| Self - paid                                     | 73  | 36.5 |

**Table 1. Demographic characteristics of the participants (N = 200) (Contd.)**

| Variables                                           | n   | %    |
|-----------------------------------------------------|-----|------|
| <b>Cigarette smoking</b>                            |     |      |
| Non- smoking                                        | 151 | 75.5 |
| Smoking                                             | 49  | 24.5 |
| <b>Alcohol drinker</b>                              |     |      |
| Non-drinker                                         | 151 | 75.5 |
| Drinker                                             | 49  | 24.5 |
| <b>Family history of allergic disease*</b>          |     |      |
| No                                                  | 108 | 54.0 |
| Yes**                                               | 92  | 46.0 |
| Children                                            | 43  | 46.7 |
| Brother/Sister                                      | 36  | 39.1 |
| Mother                                              | 19  | 20.7 |
| Father                                              | 14  | 15.2 |
| <b>Co-morbidity diseases with allergic rhinitis</b> |     |      |
| No                                                  | 139 | 69.5 |
| Yes**                                               | 61  | 30.5 |
| Sinusitis                                           | 34  | 55.7 |
| Asthma                                              | 12  | 19.7 |
| Tonsillitis                                         | 9   | 19.7 |
| Nasal polyp                                         | 7   | 11.5 |
| Laryngitis                                          | 7   | 11.5 |
| Otitis media                                        | 3   | 4.9  |
| Bronchitis                                          | 3   | 4.9  |

\* Allergic rhinitis, Asthma, Dermatitis

\*\* Each client may have more than one choice

The majority of the participants in this study were female (76%) and their mean age was 42.76 (SD = 13.42). The participants were generally employed (84.5%), could claim for reimbursement (63.5%) and having family economic status as balanced (68%). In addition, 83% of them lived in Bangkok and suburban. Their educations varied from non formal education to master degree (mean of years of education = 11.54, SD = 5.86). The majority of them were non smokers (75.5%) and non drinkers (75.5%). They reported that 11.5% of them stop smoking and 6.5% stop drinking because cigarette smoking and alcohol drinking promoted severity of allergic rhinitis symptoms. Some participants (46%) had history of allergic disease in their family (allergic rhinitis, asthma and dermatitis); the majority of them were children (46.7%). The majority of them (69.5%) had no co-morbidity disease with allergic rhinitis.

**Research objective 1: To describe the symptoms experience and severity of symptoms in adults with allergic rhinitis.**

### Symptoms experience

**Table 2. Perception of allergic rhinitis symptoms of the participants (N = 200)**

| Perception of allergic rhinitis symptoms                       | n   | %    |
|----------------------------------------------------------------|-----|------|
| Duration of allergic rhinitis (months) (mean = 72, SD = 109.7) |     |      |
| < 12                                                           | 5   | 2.5  |
| 12 – 120                                                       | 153 | 76.5 |
| 121 - 240                                                      | 29  | 14.5 |
| > 240                                                          | 13  | 6.5  |
| Time of symptom present*                                       |     |      |
| Day                                                            | 140 | 70.0 |
| Night                                                          | 100 | 50.0 |
| When expose to allergen                                        | 28  | 14.0 |
| Season of symptom                                              |     |      |
| All year round                                                 | 176 | 88.0 |
| Winter                                                         | 11  | 5.5  |
| Rainy                                                          | 10  | 5.0  |
| Summer                                                         | 3   | 1.5  |
| Known allergen or irritant induced symptom                     |     |      |
| Yes                                                            | 164 | 82.0 |
| No                                                             | 36  | 18.0 |

\* Each participant may have more than one choice

The perception of allergic rhinitis symptoms was presented in Table 2. The majority of the participants had allergic rhinitis symptoms 12-120 months (76.5%) and shown symptoms in the day time, (70%). The majority of them reported the allergic symptoms presented in early morning, from fifteen minutes to one hour after

awaken or during working hours. At night time, 50% of them had nasal obstruction symptoms that lead to discomfort and insomnia whereas most of the participants (88%) suffered with allergic rhinitis symptoms all year round. Moreover, 82% of them knew the type of specific allergen and steadily avoided such specific allergens.

**Table 3. Perception of allergen or irritant induced allergic rhinitis symptoms and resources of allergen (N = 200)**

| Type of allergen* | n** | (%)    | Source (n, %) |      |           |      |             |      |
|-------------------|-----|--------|---------------|------|-----------|------|-------------|------|
|                   |     |        | House         |      | Workplace |      | Environment |      |
|                   |     |        | n             | %    | n         | %    | n           | %    |
| Allergen          |     |        |               |      |           |      |             |      |
| Dust              | 157 | (78.5) | 101           | 50.5 | 59        | 29.5 | 25          | 12.5 |
| Animal dander     | 18  | (9.0)  | 2             | 1.0  | 1         | 0.5  | -           | -    |
| Pollen            | 15  | (7.5)  | -             | -    | -         | -    | -           | -    |
| Foods             | 15  | (7.5)  | -             | -    | -         | -    | -           | -    |
| Fungus            | 9   | (4.5)  | -             | -    | 1         | 0.5  | 3           | 1.5  |
| Yeast             | 3   | (1.5)  | -             | -    | -         | -    | -           | -    |
| Feather           | 3   | (1.5)  | -             | -    | -         | -    | -           | -    |
| Grass pollen      | 2   | (1.0)  | 1             | 0.5  | -         | -    | -           | -    |
| Kapok             | 1   | (0.5)  | 1             | 0.5  | -         | -    | -           | -    |
| Irritant          |     |        |               |      |           |      |             |      |
| Exhaust fumes     | 42  | (21.0) | 1             | 0.5  | -         | -    | 34          | 17.0 |
| Chemicals         | 37  | (18.5) | 7             | 3.5  | 12        | 6.0  | 1           | 0.5  |
| Weather           | 35  | (17.5) | -             | -    | 8         | 4.0  | 4           | 2.0  |
| Cigarette smoking | 23  | (11.5) | 1             | 0.5  | 4         | 2.0  | 5           | 2.5  |
| Air condition     | 9   | (4.5)  | -             | -    | 7         | 3.5  | 2           | 1.0  |
| Smoke             | 5   | (2.5)  | 1             | 0.5  | -         | -    | -           | -    |
| Stress            | 2   | (1.0)  | -             | -    | 1         | 0.5  | 1           | 0.5  |

\* Each participant may have more than one choice

\*\* In some cases, the participants are aware of their allergic symptoms but may not know of the sources.

The participants' perception of allergens or irritants was presented in Table 3. Dust was the major risk of allergic rhinitis symptoms (78.5%); in house (50.5%), in workplace (29.5%) and in the environment (12.5%). The other allergens were animal dander (9%), pollen (7.5%) and food (7.5%). The majority of irritant was exhaust fumes (21%), followed by chemicals (18.5%) and weather conditions (17.5%).

In this study, there were twelve participants without symptoms who insisted on regular follow-up. Most of the participants (94%) recognized the allergic symptoms. They were 85.5% had one to five allergic symptoms during the day whilst 1.5% had more than eight symptoms. Figure 3 presented the participants' perception of symptoms.

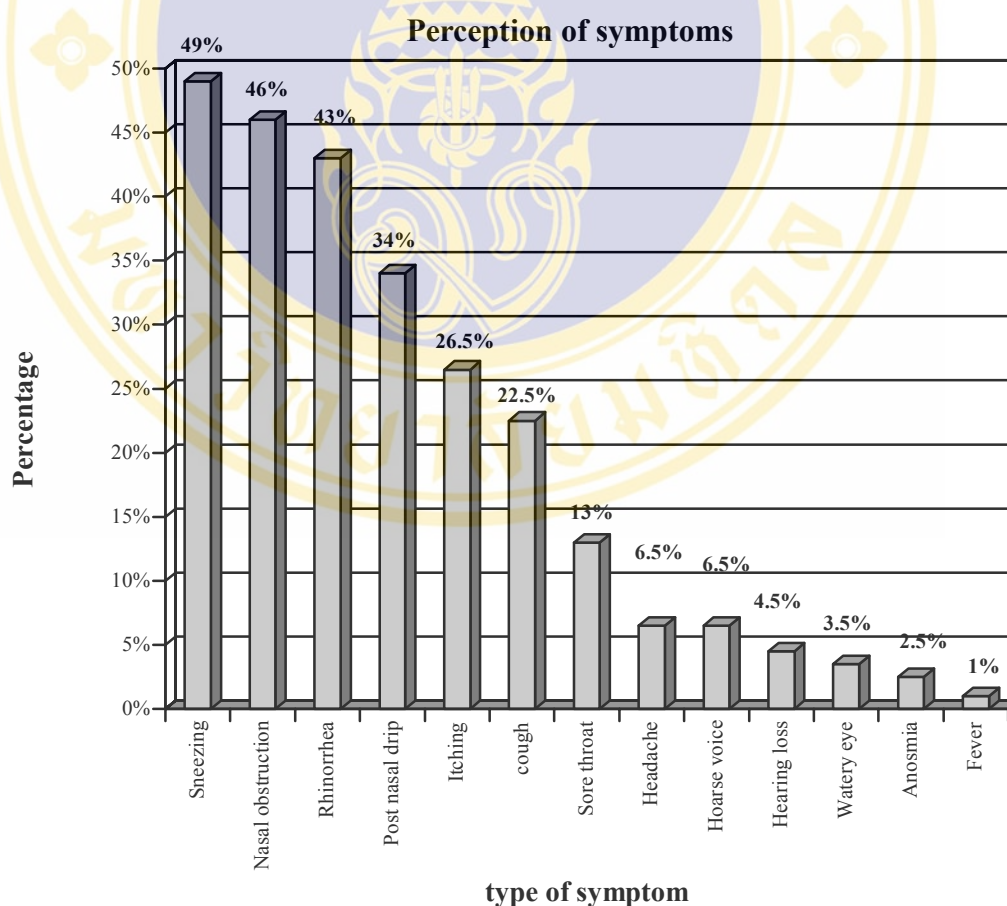


Figure 3. The perception of allergic rhinitis symptoms of adults

The top five most common symptoms of allergic rhinitis were sneezing (49%), nasal obstruction (46%), rhinorrhea (43%), post nasal drip (34%) and itching (26.5%).

### Severity of symptoms

**Table 4. Severity of allergic rhinitis symptoms and its interference with daily life by general (N = 200)**

| Perceived severity of Symptoms | n (%)            | Daily life interference |                  |
|--------------------------------|------------------|-------------------------|------------------|
|                                |                  | Yes                     | No               |
|                                |                  | n (%)                   | n (%)            |
| <b>None</b>                    | 128 (64.0)       | 83 (64.8)               | 45 (35.2)        |
| <b>Mild</b>                    | 30 (15.0)        | 16 (53.3)               | 14 (46.7)        |
| <b>Moderate</b>                | 30 (15.0)        | 24 (80.0)               | 6 (20.0)         |
| <b>Severe</b>                  | 12 (6.0)         | 5 (41.7)                | 7 (58.3)         |
| <b>Total</b>                   | <b>200 (100)</b> | <b>128 (64.0)</b>       | <b>72 (36.0)</b> |

The results in table 4. presented that the participant's perception of severity of symptoms by general symptoms. Most of allergic rhinitis symptoms were none severity (64%), follow, mild (15 %) and moderate (15%) severity, and severe (6%). The symptoms were often interference daily living (64%).

**Table 5. Severity and its interference with daily life divided by each symptoms (N = 200)**

| Symptom*          | No.<br>(%)          | Severity  |           |           |           | Interference |       |
|-------------------|---------------------|-----------|-----------|-----------|-----------|--------------|-------|
|                   |                     | None      | Mild      | Moderate  | Severe    |              |       |
|                   |                     | n (%)     | n (%)     | n (%)     | n (%)     | n (%)        | n (%) |
| Sneezing          | <b>98</b><br>(49.0) | 62 (63.3) | 24 (24.5) | 10 (10.2) | 2 (2.0)   | 38 (38.8)    |       |
| Nasal obstruction | <b>92</b><br>(46.0) | 41 (44.6) | 28 (30.4) | 10 (11.0) | 13 (14.0) | 65 (70.6)    |       |
| Rhinorrhea        | <b>86</b><br>(43.0) | 50 (58.1) | 23 (26.7) | 9 (10.5)  | 4 (4.7)   | 51 (59.3)    |       |
| Post nasal drip   | <b>68</b><br>(34.0) | 35 (51.5) | 20 (29.4) | 7 (10.3)  | 6 (8.8)   | 44 (64.7)    |       |
| Itching           | <b>53</b><br>(26.5) | 37 (69.8) | 10 (18.8) | 3 (5.7)   | 3 (5.7)   | 23 (43.4)    |       |
| Cough             | <b>45</b><br>(22.5) | 24 (53.3) | 14 (31.1) | 5 (11.1)  | 2 (4.5)   | 14 (31.1)    |       |
| Sore throat       | <b>26</b><br>(13.0) | 10 (38.5) | 13 (50.0) | 2 (7.7)   | 1 (3.8)   | 19 (73.1)    |       |
| Headache          | <b>13</b><br>(6.5)  | 2 (15.4)  | 1 (7.7)   | 4 (30.8)  | 6 (46.1)  | 11 (84.6)    |       |
| Hoarse voice      | <b>13</b><br>(6.5)  | 6 (46.1)  | 3 (23.1)  | 1 (7.7)   | 3 (23.1)  | 9 (69.2)     |       |
| Hearing loss      | <b>9</b><br>(4.5)   | 3 (33.3)  | 4 (44.5)  | 2 (22.2)  | - -       | 5 (55.6)     |       |
| Watery eye        | <b>7</b><br>(3.5)   | 5 (71.4)  | 1 (14.3)  | - -       | 1 (14.3)  | 4 (57.1)     |       |
| Anosmia           | <b>5</b><br>(2.5)   | 2 (40.0)  | 1 (20.0)  | 1 (20.0)  | 1 (20.0)  | 1 (20.0)     |       |
| Fever             | <b>2</b><br>(1.0)   | 2 (100)   | - -       | - -       | - -       | - -          |       |

\* Each participant may have more than one symptom

The severity and outcomes of symptoms were presented in Table 5, up to the perception of the participants. Most of allergic rhinitis symptoms were non-severity except for headache (n=13, 6.5%) that had both severe symptoms (46.1%) and interference of daily living (84.6%). The other symptoms having mild severity and interference of daily living were sore throat (50% and 73.1%) and hearing loss (44% and 55.6%).

**Research Objectives 2. To describe management strategies in adults with allergic rhinitis.**

The research classified the participants' symptom management in 7 groups of strategies as follows:

1. Seeking information
2. Medications managements
3. Health-risk management
4. Exercise
5. Nutrition-intake management
6. Stress management
7. Health-beliefs management

The management strategies were presented in Figures 4.

### Symptom management strategies of allergic rhinitis symptoms

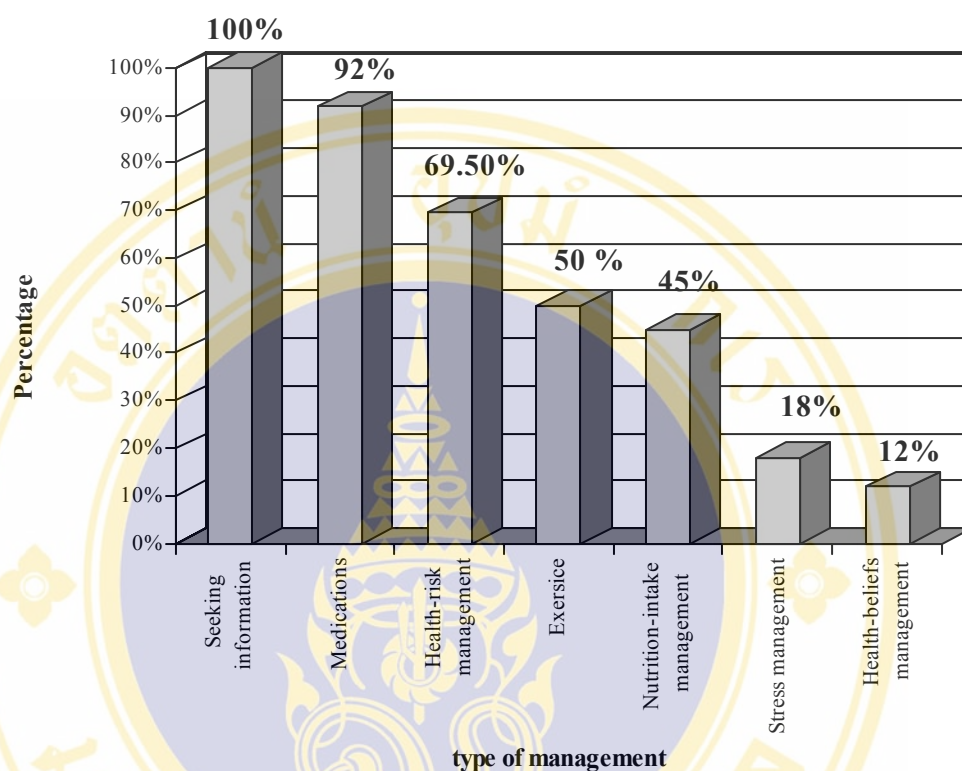


Figure 4. Management strategies of allergic rhinitis symptoms in group

Figure 4 presented symptoms management strategies of allergic rhinitis symptoms. All participants sought information on allergic rhinitis treatment and prevention followed by medications (92%), health-risk management (69.5%), exercise (50%), nutrition-intake management (45%), stress management (18%) and health-beliefs management (12%) respectively.

#### Seeking information

The participants could seek health information from other peoples, media or documents. They changed many clinics and hospitals for the best treatment and advice until symptoms free. The resources of allergic information were presented in Table 6 and places of treatment were presented in Table 7.

**Table 6. Sources of information for allergic rhinitis symptom management (N = 200)**

| Sources of information* | n          | %           |
|-------------------------|------------|-------------|
| <b>Persons*</b>         | <b>182</b> | <b>91.0</b> |
| Health profession       | 172        | 94.5        |
| Friend                  | 23         | 12.6        |
| Relative                | 6          | 3.3         |
| Family member           | 5          | 2.7         |
| Monk                    | 5          | 2.7         |
| Neighbor                | 1          | 0.5         |
| Drug salesman           | 1          | 0.5         |
| <b>Documents*</b>       | <b>74</b>  | <b>37.0</b> |
| Magazine, journal       | 43         | 58.1        |
| Brochure                | 33         | 44.6        |
| Medical textbook        | 23         | 31.1        |
| <b>Media*</b>           | <b>35</b>  | <b>17.5</b> |
| Television              | 26         | 74.3        |
| Radio                   | 10         | 2.9         |
| Newspaper               | 9          | 25.7        |

\*Each participant may have more than one source

The result of allergic rhinitis information was presented in Table 6. The majority of participants (91%) sought information from persons of health profession (94.5% of them were physician, nurse and pharmacist) to acquire knowledge on disease, disease prevention and decreased symptoms. Whilst the others sought information from document, such as, magazines (58.1%) and brochure (44.6%) received from Otolaryngology Outpatient Department of Ramathibodi Hospital.

**Table 7. Number of clinic/ hospital visited for treatment of allergic rhinitis (N = 200)**

| Number of clinic/ hospital (resource) | n   | %    |
|---------------------------------------|-----|------|
| 1*                                    | 149 | 74.5 |
| 2                                     | 41  | 20.5 |
| 3                                     | 7   | 3.5  |
| >3                                    | 3   | 1.5  |

\*Ramathibodi Hospital

The place for treatment of allergic rhinitis was presented in Table 7. The result found that many participants had improved after attending Otolaryngology Outpatient Department of Ramathibodi Hospital as they obtained information on medication, advice and immunotherapy. The majority, 74.5% of them, were first visit though the other 25.5% visited private clinics, hospitals or complementary clinics before they came to Ramathibodi Hospital. The participants visited many places because they could not get proper antihistamines or the costs of medications were expensive. At drugstore, participants could buy chlorpheniramine maleate, antitussis and calamine lotion. However, chlorpheniramine maleate and antitussis could not delete severe allergic rhinitis symptoms but relieving the symptoms before the participants visited the physician. At complementary services, they took herbs and meditation. In any case, two participants planned to move to other hospital unless they could control their allergic rhinitis symptoms in two months.

### **Medication management**

All of participants attended Ramathibodi Hospital because they need proper medication. Even though, sixteen participants (8 %) unnecessary took medication but they continuously followed up.

**Table 8. Medication used for management of allergic rhinitis (N = 184)**

| Medications*                             | n   | %    |
|------------------------------------------|-----|------|
| Antihistamines                           | 161 | 87.5 |
| Intranasal Corticosteroids               | 73  | 39.7 |
| Combined antihistamines and decongestant | 46  | 25.0 |
| Topical**                                | 26  | 14.1 |
| Antiasthmatic drug                       | 13  | 7.1  |
| Immunotherapy                            | 6   | 3.3  |
| Decongestant alone                       | 4   | 2.2  |

\* Each participant may use more than one drug

\*\* Hista oph, Normal saline irrigation, Special mouth wash, Calamine lotion

The result of medication used was presented in Table 8. The participants took more than one type of medication to decrease allergic rhinitis symptoms. Most of them (87.5%) took antihistamines followed by intranasal corticosteroids (39.7%) and combination of antihistamine and decongestant (25%). The most of antihistamines were cetirizine (37.5%), loratadine (26%) and CPM (13%). This research found the participants used topical drug (14.1%) in order to decrease the symptoms such as, hista oph for eye itching, calamine lotion for skin pruritus, antitussis for relief cough, and normal saline irrigation. However, the participants who were well condition would try to stop taking antihistamines because they worried about becoming drugs addict.

**Table 9. Management strategies and outcomes of allergic rhinitis symptoms in general (N = 200)**

| Symptoms management strategies*            | n*         | %           | Symptoms outcomes |       |           |     |
|--------------------------------------------|------------|-------------|-------------------|-------|-----------|-----|
|                                            |            |             | Improved          |       | Unchanged |     |
|                                            |            |             | n                 | %     | n         | %   |
| <b>Health-risk management*</b>             | <b>139</b> | <b>69.5</b> |                   |       |           |     |
| Dust avoidance                             | 113        | 56.5        | 111               | 98.2  | 2         | 1.8 |
| Changing weather avoidance                 | 46         | 23.0        | 46                | 100.0 | 0         | 0.0 |
| Specific allergens and irritants avoidance | 46         | 23.0        | 45                | 97.8  | 1         | 2.2 |
| Pollution avoidance                        | 28         | 14.0        | 28                | 100.0 | 0         | 0.0 |
| Maintaining normal temperature             | 24         | 12.0        | 24                | 100.0 | 0         | 0.0 |
| <b>Exercise*</b>                           | <b>100</b> | <b>50.0</b> | 100               | 100.0 | 0         | 0.0 |
| <b>Nutrition-intake management*</b>        | <b>90</b>  | <b>45.0</b> |                   |       |           |     |
| Increase food intake                       | 63         | 31.5        | 63                | 100.0 | 0         | 0.0 |
| Decrease food intake                       | 38         | 19.0        | 38                | 100.0 | 0         | 0.0 |
| Observe and food allergen avoidance        | 3          | 1.5         | 3                 | 100.0 | 0         | 0.0 |
| <b>Stress management*</b>                  | <b>36</b>  | <b>18.0</b> | 36                | 100.0 | 0         | 0.0 |
| <b>Health-beliefs management*</b>          | <b>24</b>  | <b>12.0</b> | 24                | 100.0 | 0         | 0.0 |

\* Each participant may have more than one strategy.

The other management strategies were presented in Table 9. The majority of the participants (69.5%) avoided the risk of allergic rhinitis symptoms by using health- risk management strategies whilst half of them exercised. Moreover, 45% of them improved with nutrition-intake management. Only 18% controlled stress emotions and 12% had health-beliefs management with allergic rhinitis.

**Health-risk management (n = 139, 69.5%)**

The participants having concerned on risk of allergic symptoms always avoided pollutants in atmosphere. Dust avoidance (56.5%) was the main allergic rhinitis symptom management where most of them had improved symptom subsequently.

**Dust avoidance (n = 113, 56.5%)**

The participants reported that majority (39.5%) of them cleaned their houses everyday by wet cleaning and 16% of them no longer used kapok pillow or mattress. Moreover, 29% of them cleaned bedrooms, washed pillowcases and bed sheets, and took mattresses, pillows and dolls for sunbeam exposure every few weeks. They rarely (20%) used facemask when they cleaned their houses or in workplace.

**Changing weather avoidance (n = 46, 23%)**

The participants avoided the change of temperatures condition; 17% of them did not get out or shop in the supermarket or join in the party. Some of them avoided sunbeam (12.5%), drizzle of rain and cool weather and that (6.5%) stayed in air-conditioned room.

**Specific allergens and irritant avoidance (n = 46, 23%)**

The participants who were familiar with the specific allergens and irritants causing allergic rhinitis symptoms would generally avoid it. Exhaust fumes, 6.5% of the participants used facemask or handkerchief; 2% transported by air-conditioned bus. Specific allergens or irritants, 5.5% observed the symptoms and avoided it; 3.5% used facemask and grove during work. The participants (3.5%) who stayed in high-density area of pollen and dust would close all windows and doors at all times. The participants who were teachers (3.5%) used worksheet to replace chalk. They reported that 11.5% of the participants stop smoking.

**Pollution avoidance (n = 28, 14%)**

The participants who had contact with allergen and irritants in workplace; 5% retired, 5% changed jobs and 1% went abroad. Wherein other participants who could not avoid allergen in atmosphere moved to new houses (4.5%).

**Maintaining normal temperature at bedtime (n = 24, 12%)**

The participants rarely (9.5%) maintained normal temperature in bedroom during sleep because they had bad experience with allergic rhinitis symptoms in the morning. They did not use fan (6.5%) nor wore scarf, wool hat and stocking at night (6.5%).

**Exercise (n = 100, 50%)**

Half of the participants exercised every week and found symptoms improved. They reported that whilst walking (20%) was the most favorite exercise, the older participants suggested housework as the best exercise (3%) for them.

**Nutrition-intake management (n = 90, 45%)**

The participants who had bad experience with food allergens; 45% were interested in the type of food intake so they could assess the effect of food to allergic rhinitis.

**Increasing amount of foods (n = 36, 18%)**

The participants had information on food that improved physical condition and decreased allergic rhinitis symptoms. Some of them took food supplements (17%), i.e., seaweed (spirulina), evening primrose, red unpolished rice and brown rice. They ate more healthy food; 9% increased fresh fruit, fresh vegetable and juice; 5.5% drank only warm water; and 5.5% increased fluid intake (two to three liters per day). Furthermore, 5.5% took essential minerals, such as, vitamin C, vitamin B<sub>1-6-12</sub>, multi-vitamin and calcium by bought over the counter.

**Decreasing amount of foods (n = 38, 19%)**

The participants (19%) decreased food allergens and irritants; for examples, pickle foods (6%), meat (5%), cold water and ice cube (5%). They reported 6.5% of them stop drinking because alcohol drinking promoted severity of allergic rhinitis symptoms.

**Observe and avoid (n = 3, 1.5%)**

Only 1.5% of the participants observed symptoms and avoided food allergen.

**Stress management (n = 36, 18%)**

Eighteen percents of the participants complained that stress increased allergic rhinitis symptoms. They managed stress by resting (11.5%), controlled stress emotion (4.5%), took sleeping pill (4%) and took up meditation (2.5%).

**Health-beliefs management (n = 24, 12%)**

The participants (12%) attained health-beliefs on allergic rhinitis from their experience. They used aromatherapy; 4% of them used vaporizing medicine and 4% went to the beach on holiday. In contrast, 3% of them cleaned everything around them.

General management of allergic rhinitis symptoms were defined above. The result of allergic rhinitis management might improve or worsen the condition. Some participants (2.5%) had complication after acid was applied to turbinate. On the contrary, the participants had severe allergic rhinitis symptoms because 14% discontinued exercise, 8% unable to avoid dust and irritants and 1.5% was sleepless. The participants could; thus, seek health information to consider the tryout or continue with effective treatment. The presentation of management strategies to improve the specific symptom and outcome was shown in Table 10.

**Table 10. Management strategies to improve specific symptom and outcomes.**  
(N = 200)

| Symptoms and management strategies | n*        | %           | Symptoms outcomes |       |           |      |
|------------------------------------|-----------|-------------|-------------------|-------|-----------|------|
|                                    |           |             | Improved          |       | Unchanged |      |
|                                    |           |             | n                 | %     | n         | %    |
| <b>Sneezing*</b>                   | <b>98</b> | <b>49.0</b> |                   |       |           |      |
| Medications                        | 97        | 48.5        | 97                | 100.0 | 0         | 0.0  |
| Health-risk management             | 19        | 9.5         | 19                | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 6         | 3.0         | 6                 | 100.0 | 0         | 0.0  |
| Exercise                           | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |
| Nutrition-intake management        | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |
| Stress management                  | 2         | 1.0         | 2                 | 100.0 | 0         | 0.0  |
| <b>Nasal obstruction*</b>          | <b>92</b> | <b>46.0</b> |                   |       |           |      |
| Medications                        | 90        | 45.0        | 87                | 96.7  | 3         | 3.3  |
| Health-risk management             | 33        | 16.5        | 33                | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 10        | 5.0         | 6                 | 60.0  | 4         | 40.0 |
| Nutrition-intake management        | 7         | 3.5         | 6                 | 85.7  | 1         | 14.3 |
| Exercise                           | 6         | 3.0         | 6                 | 100.0 | 0         | 0.0  |
| Stress management                  | 6         | 3.0         | 6                 | 100.0 | 0         | 0.0  |
| <b>Rhinorrhea*</b>                 | <b>92</b> | <b>46.0</b> |                   |       |           |      |
| Medications**                      | 86        | 43.0        | 83                | 96.4  | 2         | 2.3  |
| Health-risk management             | 23        | 11.5        | 21                | 91.3  | 2         | 8.7  |
| Health-beliefs management**        | 13        | 6.5         | 12                | 92.3  | 0         | 0.0  |
| Nutrition-intake management        | 8         | 4.0         | 7                 | 87.5  | 1         | 12.5 |
| Exercise                           | 2         | 1.0         | 2                 | 100.0 | 0         | 0.0  |
| Stress management                  | 2         | 1.0         | 2                 | 100.0 | 0         | 0.0  |
| <b>Post nasal drip*</b>            | <b>68</b> | <b>34.0</b> |                   |       |           |      |
| Medications                        | 68        | 34.0        | 66                | 97.1  | 2         | 2.9  |
| Nutrition-intake management**      | 12        | 6.0         | 11                | 91.7  | 0         | 0.0  |
| Health-beliefs management          | 10        | 5.0         | 10                | 100.0 | 0         | 0.0  |

**Table 10. Management strategies to improve specific symptom and outcomes.**  
(N = 200) (Contd.)

| Symptoms and management strategies | n*        | %           | Symptoms outcomes |       |           |      |
|------------------------------------|-----------|-------------|-------------------|-------|-----------|------|
|                                    |           |             | Improved          |       | Unchanged |      |
|                                    |           |             | n                 | %     | n         | %    |
| Health-risk management             | 3         | 1.5         | 3                 | 100.0 | 0         | 0.0  |
| Exercise                           | 3         | 1.5         | 2                 | 66.7  | 1         | 33.3 |
| Stress management                  | 2         | 1.0         | 2                 | 100.0 | 0         | 0.0  |
| <b>Itching*</b>                    | <b>53</b> | <b>26.5</b> |                   |       |           |      |
| Medications                        | 52        | 26.0        | 49                | 94.2  | 3         | 5.8  |
| Health-beliefs management          | 12        | 6.0         | 12                | 100.0 | 0         | 0.0  |
| Nutrition-intake management        | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |
| Health-risk management             | 3         | 1.5         | 3                 | 100.0 | 0         | 0.0  |
| Exercise                           | 2         | 1.0         | 2                 | 100.0 | 0         | 0.0  |
| <b>Cough*</b>                      | <b>45</b> | <b>22.5</b> |                   |       |           |      |
| Medications**                      | 44        | 22.0        | 39                | 88.6  | 4         | 9.1  |
| Nutrition-intake management        | 13        | 6.5         | 12                | 92.3  | 1         | 7.3  |
| Health-beliefs management          | 4         | 2.0         | 3                 | 75.0  | 1         | 25.0 |
| Health-risk management             | 3         | 1.5         | 3                 | 100.0 | 0         | 0.0  |
| Stress management                  | 1         | 0.5         | 1                 | 100.0 | 0         | 0.0  |
| Exercise                           | 1         | 0.5         | 1                 | 100.0 | 0         | 0.0  |
| <b>Sore throat*</b>                | <b>26</b> | <b>13.0</b> |                   |       |           |      |
| Medications***                     | 25        | 12.5        | 22                | 88.0  | 1         | 4.0  |
| Nutrition-intake management        | 5         | 2.5         | 5                 | 100.0 | 0         | 0.0  |
| Health-risk management             | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |
| <b>Headache*</b>                   | <b>13</b> | <b>6.5</b>  |                   |       |           |      |
| Medication                         | 12        | 6.0         | 11                | 91.7  | 1         | 8.3  |
| Health-beliefs management          | 9         | 4.5         | 8                 | 88.9  | 1         | 11.1 |
| Health-risk management             | 4         | 2.0         | 4                 | 100.0 | 0         | 0.0  |

**Table 10. Management strategies to improve specific symptom and outcomes.**  
(N = 200) (Contd.)

| Symptoms and management strategies | n*        | %          | Symptoms outcomes |       |           |      |
|------------------------------------|-----------|------------|-------------------|-------|-----------|------|
|                                    |           |            | Improved          |       | Unchanged |      |
|                                    |           |            | n                 | %     | n         | %    |
| <b>Hoarse voice*</b>               | <b>13</b> | <b>6.5</b> |                   |       |           |      |
| Medications                        | 9         | 4.5        | 8                 | 88.9  | 1         | 11.1 |
| Nutrition-intake management        | 3         | 1.5        | 2                 | 66.7  | 1         | 33.3 |
| Health-beliefs management          | 2         | 2.0        | 2                 | 100.0 | 0         | 0.0  |
| Health-risk management             | 1         | 0.5        | 1                 | 100.0 | 0         | 0.0  |
| Exercise                           | 1         | 0.5        | 1                 | 100.0 | 0         | 0.0  |
| <b>Hearing loss*</b>               | <b>9</b>  | <b>4.5</b> |                   |       |           |      |
| Medication                         | 9         | 4.5        | 9                 | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 2         | 1.0        | 2                 | 100.0 | 0         | 0.0  |
| <b>Watery eyes*</b>                | <b>7</b>  | <b>3.5</b> |                   |       |           |      |
| Medication                         | 5         | 2.5        | 5                 | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 2         | 2.5        | 2                 | 100.0 | 0         | 0.0  |
| <b>Anosmia*</b>                    | <b>5</b>  | <b>2.5</b> |                   |       |           |      |
| Health-beliefs management          | 3         | 1.5        | 3                 | 100.0 | 0         | 0.0  |
| Medication                         | 2         | 1.0        | 2                 | 100.0 | 0         | 0.0  |
| <b>Fever*</b>                      | <b>2</b>  | <b>1.0</b> |                   |       |           |      |
| Medication                         | 1         | 0.5        | 1                 | 100.0 | 0         | 0.0  |
| Health-beliefs management          | 1         | 0.5        | 1                 | 100.0 | 0         | 0.0  |

\* Each participant may have more than one strategy

\*\* One participant is worse

\*\*\* Two participants are worse

The majority of the participants used medication to decrease allergic rhinitis symptoms. Antihistamines were the best treatment. Antitussis alone could not reduce

cough symptom unless added to antihistamines. Paracetamol could decrease nasal obstruction pain and headache.

Almost of them improved after used medications and they reported the specific management, for examples, the participants reported that they believed in breathing through mouth and elevating the head board (3%), inhaled steam (2%) and vaporizing ointment (2%) improved the symptom. The participants who had post nasal drip symptom took herb inhalants and found the symptom improved (5%). Eye itching symptom was improved after the use of eye drop (1%) and applied skin itching with calamine lotion, 1% improved but 0.5% unchanged. The participants who had cough symptom; 5% improved after taking antitussis, 2% unchanged and 0.5% worse. Sore throat symptom decreased after taking more warm water (2.5%). Headache management; 3% got well after taking paracetamol and 2.5% believed that nasal obstruction and common cold induced headache symptom.

**Table 11. Management strategies and outcomes of allergic rhinitis symptoms in none severity (N = 128)**

| Symptoms management strategies*            | n*         | %            | Symptoms outcomes |              |           |            |
|--------------------------------------------|------------|--------------|-------------------|--------------|-----------|------------|
|                                            |            |              | Improved          |              | Unchanged |            |
|                                            |            |              | n                 | %            | n         | %          |
| <b>Seeking information</b>                 | <b>128</b> | <b>100.0</b> | <b>128</b>        | <b>100.0</b> | <b>0</b>  | <b>0</b>   |
| <b>Medication management</b>               | <b>118</b> | <b>92.2</b>  | <b>118</b>        | <b>100.0</b> | <b>0</b>  | <b>0</b>   |
| - Antihistamines                           | 103        | 87.3         | 103               | 100.0        | 0         | 0          |
| - Intranasal Corticosteroids               | 49         | 41.5         | 49                | 100.0        | 0         | 0          |
| - Combined antihistamines and decongestant | 29         | 24.6         | 29                | 100.0        | 0         | 0          |
| - Topical**                                | 16         | 13.6         | 16                | 100.0        | 0         | 0          |
| - Antiasthmatic drug                       | 9          | 7.6          | 9                 | 100.0        | 0         | 0          |
| - Immunotherapy                            | 7          | 5.9          | 7                 | 100.0        | 0         | 0          |
| - Decongestant alone                       | 3          | 2.5          | 3                 | 100.0        | 0         | 0          |
| <b>Health-risk management*</b>             | <b>77</b>  | <b>60.2</b>  | <b>76</b>         | <b>98.7</b>  | <b>1</b>  | <b>1.3</b> |
| <b>Exercise*</b>                           | <b>61</b>  | <b>47.7</b>  | <b>61</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>   |
| <b>Nutrition-intake management*</b>        | <b>45</b>  | <b>35.2</b>  | <b>45</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>   |
| <b>Stress management*</b>                  | <b>28</b>  | <b>21.9</b>  | <b>28</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>   |
| <b>Health-beliefs management*</b>          | <b>22</b>  | <b>17.2</b>  | <b>22</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>   |

\* Each participant may have more than one strategy.

\*\* Hista oph, Normal saline irrigation, Special mouth wash, Calamine lotion

Table 11 presented symptoms management strategies of non-severity of allergic rhinitis symptoms (n=128, 64%). All participants sought information on allergic rhinitis treatment and prevention followed by medications (n=118, 92.2%), health-risk management (n=77, 60.2%), exercise (n=61, 47.7%), nutrition-intake management (n=45, 35.2%), stress management (n=28, 21.9%) and health-beliefs management (n=22, 17.2 %) respectively. Almost of them improved except 1.3 % of the participants who managed by health-risk management.

**Table 12. Management strategies and outcomes of allergic rhinitis symptoms in mild severity (N = 30)**

| Symptoms management strategies*            | n*        | %            | Symptoms outcomes |             |           |          |
|--------------------------------------------|-----------|--------------|-------------------|-------------|-----------|----------|
|                                            |           |              | Improved          |             | Unchanged |          |
|                                            |           |              | n                 | %           | n         | %        |
| <b>Seeking information</b>                 | <b>30</b> | <b>100.0</b> | <b>30</b>         | <b>100</b>  | <b>0</b>  | <b>0</b> |
| <b>Medication management</b>               | <b>29</b> | <b>96.7</b>  | <b>29</b>         | <b>100</b>  | <b>0</b>  | <b>0</b> |
| - Antihistamines                           | 23        | 79.3         | 23                | 100         | 0         | 0        |
| - Intranasal Corticosteroids               | 14        | 48.3         | 14                | 100         | 0         | 0        |
| - Combined antihistamines and decongestant | 11        | 37.9         | 11                | 100         | 0         | 0        |
| - Topical**                                | 1         | 3.4          | 1                 | 100         | 0         | 0        |
| - Antiasthmatic drug                       | 1         | 3.4          | 1                 | 100         | 0         | 0        |
| - Decongestant alone                       | 1         | 3.4          | 1                 | 100         | 0         | 0        |
| <b>Exercise*</b>                           | <b>21</b> | <b>70.0</b>  | <b>21</b>         | <b>100</b>  | <b>0</b>  | <b>0</b> |
| <b>Health-risk management*</b>             | <b>16</b> | <b>53.3</b>  | <b>16</b>         | <b>100</b>  | <b>0</b>  | <b>0</b> |
| <b>Nutrition-intake management*</b>        | <b>10</b> | <b>33.3</b>  | <b>10</b>         | <b>100</b>  | <b>0</b>  | <b>0</b> |
| <b>Health-beliefs management***</b>        | <b>6</b>  | <b>20.0</b>  | <b>5</b>          | <b>83.3</b> | <b>0</b>  | <b>0</b> |
| <b>Stress management*</b>                  | <b>5</b>  | <b>16.7</b>  | <b>5</b>          | <b>100</b>  | <b>0</b>  | <b>0</b> |

\* Each participant may have more than one strategy.

\*\* Hista oph, Normal saline irrigation, Special mouth wash, Calamine lotion

\*\*\*One participant is worse

Table 12 presented symptoms management strategies of mild severity of allergic rhinitis symptoms (n=30, 15%). All participants sought information on allergic rhinitis treatment and prevention followed by medications (n=29, 96.7%), exercise (n=21, 70%), health-risk management (n=16, 53.3%), nutrition-intake management (n=10, 33.3%), health-beliefs management (n=6, 20%) and stress management (n=5, 16.7%) respectively, and all of them improved symptoms.

**Table 13. Management strategies and outcomes of allergic rhinitis symptoms in moderate severity (N = 30)**

| Symptoms management strategies*            | n*        | %            | Symptoms outcomes |              |           |             |
|--------------------------------------------|-----------|--------------|-------------------|--------------|-----------|-------------|
|                                            |           |              | Improved          |              | Unchanged |             |
|                                            |           |              | n                 | %            | n         | %           |
| <b>Seeking information</b>                 | <b>30</b> | <b>100.0</b> | <b>30</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>    |
| <b>Medication management</b>               | <b>26</b> | <b>86.7</b>  | <b>26</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>    |
| - Antihistamines                           | 24        | 92.3         | 24                | 100.0        | 0         | 0           |
| - Intranasal Corticosteroids               | 6         | 23.1         | 6                 | 100.0        | 0         | 0           |
| - Topical**                                | 6         | 23.1         | 6                 | 100.0        | 0         | 0           |
| - Combined antihistamines and decongestant | 3         | 11.5         | 3                 | 100.0        | 0         | 0           |
| - Antiasthmatic drug                       | 3         | 11.5         | 3                 | 100.0        | 0         | 0           |
| <b>Health-risk management*</b>             | <b>20</b> | <b>66.7</b>  | <b>19</b>         | <b>95.0</b>  | <b>1</b>  | <b>5.0</b>  |
| <b>Exercise*</b>                           | <b>17</b> | <b>56.7</b>  | <b>17</b>         | <b>100.0</b> | <b>0</b>  | <b>0</b>    |
| <b>Nutrition-intake management*</b>        | <b>9</b>  | <b>30.0</b>  | <b>8</b>          | <b>88.9</b>  | <b>1</b>  | <b>11.1</b> |
| <b>Stress management*</b>                  | <b>8</b>  | <b>26.7</b>  | <b>8</b>          | <b>100.0</b> | <b>0</b>  | <b>0</b>    |
| <b>Health-beliefs management*</b>          | <b>7</b>  | <b>23.3</b>  | <b>7</b>          | <b>100.0</b> | <b>0</b>  | <b>0</b>    |

\* Each participant may have more than one strategy.

\*\* Hista oph, Normal saline irrigation, Special mouth wash, Calamine lotion

Table 13 presented symptoms management strategies of moderate severity of allergic rhinitis symptoms (n=30, 15%). All participants sought information on allergic rhinitis treatment and prevention followed by medications (n=26, 86.7%), health-risk management (n=20, 66.7%), exercise (n=17, 56.7%), nutrition-intake management (n=9, 30%), stress management (n=8, 26.67%) and health-beliefs management (n=7, 23.33%) respectively. Almost of them improved excepted 5% of the participants who managed by health-risk management and 11.1% of participants who used nutrition intake management.

**Table 14. Management strategies and outcomes of allergic rhinitis symptoms in severe severity (N = 12)**

| Symptoms management strategies*            | n*        | %           | Symptoms outcomes |      |           |      |
|--------------------------------------------|-----------|-------------|-------------------|------|-----------|------|
|                                            |           |             | Improved          |      | Unchanged |      |
|                                            |           |             | n                 | %    | n         | %    |
| <b>Seeking information</b>                 | <b>12</b> | <b>100</b>  | 12                | 100  | 0         | 0    |
| <b>Medication management</b>               | <b>11</b> | <b>91.7</b> | 11                | 100  | 0         | 0    |
| - Antihistamines                           | 11        | 100         | 11                | 100  | 0         | 0    |
| - Intranasal Corticosteroids               | 4         | 36.7        | 4                 | 100  | 0         | 0    |
| - Combined antihistamines and decongestant | 3         | 27.3        | 3                 | 100  | 0         | 0    |
| - Topical**                                | 2         | 18.2        | 2                 | 100  | 0         | 0    |
| <b>Health-risk management*</b>             | <b>8</b>  | <b>66.7</b> | 7                 | 87.5 | 1         | 12.5 |
| <b>Nutrition-intake management*</b>        | <b>5</b>  | <b>41.7</b> | 4                 | 80   | 1         | 20.0 |
| <b>Health-beliefs management*</b>          | <b>5</b>  | <b>41.7</b> | 5                 | 100  | 0         | 0    |
| <b>Exercise*</b>                           | <b>3</b>  | <b>25.0</b> | 3                 | 100  | 0         | 0    |
| <b>Stress management*</b>                  | <b>2</b>  | <b>16.7</b> | 2                 | 100  | 0         | 0    |

\* Each participant may have more than one strategy.

\*\* Hista oph, Normal saline irrigation, Special mouth wash, Calamine lotion

Table 14 presented symptoms management strategies of severe of allergic rhinitis symptoms (n=12, 6%). All participants sought information on allergic rhinitis treatment and prevention followed by medications (n=11, 91.7%), health-risk management (n=8, 66.7%), nutrition-intake management (n=5, 41.7%), health-beliefs management (n=5, 41.67%) exercise (n=3, 25%), and stress management (n=2, 16.7%) respectively. Almost of them improved symptoms except 20% and 15% of the participants who managed by nutrition and health-risk management.

Besides, the outcomes of management strategies were presented above. The outcomes of allergic rhinitis management strategies could be presented with

respondence and cost of treatment. Response outcomes were presented in Table 15 and cost of treatment was presented in Table 16 and 17.

**Research Objectives 3. To explore symptom management outcomes and the cost of care for management of allergic rhinitis in adults with allergic rhinitis.**

**Table 15. Outcomes of the participants response to allergic rhinitis symptoms management (N = 200)**

| Outcomes                 | n*  | %    |
|--------------------------|-----|------|
| <b>Disturb*</b>          |     |      |
| No                       | 72  | 36.0 |
| Yes                      | 128 | 64.0 |
| Day living               | 126 | 63.0 |
| Sleep                    | 57  | 28.5 |
| Study, work              | 55  | 27.5 |
| Boredom                  | 45  | 22.5 |
| Joy, sport               | 2   | 1.0  |
| Worrying                 | 2   | 1.0  |
| <b>Memory change*</b>    |     |      |
| No                       | 151 | 75.5 |
| Yes                      | 49  | 24.5 |
| Forgetfulness            | 35  | 17.5 |
| Amnesia                  | 12  | 6.0  |
| Reluctance               | 7   | 3.5  |
| Sluggishness             | 3   | 1.5  |
| <b>Emotional change*</b> |     |      |
| No                       | 103 | 51.5 |
| Yes                      | 97  | 48.5 |
| Annoy                    | 93  | 46.5 |
| Lose of self confident   | 54  | 27.0 |

**Table 15. Outcomes of the participants response to allergic rhinitis symptoms management (N = 200) (Contd.)**

| Outcomes             | n* | %   |
|----------------------|----|-----|
| Stress               | 18 | 9.0 |
| Hopeless and depress | 6  | 3.0 |
| Anger                | 7  | 3.5 |

\* Each participant may have more than one answer

The responsiveness of allergic rhinitis concerned with their life as presented in Table 15. It was classified in three parts; disturbed lives, memory changed and emotional change. The majority of the participants, or 64%, complained that symptom disturbed their lives, (63%) disturbed daily life. In addition, 28.5% of them disturbed sleep, 27.5% disturbed study and work. Furthermore, 24.5% of them complained that memory ability changed; 17.5% knew about their forgetfulness and 6% knew amnesia. Besides, the participants knew that their emotional was varied (48.5%). They sometimes (46.5%) were annoyed with themselves and neighbor. Additionally, 27% of them lost self confident (27%) because of constant sneezing, rhinorrhea and cough in workplace. As a consequence, their colleague assumed they had severe infection and would stay away from them. The cause of problems above induced stress (9%), hopeless and depression (3%) in allergic rhinitis patients. In any event, 3.5% of them felt angry at themselves.

**Table 16. monthly cost of allergic rhinitis management (N = 200)**  
**(Baht per person per month)**

| Source of expense*                              | n          | range           | median        | mean           | SD             |
|-------------------------------------------------|------------|-----------------|---------------|----------------|----------------|
| <b>Direct healthcare cost</b>                   | <b>198</b> | <b>5-3000</b>   | <b>300.00</b> | <b>394.85</b>  | <b>406.48</b>  |
| - Medication as prescribed                      | 182        | 30-3000         | 3000.00       | 385.51         | 389.98         |
| - Medication over the counter                   | 32         | 5-1000          | 55.00         | 122.47         | 193.04         |
| - Private clinic fee                            | 5          | 200-1300        | 900.00        | 720.00         | 496.99         |
| - Examination fee                               | 4          | 100-200         | 100.00        | 125.00         | 50.00          |
| <b>Direct non-healthcare cost</b>               | <b>41</b>  | <b>40-12000</b> | <b>700.00</b> | <b>1136.66</b> | <b>1900.01</b> |
| - Dietary                                       |            |                 |               |                |                |
| - Food supplements                              | 15         | 40-2500         | 500.00        | 856.67         | 814.26         |
| - Fresh fruit and vegetables                    | 3          | 50-3000         | 470.00        | 1173.33        | 1595.82        |
| - Protection (Mask and glove)                   | 2          | 83-200          | 141.50        | 141.50         | 82.73          |
| - Transportation cost/<br>cost of resting place | 25         | 150-12000       | 500.00        | 1198.00        | 1952.38        |
| <b>Indirect cost</b>                            | <b>82</b>  | <b>11-2500</b>  | <b>250.00</b> | <b>373.63</b>  | <b>412.76</b>  |
| - Cost of time absent**                         | 82         | 11-2500         | 250.00        | 373.63         | 412.76         |

\* Each participant may have more than one answer

\*\* Include day lost of employer

The cost of allergic rhinitis management to make payment in adults was presented in Table 16. Cost of treatment was divided by direct healthcare cost, direct non-healthcare cost and indirect cost. High cost of management was direct non-healthcare cost, or Baht 1136.66 (n=41) per person per month. Most of them paid for transportation cost to visit the hospital by themselves, or Baht 1198.00 (n=25) per person per month and fresh fruit and vegetable Baht 1173.33 (n=3) per person per month. The participants who came from long distant; they paid for transportation and a resting place. Moreover, they paid for food supplements; i.e., seaweed, evening

primrose and mineral. In addition, toxic-free fresh fruit and vegetable were more expensive than common fresh fruit.

Direct healthcare cost was Baht 394.85 (n=198) per person per month. The majority was medication as prescribed or Baht 385.51 (n=182) per person per month. The medication famous used was antihistamines and corticosteroids. Price of medications was varied between original and generic drugs, for example, antihistamine range from Baht 0.20 – 14.10 per tablet and inhalant range from Baht 200 – 620 per unit (present price at collecting times).

Besides, indirect cost was Baht 373.63 (n=82) per person per month; it was calculated by the number of times lost of employer. The employer commonly leaved from the office. They lost times at work range from half a day to three days.

Finally, the total average cost of allergic rhinitis managements was showed in table 17.

**Table 17. Cost of allergic rhinitis management (N = 200)**  
**(Baht per person per month)**

| Source of expense*                           | range          | mean***       | SD            |
|----------------------------------------------|----------------|---------------|---------------|
| <b>Direct healthcare cost</b>                | <b>0-3000</b>  | <b>390.91</b> | <b>406.34</b> |
| - Medication as prescribed                   | 0-3000         | 350.81        | 388.02        |
| - Medication over the counter                | 0-1000         | 19.60         | 88.49         |
| - Private clinic fee                         | 0-1300         | 18.00         | 132.91        |
| - Examination fee                            | 0-200          | 2.50          | 18.59         |
| <b>Direct non-healthcare cost</b>            | <b>0-12000</b> | <b>233.02</b> | <b>968.12</b> |
| - Dietary                                    |                |               |               |
| - Food supplements                           | 0-2500         | 64.25         | 312.75        |
| - Fresh fruit and vegetables                 | 0-3000         | 17.60         | 214.56        |
| - Protection (Mask and glove)                | 0-200          | 1.42          | 15.28         |
| - Transportation cost/ cost of resting place | 0-10000        | 149.75        | 785.80        |
| <b>Indirect cost</b>                         | <b>0-2500</b>  | <b>153.19</b> | <b>312.38</b> |
| - Cost of time absent**                      | 0-2500         | 153.19        | 312.38        |
| <b>Total cost of treatment</b>               | <b>0-12010</b> | <b>777.12</b> | <b>1090.8</b> |

\* Each participant may have more than one answer

\*\* Include day lost of employer

\*\*\*Mean base on sample size 200

Average cost of allergic rhinitis management base on total participants (200). Cost of treatment was divided by direct healthcare cost, direct non-healthcare cost and indirect cost. High cost of management was direct healthcare cost, or Baht 390.91 per person per month. The majority was medication as prescribed or Baht 350.81 per person per month. Direct non-healthcare cost was Baht 233.02 per person per month. Most of them paid for transportation cost to visit the hospital by themselves. Besides, indirect cost was Baht 153.19 per person per month. Finally, the total average cost of allergic rhinitis managements was Baht 777.12 per person per month.

## CHAPTER V

### DISCUSSION

The results of the study of adults with allergic rhinitis symptoms and affect of symptoms management strategies were discussed in this chapter. Discussion of the finding was presented as follows: 1) the symptoms experience of the participants and the severity of symptom of the participants; 2) symptoms management strategies; and 3) cost of care for symptoms management of the participants with allergic rhinitis.

**Research objective 1: To describe the symptoms experience and severity of symptoms in adults with allergic rhinitis.**

#### **Symptoms experience**

##### **Perception of symptom**

The study found the majority of the allergic rhinitis symptoms present all year around (88%) (Table 2) and the common cause of symptoms was dust (78.5%) (Table 3). These results were consistent with Suwat Benjapolpituk, et al. (Eds., B. E. 2544: 11, 44) which stated that in Thailand, dust is allergens which induce allergic rhinitis found throughout the year. Similarly, the study of Leong, et al. (1999: 163), Hopkinson (2004: 44), Smith-Sivertsen, Tchachtchine, & Lund. (2003: 357-360) and Stearn (2005: 31) found allergic rhinitis symptoms lasting years after expose to dust.

Exhaust fumes being the major irritant (21%) led to allergic rhinitis symptoms (Table 3) wherein the participants contacted during transport. The finding was consistent with the statement of Lee & Guo (2004: 144) that prevalence of respiratory symptoms related with the number of motor vehicles which nitrogen oxides and carbon monoxide were common pollutants from motor vehicles.

The symptoms experience was an individual's perception of a symptom. The participants evaluated the meaning of symptoms and responded to a symptom as same

as a model of Dodd, et al. (2001: 671). In addition, Dodd, et al. (2001: 671) suggested that people evaluated their symptoms by making judgments about the severity and the effect of symptoms on their lives (Dodd, et al., 2001: 671). The allergic rhinitis patients had multiple sensitizers through the year when the patients suffered from these symptoms (Domely, et al., 2003: 673-4).

The most common symptoms of allergic rhinitis in this study were sneezing (49%), nasal obstruction (46%), rhinorrhea (43%), and post nasal drip (34%); in addition to itching (26.5%), cough (22.5%), sore throat (13%), headache and hoarse voice of (6.5%) respectively (Table 5). Sneezing was found as the major symptom in this study as same as the study of Scadding, Richard & Price. (2000: 553). The allergic rhinitis symptoms found in this study were consistent with the result of Gross, et al. (2002: 56), Loh, et al. (2004: 1170), Topuz & Ögmen (2003: 824-5) and Vichayanond, et al. (2002: 36) that most of allergic rhinitis symptoms in adults were sneezing, itching nose, rhinorrhea and nasal obstruction.

In general, the participants felt allergic rhinitis symptoms were not severe; the severity of allergic rhinitis symptoms were non-severity (64%), mild severity (15%), moderate severity (15%) and sever (6%) (Table 4).

The participants perceived the symptoms as non-severity was sneezing, nasal obstruction, rhinorrhea, post nasal drip, and itching; whereas, the symptoms disturbing their life were headache (84.6%). Moreover, the participants reported that allergic rhinitis symptoms presented in early morning, from fifteen minutes to one hour after awoken. The finding was consistent with the result of Craig, et al. (2004: S140), Storms (2004: S147) and Smolensky, Reinberg, & Labrecque, et al. (1995: 1086) that found the evidence of sneezing, nasal congestion and rhinorrhea as common and being the major symptoms present in the morning because the levels of inflammatory eosinophils and basophils in patients with allergic rhinitis were highest in the early morning (Craig, et al., 2004: S140).

## **Research objective 2: To describe management strategies in adults with allergic rhinitis.**

### **Symptoms management strategies**

The results of this study found the symptoms management strategies of the participants as varied with the individual's perception. They had more than one intervention for prevention or management of the symptoms. The finding was; thus, consistent with model of Dodd, et al., 2001 (673) that found management being with assessment of the symptoms experience from the individual's perspective. Assessment was followed by identifying the focus for intervention strategies. The intervention strategies might be targeted at one or more components of the individual's symptoms experience to achieve one or more desired outcomes. The mass result of the symptoms management in this study was grouping within content analysis technique.

The management of allergic rhinitis symptoms was classified in 7 strategies (Figure 4) that were seeking information, medications, and was follow by five parts of health promotion model of Pender; health-risk management, exercise, nutrition-intake management, stress management and health-beliefs management. The result of the study (Figure 4) found all participants sought information (100%), followed by medication (92%), health-risk management (69.5%), exercise (50%), nutrition-intake management (45%), stress management (18%) and health-beliefs management (12%) respectively.

#### **Seeking information**

The participants sought information from various sources (100%); i.e., persons, document and media (Table 6). The majority of them (91%) sought allergic rhinitis information from persons where most of them (94.5%) received health information from physicians and staff nurses in clinics and hospitals. In addition, 37% of them sought information from documents such as articles on health education in magazines and allergic rhinitis brochures created by the Otolaryngology Outpatient Department of Ramathibodi Hospital. All of allergic rhinitis patients received

information about dust avoidance and antihistamine therapy as antihistamine was a major choice of drug for attendants. Almost all of them visited Ramathibodi Hospital because they received effective antihistamines at low price whilst other clinics and hospitals offered various treatment both medications and alternative therapy.

The prices of medications in drug store, private clinic and hospital were very expensive; for example, zyrex 10 mg and loratadine 10 mg were Baht 0.80 and 1.50 per tablet increased to Baht 5 – 10 per tablet; zyrtec 10 mg and clarityne 10 mg were Baht 11.2 and 14.1 per tablet increased to Baht 20 – 50 per tablet in drug store. In primary care unit, the patients received chlorpheniramine (CPM) for medication which they were not happy. They reported that CPM was not effective for severe symptoms; in contrast, it had sedative side effect.

Similar with the study of Asmuni (1996: 4) and Wang, Chan, & Smith, (2004: 315) that found the physicians in primary care clinics generally used CPM as the first choice of drug to treat allergic rhinitis. Likewise, the study of Scadding, et al. (2000: 555-6), Fokkens, (2002: 469-70) and Ryan, et al. (2005: 204-7) found the allergic rhinitis patients having first contact with primary care physician. They received varied medication from low effective drugs to over treatment relating to the knowledge of physician. Additionally, pharmacist in Europe and America gave advice on allergic rhinitis medication (Bousquet, Van Cauwenberge, & Khaltaev, 2004: 373). Thus, the patients were subjected to risk on drug inducement or other medication following self-care.

### **Medications management**

The majority of the participants used medication (92%) (Figure IV), and 87.5% of them took antihistamines (Table 8), especially new-generation antihistamines. Similar the results of the study of Nunes & Ladeira (2000: 20) indicating that oral antihistamines were the most frequently prescribed medications for the management of the allergic rhinitis. Whilst antihistamines relived symptoms of itching, nasal drainage and sneezing, it was typically ineffectual with late-phase nasal obstruction. However, second-generation antihistamines had higher potencies and long action than first-generation antihistamines, with adding benefit of minimal sedating properties and might improve some degree of congestion (Adkinson, et al.,

Eds., 2003: 834, 838; Craig, 2004: S142) and, symptom distress, sleep problems and emotional difficulties (Noonan, et al, 2003: 356). The result of this study found the participants got well after taking cetirizine and loratadine. Moreover, they used CPM in line with the physician prescription or by themselves when they had severe symptoms.

Besides antihistamines, 39.7% of the participants used intranasal corticosteroids to reduce nasal symptoms. The topical corticosteroids could effectively reduce nasal inflammation (inhibit the influx and activation of inflammatory cells), nasal congestion, sneezing, rhinorrhea, and itching (Adkinson, et al., Eds., 2003: 902-3; Arshad, 2002: 73; Bunnag & Muntarbhorn, Eds., 1997: 37; Fokkens, et al., 2003: 725; Gross, et al., 2002: 56-62). Intranasal corticosteroids reduced congestion better than second-generation antihistamines as it improved sleep and reduced daytime sleepiness (Craig, et al., 2004: S139). Nevertheless, the participants complained that intranasal corticosteroids were very expensive; for examples, price of beconase spray 200 ds Inh was Baht 252, rhinocott Aqua 120 ds Inh was Baht 310 and flixonase AQ nasal spr 120 ds Inh was Baht 560 (Ramathibodi Hospital, B.E. 2546). Therefore, the participants who could not get reimbursement or having insufficient fund could do without such medication.

The majority of the participants in this study took antihistamines to relieve allergic rhinitis symptoms and intranasal corticosteroid the same as the study of Chen, et al. (2004: 847) that found the majority of patients using non-sedative antihistamine, over the counter antihistamine or decongestant and steroids nasal spray. However, allergic rhinitis symptoms affected many organs and represented many symptoms such as eye itching, skin itching, cough and sore throat (Little, 2003). This research found the participants used topical drug (14.1%) in order to decrease the symptoms such as, hista oph for eye itching, calamine lotion for skin pruritus, antitussis for relief cough, and normal saline irrigation. The result was consistent with the study of Heatley, et al. (2001: 44, 46) that found nasal irrigation with hypertonic saline decreased nasal secretion and improved mucociliary transportation.

### **Health-risk management**

Health-risk management (69.5%) was the major self-management in allergic rhinitis, especially dust avoidance the same as the study of Terreehorst, et al. (2005: 888, 892), in addition to dust avoidance in house and bedding providing floor and furniture mopping and clean bedding respectively. The finding was consistent with Jerrim, et al. (2002: 63) that found wet cleaning could reduce dust whilst protect allergen blow in the air. Moreover, multi-wall vacuum bags should control allergen dispersal (Thomas, et al., 2003: 91). Likewise, the study of Baur, 2003: 11; Mahakittikun, et al. (2003: 981), Sidenius, et al. (2002: 35-6) and Yi, et al. (2004: 150) found prevalence of dust in bedroom was more than any other indoor environment.

The result of this study found the participants washed mattress cover, took bedding and soft toys for sun exposure and slept on sleeping mat. This practice was correct in accordance with the common guideline of dust avoidance providing they should wash bedding regularly at 55°C degrees water, remove soft toys from the bed, remove carpets, decrease soft furnishings, close the door and dehumidification (Krouse & Krouse, 1999: 13; Kupecz, 1999: 108-9; Stearn, 2005: 32-33.)

In addition, the participants cleaned the fans and air conditioning filters to reduce dust in the rooms. The result related to the study of Kuwahara, et al. (2001: 229) that found air conditioning at home had high rate of exposure to molds in the air and surface. Furthermore, the participants reported the increase of allergic rhinitis symptoms after living in air conditioned rooms outside their homes.

This study found some participants stop smoking because it induced allergic rhinitis symptoms. It was consistent with the statement of Krouse & Krouse (1999: 13) that tobacco smoke was known to damage the cilia of the respiratory clearance, and predispose the patient to both upper and lower respiratory disease. So, the patients were encouraged to avoid tobacco smoke.

### **Exercise**

The results found 50% of the participants managed symptoms by using exercises whereas 100% of them improved after exercise. They were walking and jogging. The older participants and those participants having orthopedic problem

would perform physical exercise and walking instead. Some participants complained that running worsen their condition. It was similar to Serra-Batlles, et al. (1994: 128) and Wilde, Cook & Jones. (1995: 345) study that found isometric exercise induced nasal obstruction but limited nasal airflow. However, exercises improved respiratory cardiovascular function concurrently decreased anxiety depressions and enhanced feeling of well being (Franklin Ed., 2000: 6-7; Mackinnon, 2000: S374).

### **Nutrition management**

The participants managed their symptoms by using nutrition management 45% in which all of them found their symptoms had improved. They managed themselves by decreasing certain food intake; i.e., pickled foods, meat, cold water and ice cube, and avoiding food allergen and increasing food intake; i.e., fluid intake, essential mineral, vitamin and food supplement such as seaweed, evening primrose, royal jelly, unpolished or brown rice. All of these strategies improved their symptoms. The possible explanation could be self-care action and increase awareness on health care behavior of people where they learned from experiences, sourcing information and social learning. As they applied these strategies the symptoms improved; thus, they continued the practice regularly.

Some of them avoided drinking cold water and increased with warm water to decrease the symptoms. This was similar to the finding of Wilde (1999: 411) that cold water (15°C) would increase nasal obstruction.

In addition, the participants had allergic rhinitis symptoms after consuming some kind of foods without signs of food poisoning. The finding of this research was coherent with the statement of Schäfer, et al. (2001: 1206-1210) that patients with hay fever bearing the risk of food allergy because allergens sensitivity associated with food allergy in adults although food allergy had no history of severe anaphylaxis (Crespo, et al., 2002: 946-7; Crespo & Rodriguez, 2003: 100). Furthermore, Mattila, et al. (2003: 600, 603) stated that pollen sensitization increased the prevalence of hypersensitivity to several fruits and vegetables. In addition, the stated of Bieloly, 2003 (581) that the patients have adverse reactions after use royal jelly. Hence, the participants must be aware and be careful of herbs intake because they had history of seaweed, evening primrose and royal jelly intake.

The effective result of supplement treatment as reported by the participants was that they felt healthy and it decreased allergic rhinitis symptoms. The benefited of treatment as a perception and self report were the same worldwide (Bielory, 2002: 656; George Wong, 2001: 192-5; Niggemann & Grüber, 2003: 707; Schäfer, et al., 2002: 694). Many herbs found anti-inflammation or anti-allergic effect (More, Napoli & Hagan, 2003: 492). Whereas, in this study found only few percent of herbs inhalant (lotus ashes 2.5% and oilment 1%) but could not improve nasal symptoms.

Moreover, spirulina had high protein content, indispensable amino acids, vitamins,  $\beta$ -carotene, pigment, mineral substances, indispensable fatty acids, and polysaccharides that claimed it made feeling of wellbeing (Duangchan Hengsaewadi, et al., B.E. 2539: 174-5; Canela, et al., 2002: 3021; Rungrapa Praditpong, B.E. 2536: 48-49), it contained no laboratory result on allergic rhinitis. Evening primrose oil (EPO) was mostly used as a dietary supplement for rheumatic and arthritic conditions, atopic dermatitis, psoriasis, premenstrual and menopausal syndrome, and diabetic neuropathy (Hamburger, 2002: 5533). Royal jelly was the product from the bees that was claimed to provide immediate feeling of well-being, resistance to fatigue, greater leaning capacity, better memory and increase immune response. However, the royal jelly had an affect on people having sensitivity to honey, bees, grass and pollen that led to acute asthma, anaphylaxis and death (Levi, 2005). Although spirulina, evening primrose and royal jelly had advertisement about the ability to decrease allergic rhinitis symptoms, there had yet been any laboratory support to date.

Finally, the participants who had history of alcohol sensitivity had stopped their alcohol intake (6.5%). That was consistency with the study of Nihlen, et al. (2005: 762) which found alcohol usage induced nasal symptoms.

### **Stress management**

Eighteen percents of the participants perceived stress inducing allergic rhinitis symptoms. So, they controlled stress by resting and emotional controlled. The participants who could not fall asleep themselves took sleeping pill, anti-depression drug and meditation. The participants commonly reported they had abnormal sleep, daytime somnolence which significantly effected on mood and daytime functioning. This result was consistent with Krouse, Davis & Krouse. (2002:

608); Mackinnon (2000: S374) and Rippe, Ed., (1999: 1235) which stated that psychological stress and sleepless affected the immunology system.

### **Health-beliefs management**

The study found 12% of the participants applied health-beliefs management by using aromatherapy vaporizing medicine; went to the beach and got rid of impurities to improve allergic rhinitis symptoms. This thesis finding could be explained that they chose alternative strategies on their beliefs and value on illness, which were the part of cognitive structure of the people's culture. This result was consistent with Dodd, et al., 2001, management strategies began with assessment of symptoms experience from the individual's perspective. Symptoms management was a dynamic process, often requiring changes in strategies over time or in response to acceptance or lack of acceptance of the strategies devised (Dodd, et al., 2001).

In this study, most of the participants had improved condition after managing various strategies, except for cough symptom. Cough symptoms did not decrease after taking only antitussis even if added antihistamines. As cough in allergic rhinitis was different from the others as had been stated by Lampasso & Lampasso (2004: 40) that cough in allergic rhinitis associated with postnasal drip, nasal obstruction to breathing, and itching (Lampasso & Lampasso, 2004: 40). Furthermore, Cho, et al. (2003: 489) indicated cold air induced chronic cough and improved nasal inhalant.

Management strategies and outcomes of allergic rhinitis in various levels of severity; non-severity (n=128, 64%); mild severity (n=30, 15%); moderate severity (n=30, 15%); and severe (n=12, 6%). All participants sought information on allergic rhinitis treatment and prevention followed by medications as same as in general management. Beside, other favor management strategies were health-risk avoidance, exercise and nutrition management were varied with their perception.

### **Research Objectives 3: To explore symptoms management outcomes and the cost of care for management of allergic rhinitis in adults with allergic rhinitis.**

The outcomes of symptoms management in allergic rhinitis participants focused on the quality of life and cost of treatment that both factors were two of eight factors of outcomes in the model of Dodd, et al.(2001: 674).

#### **Outcomes of participants' response**

The result of this study shown the allergic rhinitis symptoms disturbed the participants' lives (64%); i.e., daily living, sleep, study, work, and boredom. The participants faced emotional change (48.5%) and memory change (24.5%). These results were consistent with symptom management model of Dodd, et al., 2001 which stated that outcomes of managements include quality of life, functional status and emotional status. The result was similar to the study of Leong, et al. (1999: 163) and statement of Chen, et al., 2004: 845, Gerth van Wijk (2002: 1104-5) and Gerth van Wijk (2005: 32, 34) that the allergic rhinitis symptoms affected the sleep, social functioning productivity, economic and social burden, emotional problem, and low mental wellbeing.

Cost of treatment in the model of Dodd, et al., 2001 (674) included financial status, health services utilization, loss of professional opportunities for career advancement and costs of the individual's personal life. So the participants who were successfully treated and completely resolved from the symptoms, including, able to pay for allergic rhinitis treatment and prevention would continue with effective management strategies to resolve allergic rhinitis symptoms in the long run.

### Cost of care for symptoms management

This research found the average cost of allergic management in allergic rhinitis was Baht 777.12 (n=200) per person per month.

The major cost was direct non-healthcare cost of Baht 1136.66 (n=41) per person/month whilst cost of transportation and resting place were Baht 1198.00 (n=25) per person/month, and fresh fruit and vegetable Baht 1173.33 (n=3) per person per month. Furthermore, transportation cost was at the height of direct non-healthcare cost which could decrease if the participants did not visit a distant hospital.

Direct health care cost of Baht 394.85 (n=198) per person/month whilst cost of medications from prescription (Baht 385.51, n=182 per person/month) and private clinic (Baht 720.00, n=5 per person/month). These costs were too expensive for health care but 63.5% of them could claim reimbursement; thus, they could continue with the follow-up. The healthcare costs of allergic rhinitis in Thailand were not available nevertheless the estimated cost of allergic rhinitis treatment per annum for worldwide could be obtained. In USA, the estimated cost of rhinoconjunctivitis was US\$1.9 billion in 1996 (Gerth van Wijk, 2002: 1104-5). The estimated cost in Australia was AU\$ 930 million and £1.6 billion in the UK (Schäfer, et al., 2002: 694). In addition, cost of allergic rhinitis and related symptoms were over US\$350 per person (Howarth, et al., 2005: S387). The cost of management in this study included both cost of medications and self-management which was consistent with the statement of Kupecz (1999: 109) that the first of allergic rhinitis treatment was avoidance and followed by medications.

Moreover, the participants also bought chlorpheniramine, antitussis and calamine lotion over the counter by themselves (Baht 122.47 per person/month, n=32). Most of them paid for low price of antihistamines at the hospital. The cost of absenteeism as indirect cost was on the average of Baht 373.63 (n=82) per person/month as the participants left workplace half a day every week until they could control the symptoms. This had direct affect on productivity and relationship at workplace.

The numbers of alternative treatments increased in allergic rhinitis management. This was the same as the statement of Bielory (2002: 655) and Schäfer, et al. (2002: 698) that allergy was one of the most common chronic diseases and the

patients used 'complementary and alternative medicine' or CAM to treat IgE-mediated allergies and other disorder associated to the atopic constitutions. The result of this study also found the dietary very important as the participants paid Baht 40 to 3,000 per person/month for food supplement, fresh fruit and vegetable. These foods were very expensive but the participants were satisfied with the results as they had no side effects. Nonetheless, the real outcomes were rather difficult to evaluate. The participants could buy such items over the counter or by direct sale since they were categorized as foods not drugs.

However, the cost of care for management based on the total participants (n=200). The average direct health care cost of allergic rhinitis management in adult was Baht 777.12 per person per month. The direct healthcare cost was on the average of Baht 390.91 per person/month. The direct non-healthcare cost was on the average of Baht 233.02 per person/month and indirect healthcare cost was on the average of Baht 153.19 per person/month. This finding cost was higher than the study of Rattanamongkolkul (2003: 61) which found the average Bath 318.72 per person throughout the cause of illness in the older adult with common cold or influenza.

## CHAPTER VI

### CONCLUSION

This descriptive research design was aimed to explore symptoms experience, symptoms management strategies, and symptoms outcomes of adults with allergic rhinitis, two hundred participants were collected by purposive sampling from Otolaryngology Outpatient Department at Ramathibodi Hospital. The duration of data collection was five months (April to August, 2003). The inclusion criteria were: 1) having symptoms of allergic rhinitis more than six months; 2) age twenty years or older; 3) able to communicate Thai language verbally; and 4) willing to participate in this study.

The structure interviewed form instruments of this study were composed of three parts as follows: 1) the demographic data; 2) the symptoms experiences; and 3) management strategies and outcomes of allergic rhinitis symptoms management. All three parts were developed by the researcher based on the literature review. The symptoms experiences included perception and severity of symptoms. The management strategies and outcomes of allergic rhinitis symptoms included symptoms management strategies, outcomes of the participants' response and cost of allergic rhinitis management. The structure interviewed form included closed-end open-end item and check list.

Collection of data was performed by the researcher throughout the study. After the patients completed the examination; the researcher explained the purposes of the study and time required for the interview, and requested for their consents to participate in this study. The data was collected only one time and analyzed by means of descriptive statistic (frequency and percentage).

The finding of this study could be summarized as follows:

### **1. The symptoms experiences of adults with allergic rhinitis**

Most patients had experienced on sneezing (49%), nasal obstruction (46%), rhinorrhea (43%), post nasal drip (34%), itching (26.5%), cough (22.5%), sore throat (13%), headache (6.5%), hoarse voice (6.5%), hearing loss (4.5%), watery eye (3.5%), anosmia (2.5%) and fever (1%). The majority of them had non-severity due to the use of medications. In addition, the allergic rhinitis symptoms interfere with daily life as the symptoms occurred all year round (in early morning and working hours). Furthermore, the majority of the participants knew the type of allergen or irritant. The symptoms being evaluated as the most severe was headache (46.1%) and the symptoms interfering the daily life were headache (84.6%), sore throat (73.1%), and nasal obstruction (70.6%).

The participant's perceived severity of symptoms by general symptoms. Most of allergic rhinitis symptoms were non-severity (64%), follow, mild (15 %) and moderate (15%) severity, and severe (6%). The symptoms were often interference daily living (64%).

### **2. Management strategies with allergic rhinitis and outcomes of management strategies**

The management of allergic rhinitis symptoms was classified in 7 strategies, i.e., seeking information (100%), medication (92%), health-risk management (69.5%), exercise (50%), nutrition-intake management (45%), stress management (18%) and health-beliefs management (12%).

Almost all participants sought allergic rhinitis information by themselves. The majority of them (94.5%) received advice from health profession about antihistamines and dust avoidance. Among the patients, 74.5% had visited Ramathibodi Hospital the first time whilst the others bought the medications themselves or visited the clinic or hospital. The most effective management strategies were medications (92%) in which antihistamines and intranasal corticosteroids were commonly used for severe nasal symptoms.

Moreover, the participants carried out variety of allergic rhinitis symptoms management by themselves. Health-risk management (69.5%) was

commonly useful strategies; the majority of them were dust avoidance and improve. Exercise (n=50) was strongly improved health status and decreased allergic rhinitis symptoms. Furthermore, nutrition-intake management (45%) had improved on most patients after increased amount of foods. Similarly, the participants suggested that stress management (18%) was considered as effective strategies. Increasing rest/sleep was used as a useful strategy to decrease stress whereas quality of sleep had an impact on their daily activity and decision making. The health-beliefs management of allergic rhinitis symptoms in this study was using aromatherapy; used vaporizing medicine and went to the beach on holidays. The others of them cleaned everything around them. Whilst the majority of participants used medications on specific symptoms, it was found that cough improved after taking antihistamines and antitussis.

The majority of allergic rhinitis suggested that the symptoms disturbed their daily living (64%). On the other hand, the participants perceived that allergic rhinitis symptoms changed their memories (24.5%) and emotion (48.5%). Nevertheless, 46.5% of them felt annoy.

The mean cost of allergic rhinitis management of the total participants in this study was Baht 777.12 per person per month. The majority was direct healthcare cost, mean cost was Baht 390.91 per person per month, including, medication as prescribed (Baht 350.81), medication over the counter (Baht 19.60), private clinic fee (Baht 18.00) and examination fee (Baht 2.50). The mean direct non-healthcare cost was 233.02 Baht per person per month, including, dietary (food supplements= Baht 64.25; fresh fruit and vegetables= Baht 17.60), protection (mask and grove) (Baht 1.42), transportation and a resting place cost (Baht 149.75). The mean of indirect cost was Baht 153.19 per person per month that calculated by the number of times lost of employee and their salary.

## **Recommendation**

### **Implications for nursing practice**

The result of this research found most of the participants sought information from health professional. They paid a lot of money for health care because allergic rhinitis having symptoms all year. The majority of effective treatment was medications management, allergen avoidance and exercise. The best of medications was antihistamines. The patients will take medication until they felt the symptom less and then tried to stop it by themselves. Health profession should give information about medications, especially about antihistamines.

Furthermore, the participants should avoid allergens. It was extremely easy self-management but effectively. In addition, exercise was considered effective management but the participants reported lack of time. Thus, nurses should promote suitable exercise that could be effectively managed and less time consuming, such as, physical exercise and walking regularly a few times per week, which were particularly useful for management.

Therefore, the health education program for allergic rhinitis should promote result of antihistamines used, detect type of specific allergen as well as provide information on allergen avoidance, and tolerable exercise. If the program was effective, the cost of care both direct and non-direct costs should be decreased.

### **Implications for nursing research**

1. The research explored perception of experience and management strategies of allergic rhinitis symptom. The future research should study about the program of health education and health promotion in allergic rhinitis patients, especially intervention to antihistamines management, allergen avoidance and exercise.

2. The result of this research found most participants having allergic rhinitis symptoms 12-120 months and various self-managements before they visited the physician. As most of the patients might not able to control allergic rhinitis symptoms themselves, the majority of them need medications treatment more than self-management. Another reason might be due to the setting of this research which

performed in a tertiary care hospital. The future research should study allergic rhinitis management in community and in primary care unit.

3. The current research should study the management strategies of the allergic rhinitis patients with different clinical severity level; mild and moderate to severe level of symptoms to develop the program of health education and health promotion in allergic rhinitis patients for each severity level.

### **Limitation of the study**

1. The participants were collected by convenience sampling whilst attended the hospital. They needed both medications and self-management to treat allergic rhinitis symptoms. So the result of this study might not represent the general public as a whole.

2. The participants in this study had clinical diagnosis as allergic rhinitis but they were not supported by skin test or blood test. So, the result of this study might not represent the specific allergic rhinitis diagnosis patients

3. Most of the participants in this study took medication that was effective treatment for allergic rhinitis. In addition, the outcomes of symptom management strategies were individual assessments and individual perceptions of the participants. Thus, the outcomes of the self-management; for examples, health-risk management, exercise and nutrition management were not apparent. As a result, it was not strongly recommended as effective management for allergic rhinitis symptoms.

## REFERENCES

- Adkinson, F. N., Bochner, S. B., Yunginger, W. J., Holgate, T. Stephen., Buss, W. W., & Simons, R. F. E. (Eds.). (2003). ***Middleton's Allergy. Principles and practice.*** (6<sup>th</sup> Edition). Philadelphia: Mosby.
- Alper, C. M., Myers, E. N., & Eibling, D. E. (Eds.). (2001). ***Decision making in ear, nose, and throat disorders.*** Philadelphia: W.B. Saunders company.
- Arshad, H. S. (2002). ***An illustrated colour text. Allergy.*** China: Churchill Livingstone.
- Asmuni, S. (1996). ***Comparison of once daily dose of chlorpheniramine (8mg) and cetirizine (10mg) in the treatment of perennial allergic rhinitis patients.*** The degree of master of science (Health development program). Graduate school. Chulalongkorn University.
- Bachert, C., Virchow Jr, C. J., & Plenker, A. (2002). Desloratadine in the treatment of seasonal allergic rhinitis. ***Clin Drug Invest***, 22(Suppl. 2), 43-52.
- Ballenger, J. J., & Snow, J. B. (Eds.). (1996). ***Otorhinolaryngology: head and neck surgery*** (15<sup>th</sup> Edition). Baltimore: Williams & Wilkins.
- Baur, X. (2003). Are we closer to developing threshold limit values for allergens in the workplace?. ***Ann Allergy Asthma Immunol***, 90(Suppl), 11-18.
- Berger, W. E. (2003). Overview of allergic rhinitis. ***Ann Allergy Asthma Immunol***, 90(Suppl 3), 7-12.
- Bierman, C. W., Pearlman, D. S., Shapiro, G. G., & Busse, W. W. (Eds.). (1996). ***Allergy, asthma, and immunology from infancy to adulthood.*** (3<sup>rd</sup> Edition). Philadelphia: W. B. Saunders Company.
- Bielory, L. (2002). 'Complementary and alternative medicine' population based studies: a growing focus on allergy and asthma. ***Allergy***, 57, 655-658.
- Bielory, L. (2003). Complementary and alternative medicine cultures. ***Ann Allergy Asthma Immunol***, 90, 581-582.
- Bolin, K., & Lindgren, B. (2002). Asthma and allergy: the significance of chronic conditions for individual health behavior. ***Allergy***, 57, 115-122.

- Borish, L. (2003). Allergic rhinitis: systemic inflammation and implications for management. *J Allergy Clin Immunol*, **112**(6), 1021-1031.
- Bousquet, J. (Ed.). (2001). *Management of allergic rhinitis and its impact on asthma. Pocket guide. ARIA. Allergic rhinitis and its impact on asthma initiative. Members of the workshop expert panel*. Base on the allergic rhinitis and its impact on asthma workshop report in collaboration with the world health organization.
- Bousquet, J. (Ed.). (2002). Allergic rhinitis and its impact on asthma (ARIA) in collaboration with the world health organization. *Allergy*, **57**, 841-855.
- Bousquet, J., Van Cauwenberge, P., & Khaltaev, N. (2004). ARIA in the pharmacy: management of allergic rhinitis symptoms in the pharmacy. *Allergy*, **59**, 373-387.
- Braunstahl, G. -J., Fokkens, W. J., Overbeek, S. E., KleinJan, A., Hoogsteden, H. C., & Prins, J. -B. (2003). Mucosal and systemic inflammatory changes in allergic rhinitis and asthma: a comparison between upper and lower airways. *Clin Exp Allergy*, **33**, 579-587.
- Bunnag, C., & Muntarbhorn, K. (Eds.). (1997). *ASEAN Rhinological practice*. (1<sup>st</sup> Edition). Bangkok: Siriyod (Thailand) Co., Ltd.
- Busse, W. W., & Holgate, S. T. (Eds.). (1995). *Asthma and rhinitis*. Boston: Blackwell Scientific Publications.
- CAJ Prescott. (1998). *Handbook of ENT: diseases and disorders of the ear, nose, and throat*. Cape Town: Oxford University Press.
- Canela, A. P. R. F., Rosa, P. T. V., Marques, M. O. M. & Meireles, M. A. A. (2002). Supercritical fluid extraction of fatty acids and carotenoids from the microalgae *spirulina maxima*. *Ind. Eng. Chem. Res*, **41**, 3012-3018.
- Chatzi, L., et al. (2005). Allergic rhinitis, asthma, and atopy among grape farmers in a rural population in Crete, Greece. *CHEST*, **127**(1), 372-378.
- Chen, H., Katz, P. P., Eisner, M. D., Yelin, E. H., & Blanc, P. D. (2004). Health-related quality of life in adult rhinitis: the role of perceived control of disease. *J Allergy Clin Immunol*, **114**(4), 845-850.
- Cho, Y. S., Park, S. Y., Lee, C. -K., Lee, E. Y., Shin, J. -H., Yoo, B., & Moon, H. -B. (2003). Enhanced cough response to hyperpnea with cold air challenge

- in chronic cough patients showing increased cough sensitivity to inhaled capsaicin. *Allergy*, **58**, 486-491.
- Cooper, R. D. (2001). Sneezing. [online]. Available: <http://health.yahoo.com/ency/adam/003060> [2005, may 26].
- Craig, T. J., McCann, J. L., Gurevich, F., & Davies, M. J. (2004). The correlation between allergic rhinitis and sleep disturbance. *J Allergy Clin Immunol*, **114**(5), S139-145.
- Crespo, J. F., Rodríguez, J., James, J. M., Daroca, P., Reaño, M., & Vives, R. (2002). Reactivity to potential cross-reactive foods in fruit-allergic patients: implications for prescribing food avoidance. *Allergy*, **57**, 946-949.
- Crespo, J. F., & Rodriguez, J. (2003). Food allergy in adulthood. *Allergy*, **58**, 98-113.
- Crystal-Peters, J., Neslusan, C. A., Smith, M. W. & Togias, A. (2002). Health care cost of allergic rhinitis-associated conditions vary with allergy season. *Ann Allergy Asthma Immunol*, **89**, 457-462.
- Demoly, P., Allaert, F. -A., Lecasble, M., & PRAGM. (2002). ERASM, a pharmacoepidemiologic survey on management of intermittent allergic rhinitis in every day general medical practice in France. *Allergy*, **57**, 546-554.
- Demoly, P., Allaert, F. -A., Lecasble, M., Bousquet, J., & PRAGMA. (2003). Validation of the classification of ARIA (allergic rhinitis and its impact on asthma). *Allergy*, **58**, 672-675.
- Dhillon, R. S., & East, C. A. (1999). *An illustrated colour text. Ear, nose and throat and head and neck surgery*. (2<sup>nd</sup> Edition). China: Churchill Livingstone.
- Dodd, M., et al. (2001). Nursing theory and concept development or analysis. Advancing the science of symptom management. *Journal of Advanced Nursing*, **33**(5), 668-676.
- Donald, P. J., Gluckman, J. L., & Rice, D. H. (Eds.). (1995). *The sinuses*. New York: Raven Press.
- Ferguson, B. J. (2004). Influences of allergic rhinitis on sleep. *Otolaryngology-Head and Neck Surgery*, **130**(5), 617-629.

- Fokkens, W. J. (2002). Who should treat patients with seasonal allergic rhinitis?. *Allergy*, **57**, 469-471.
- Fokkens, W. J. (2003). Nasal corticosteroids, first choice in moderate to severe allergic rhinitis. What prevents general practitioners from using them?. *Allergy*, **58**, 724-726.
- Franklin, A. B. (Ed.). (2000). *ACSM's guidelines for exercise testing and prescription*. (6<sup>th</sup> Edition). Baltimore: Lippincott Williams & Wilkins.
- Gautrin, D., Ghezzi, H., & Malo, J. -L. (2003). Rhinoconjunctivitis, bronchial responsiveness, and atopy as determinants for incident-non-work-related asthma symptoms in apprentices exposed to high-molecular-weight allergens. *Allergy*, **58**, 608-615.
- George Wong, H. C. (2001). Chinese herbal medicine and allergy. *ACI International*, **13**(5), 192-196.
- Gerth van Wijk, R. (2002). Allergy: a global problem. Quality of life. *Allergy*, **57**, 1097-1110.
- Gerth van Wijk, R. (2005). Assessment of quality of life: advantages and pitfalls. *Clin Exp All Rev*, **5**, 32-35.
- Greene, A. (2001). Sore throat. [online]. Available: <http://health.yahoo.com/ency/adam/003053> [2005, may 26].
- Gross, G., Jacobs, R. L., Woodworth, T. H., Georges, G. C., & Lim, J. C. (2002). Comparative efficacy, safety, and effect on quality of life of triamcinolone acetonide and fluticasone propionate aqueous nasal sprays in patients with fall seasonal allergic rhinitis. *Ann Allergy Asthma Immunol*, **89**, 56-62.
- Hamburger, M., et al. (2002). Constituents in evening primrose oil with radical scavenging, cyclooxygenase, and neutrophil elastase inhibitory activities. *J. Agric. Food Chem*, **50**(20), 5533-5538.
- Hayden, M. L. (2004). Rhinitis. *The Nurse Practitioner*, **29**(12), 27-37.
- Heatley, D. G., McConnell, K. E., Kille, T. L., & Levenson, G. E. (2001). Nasal irrigation for the alleviation of sinonasal symptoms. *Otolaryngol Head and Neck Surgery*, **125**(1), 44-48.
- Horak, F., Stübner, P., Zieglmeyer, R., & Harris, A. G. (2003). Comparison of the effect of desloratadine 5-mg daily and placebo on nasal airflow and seasonal

- allergic rhinitis symptoms induced by grass pollen exposure. *Allergy*, **58**, 481-485.
- Høst, A., & Halken, S. (2002). Can we apply clinical studies to real life?. Evidence-based recommendations from studies on development of allergic diseases and allergy prevention. *Allergy*, **57**, 389-397.
- Howarth, P. H., Salagean, M., & Dokic, D. (2000). Allergic rhinitis: not purely a histamine-related disease. *Allergy*, **55**, 7-16.
- Howarth, P. H., Mygind, N., Silkoff, P. E., & Togias, A. (2005). Preface to outcome measures in allergic rhinitis. *J Allergy Clin Immunol*, **115**(3), S387-S389.
- Hopkinson, K. (2004). Management of allergic rhinitis. *Primary health care*, **14**(4), 43-49.
- Hu, G., et al. (2002). The Chinese herbal formulation biminne in management of perennial allergic rhinitis: a randomized, double-blind, placebo-controlled, 12-week clinical trial. *Ann-Allergy-Asthma-Immunol*, **88**(5), 478-487.
- Hughes, K., et al. (2003). Efficacy of the topical nasal steroid budesonide on improving sleep and daytime somnolence in patients with perennial allergic rhinitis. *Allergy*, **58**, 380-385.
- Israel, G. D. (No Date). Determining sample size [Online]. Available: [http://edis.ifas.ufl.edu/BODY\\_PD006](http://edis.ifas.ufl.edu/BODY_PD006) [2003, March 15].
- Jerrim, K. L., Whitmore, L. F., Hughes, J. F., & McKechnie, M. T. (2002). Airborne dust and allergen generation during dusting with and without spray polish. *J Allergy Clin Immunol*, **109**(1), 63-67.
- Kacker, A. (2002). Smell-impaired. [online]. Available: <http://health.yahoo.com/ency/adam/003052> [2005, May 26].
- Kemp, S. F., & Lockey, R. F. (2000). *Diagnostic testing of allergic disease*. NewYork: Marcel Dekker.
- Kotton, N. D. (2002). Cough. [online]. Available: <http://health.yahoo.com/ency/adam/003072> [2005, May 26].
- Krouse, J. H., & Krouse, H. J. (1999). Introduction to sinus disease part II: diagnosis and treatment. *ORL-Head and Neck Nursing*, **17**(3), 6-20.

- Krouse, H. J., Davis, J. E., & Krouse, J. H. (2002). Immune mediators in allergic rhinitis and sleep. *Otolaryngology Head Neck Surgery*, **126**(6), 607-613.
- Kupecz, D. (1999). Managing allergic rhinitis. *The Nurse Practitioner*, **24**(5), 107-120.
- Kuwahara, Y., Kondoh, J., Tatara, K., Azuma, E., Nakajima, T., Hashimoto, M., & Komachi, Y. (2001). Involvement of urban living environments in atopy and enhanced eosinophil activity: potential risk factors of airway allergic symptom. *Allergy*, **56**, 224-230.
- Lampasso, J. D., & Lampasso, J. G. (2004). Allergy, nasal obstruction, and occlusion. *Seminars in Orthodontics*, **10**(1), 39-44.
- Larson, P. J., et al. (1994). A model for symptom management. *IMAGE: Journal of Nursing Scholarship*, **26**(4), 272-276.
- Lazo-Sáenz, J. G. (2005). Eustachian tube dysfunction in allergic rhinitis. *Otolaryngol Head Neck Surg*, **132**(4), 626-631.
- Lee, Y. -L. & Guo, Y. L. (2004). Air pollution and asthma in Asia. *Allergy Clin Immunol Int - J World Allergy Org.*, **16**(4), 142-149.
- Leong, K. P., et al. (1999). Quality of life of patients with perennial allergic rhinitis: preliminary validation of the rhinoconjunctivitis quality of life questionnaire in Singapore. *Asia Pacific Journal of Allergy and Immunology*, **17**, 163-167.
- Lieberman, P., & Anderson, J. A. (2000). *Allergic Diseases. Diagnosis and treatment* (2<sup>nd</sup> Edition). TOTOWA, New Jersey: HUMANA Press.
- Little, F. F. (2003). Allergy to mold-dander-dust. [online]. Available: <http://health.yahoo.com/ency/adam/000814> [2005, May 26].
- Levi, J. R. (2005). Royal jelly. What all the buzz is about. [online]. Available: [http://www.looksmarthair.com/p/articles/mi\\_m0FKA/is\\_5\\_67/ai\\_n13665614#continue](http://www.looksmarthair.com/p/articles/mi_m0FKA/is_5_67/ai_n13665614#continue). [2006, Jan 13].
- Lloyd, K. B., & Berger, B. A. (2002). Communicating with the Allergic Rhinitis Patients. Part 3: Patient Education. *U.S. Pharmacist*, **27**(10) Posted 10/15/02. [online]. Available: [http://www.uspharmacist.com/index.asp?show=articals&page=8\\_962.htm](http://www.uspharmacist.com/index.asp?show=articals&page=8_962.htm) [2002, Dec 4].

- Loh, C. Y., Chao, S. S., Chan, Y. H., & Wang, Y. D. (2004). A clinical survey on compliance in the treatment of rhinitis using nasal steroids. *Allergy*, **59**, 1168-1172.
- Mackinnon, L. T. (2000). Chronic exercise training effects on immune function. *Med. Sci. Sports Exerc*, **32**(7 Suppl.), S369-S376.
- Mahakittikun, V., Komoltri, C., Nochot, H., Angus, A. C., & Chew, F. T. (2003). Laboratory assessment of the efficiency of encasing materials against house dust mites and their allergens. *Allergy*, **58**, 981-985.
- Mattila, L., Kilpeläinen, M., Terho, E. O., Koskenvuo, M., Helenius, H. & Kalimo, K. (2003). Food hypersensitivity among Finnish university students: association with atopic disease. *Clin Exp Allergy*, **33**, 600-606.
- Middleton, E., Reed, C. E., Ellis, E. F., Adkinson, N. F., Yunginger, J. W., & Busse, W. W. (Eds.). (1998). *Allergy. Principles and practice*. (5<sup>th</sup> Edition). Missouri: Mosby-Year Book, Inc.
- More, D. R., Napoli, D. C., & Hagan, L. L. (2003). Herbal supplements and skin testing: the lack of effect of commonly used herbal supplements on histamine skin prick testing. *Allergy*, **58**, 492-494.
- Muangchang, Y. (2000). *Care Behavior of school-age children's mothers regarding prevention of symptoms of allergic rhinitis*. The degree of master of nursing science (Maternal and Child nursing). Faculty of graduated studies. Mahidol University.
- Nadee, K. (1996). *Health-seeking behavior of the elderly receiving first service at King Mongkut Prachomklas Hospital, Petchaburi province*. The degree of master of nursing science (Adult nursing). Faculty of graduate studies. Mahidol University.
- Nihlen, U., Greiff, L. J., Nyberg, P., Persson, C. G. A., & Andersson, M. (2005). Alcohol-induced upper airway symptoms: prevalence and co-morbidity. *Respiratory Medicine*, **99**, 762-769.
- Nguyen, Q. A. (2004). Allergic rhinitis. [online]. Available: <http://www.emedicine.com/ent/topic194.htm> [2005, May 20].

- Niggemann, B., & Grüber, C. (2003). Side-effects of complementary and alternative medicine. *Allergy*, **58**, 707-716.
- Noonan, M. J., et al. (2003). The health-related quality of life effects of once-daily cetirizine HCL in patients with seasonal allergic rhinitis: a randomized double-blind, placebo-control trial. *Clinical Exp Allergy*, **33**, 351-358.
- Nunes, C. & Ladeira, S. (2000). Double-blind study of cetirizine and loratadine versus placebo in patients with allergic rhinitis. *Invest Allergol Clin Immunol*, **10**(1), 20-30.
- Olivieri, M., et. al. (2002). Prevalence and features of allergic rhinitis in Italy. *Allergy*, **57**, 600-606.
- Patterson, R., Grammer, L. C., & Greenberger, P. A., (Eds.). (1997). *Allergic diseases. Diagnosis and management*. (4<sup>th</sup> Edition). Philadelphia: Lippincott-Raven.
- Pender, N. J., Murdaugh, C. L., & Parsons, M. A. (2001). *Health promotion in nursing practice*. (5<sup>th</sup> Edition). New Jersey: Prentice Hall.
- Rattanamongkolkul, J. (2003). *Symptom experiences and management strategies in older adults with common cold or influenza*. The degree of master of nursing science (Adult nursing). Faculty of graduate studies. Mahidol University.
- Raukas-Kivioja, A., Raukas, E., Loit, H. –M., Kiviloog, J., Rönmark, E., Larsson, K., & Lundbäck, B. (2003). Allergic sensitization among adults in Tallinn, Estonia. *Clin Exp Allergy*, **33**, 1342-1348.
- Rippe, M. J. (Ed.). (1999). *Lifestyle medicine*. Massachusetts: Blackwell Science, Inc.
- Roland, N. J., McRae, R. D. R., & McCombe, A. W. (1995). *Key topic in otolaryngology*. Oxford: BIOS Scientific Publisher.
- Ryan, D., Grant-Casey, J., Scadding, G., Pereira, S., Pinnock, H., & Sheikh, A. (2005). Management of allergic rhinitis in UK primary care: baseline audit. *Primary Care Respiratory Journal*, **14**, 204-209.
- Salib R. J., Drake-Lee, A., & Howarth, P. H. (2003). Allergic rhinitis: past, present and the future. *Clin. Otolaryngol*, **28**, 291-303.

- Scadding, G. K., Richards, D. H., & Price, M. J. (2000). Patient and physician perspectives on the impact and management of perennial and seasonal allergic rhinitis. *Clin. Otolaryngol*, **25**, 551-557.
- Schäfer, T., et al. (2001). School education and allergic sensitization in adults. *Allergy*, **56**, 1206-1210.
- Schäfer, T., Riehle, A., Wichmann, H. -E., & Ring, J. (2002). Alternative medicine in allergies-prevalence, patterns of use, and cost. *Allergy*, **57**, 694-700.
- Serra-Batlles, J., Montserrat, J. M., Mullol, J., Ballester, E., Xaubet, A., & Picado C. (1994). Response of the nose to exercise in healthy subjects and in patients with rhinitis and asthma. *Thorax*, **49**, 128-132.
- Sidenius, K. E., Hallas, T. E., Stenderup, J., Poulsen, L. K., & Mosbech, H. (2002). Decay of house-dust mite allergen Der f 1 at indoor climatic conditions. *Ann Allergy Asthma Immunol*, **89**, 34-37.
- Smith-Sivertsen, T., Tchachtchine, V. & Lund, E. (2003). Atopic in Norwegian and Russian adults: a population-based study from the common border area. *Allergy*, **58**, 357-362.
- Smolensky, M. H., Reinberg, A., & Labrecque, G. (1995). Twenty-four hour pattern in symptom intensity of viral and allergic rhinitis: treatment implications. *J Allergy Clin Immunol*, **95**(5), part 2, 1084-1096.
- Stearn, R. (2005). Respiratory care. One airway, one disease. *Primary health care*, **15**(2), 31-34.
- Stroms, W. W. (2004). Pharmacologic approaches to daytime and nighttime symptoms of allergic rhinitis. *J Allergy Clin Immunol*, **114**(5), S146-S153.
- Terreehorst, I., et al. (2005). The effect of encasings on quality of life in adult house dust mite allergic patients with rhinitis, asthma and/or atopic dermatitis. *Allergy*, **60**, 888-893.
- Thomas, W. R., Chapman, M. D., Tovey, E. R., & Platts-Mills, T. A. E. (2003). World allergy organization-ICACI indoor allergen survey and monitoring working group. *ACI International*, **15**(2), 88-92.
- Topuz, B., & Ögmen, G. G. (2003). Montelukast as an adjuvant to mainstay therapies in patient with seasonal allergic rhinitis. *Clin Exp Allergy*, **33**, 823-826.

- Van Adelsberg, J., et al. (2003). Randomized controlled trial evaluating the clinical benefit of montelukast for treating spring seasonal allergic rhinitis. *Ann Allergy Asthma Immunol*, **90**, 214-222.
- Vichyanond, P., Sunthornchart, S., Singhirannusorn, V., Ruangrat, S., Kaewsomboon, S., & Visitsunthorn, N. (2002). Prevalence of asthma, allergic rhinitis and eczema among university students in Bangkok. *Respiratory Medicine*, **96**, 34-38.
- Wang, D. -Y., Chan, A., & Smith, J. D. (2004). Management of allergic rhinitis: a common part of practice in primary care clinics. *Allergy*, **59**, 315-319.
- Wilde, A. D., Cook, J. A., & Jones, A. S. (1995). The nasal response to isometric exercise. *Clin Otolaryngol*, **20**, 345-347.
- Wilde, A. D. (1999). The effect of cold water immersion on the nasal mucosa. *Clin Otolaryngol*, **24**, 411-413.
- Yi, F. C., Shek, L. P. C., Cheong, N., Chua, K. Y., & Lee, B. W. (2004). Dust mite allergy in East Asia. *Allergy Clin Immunol Int-J World Allergy Org*, **16**(4), 150-154.
- Boonchu Kulapaditharom & Yupa Sumitsawan. (Eds.). (B.E. 2544). บุญชู คุลประดิษฐารมณ และ ยูพา สุमितสุวรรณ. (บรรณาธิการ). แนวทางการตรวจรักษาโรคจมูกอักเสบจากภูมิแพ้ในผู้ใหญ่สำหรับประเทศไทย. *หู คอ จมูก และใบหน้าที่*, **2**(2), 1-29.
- Chaweewan Bunnag., et al. (B.E. 2538). จวีวรรณ บุนนาค พีรพันธ์ เจริญชาติ ศรีพร วรประยูร และ สุจิตรา ประสารสุข. การสำรวจอุบัติการณ์ของโรคจมูกอักเสบจากภูมิแพ้ในประชากรไทย. *สารศิริราช*, **47**(11), 1027-1031.
- Duangchan Hengsawadi., et. al. (B.E. 2539). ดวงจันทร์ เสงส์สวัสดิ์ ผ่องศรี จิตตบุญท์ เขาวดี คุปตะพันธ์ เจียมจิตต์ บุญสม และ สุชาติ อิงธรรมจิตร. (2539). การประเมินคุณค่าทางโภชนาการของผลิตภัณฑ์สำหรับเลี้ยงสัตว์น้ำเงินพันธุ์ไทยที่ผลิตโดยวิธีพ่นแห้ง. *อาหาร*, **26**(3), 173-181.
- Malee Bunchub, et. al. (B.E. 2543). มาลี บรรจบ, ดร. เพ็ชรลา, สุธิดา ไชยราช และ ชลธิชา สว่างวงศ์. (2543). *สมุนไพรพื้นบ้านภาคอีสาน เล่ม 2*. สถาบันวิจัยสมุนไพร กรมวิทยาศาสตร์การแพทย์. ธนาสินเจริญการพิมพ์.

- Nutsara Nimnoy. (B.E. 2542). นุสรณ์ นิ่มน้อย. (2542). **พฤติกรรมและการแสวงหาการดูแลสุขภาพของผู้ป่วยเบาหวานชนิดไม่พึ่งอินซูลิน**. วิทยานิพนธ์ปริญญาพยาบาลศาสตรมหาบัณฑิต. บัณฑิตวิทยาลัย. มหาวิทยาลัยมหิดล.
- Orasa Panpakdee. (B.E. 2542). อรสา พันธุ์ศักดิ์. (2542). **กระบวนการการดูแลตนเองของผู้ป่วยความดันโลหิตสูงชนิดไม่ทราบสาเหตุ**. วิทยานิพนธ์ปริญญาพยาบาลศาสตรดุษฎีบัณฑิต. บัณฑิตวิทยาลัย. มหาวิทยาลัยมหิดล.
- Ramathibodi Hospital. (B.E. 2544, 2545). โรงพยาบาลรามาธิบดี. (2544, 2545). **สถิติผู้ป่วยโรคภูมิแพ้จากภูมิแพ้**. กรุงเทพฯ: งานเวชสถิติ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล.
- Ramathibodi Hospital. (B.E. 2546). โรงพยาบาลรามาธิบดี. (2546). **บัญชียา โรงพยาบาลรามาธิบดี**. กรุงเทพฯ: ฝ่ายเภสัชกรรม โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล.
- Rungnapa praditpong. (B.E. 2536). รุ่งนภา ประดิษฐ์พงษ์. (2536). โปรดิน: จากสายห้อย. **อุตสาหกรรมเกษตร**, 4(1), 48-49.
- Supawadee Prakunhungsit & Somyos Kunchak. (Eds.). (B.E. 2544). สุภาวดี ประคุณหังสิต และ สมยศ คุณจักร. (บรรณาธิการ). (2544). **ตำราโสต ศอ นาสิกวิทยา**. กทม: Holistic Publishing.
- Suwat Benjapolpituk., et al. (Eds.). (B.E. 2544). สุวัฒน์ เบจพลพิทักษ์ สุรางค์ เจริญจรรยา สุวรรณ เรืองกาญจนเศรษฐ์ และ อัฐชลี เชื้อองศรีกุล. (บรรณาธิการ). (2544). **โรคภูมิแพ้และภูมิแพ้ในวิทยาคลินิก**. กรุงเทพฯ: ชัยเจริญ.
- Veerasingh Mungmun. (B.E. 2543). วีระสิงห์ เมืองม่น. (2543). **การใช้สมุนไพร รักษาโรคของผู้ใหญ่**. กทม: ธรรมกมลการพิมพ์.
- Vondee Kidsapun. (B.E. 2538). วันดี กฤษดาพันธ์. (2538). **สมุนไพรสารพัดประโยชน์**. กรุงเทพฯ: ภาควิชาเภสัชวินิจัย คณะเภสัชศาสตร์ มหาวิทยาลัยมหิดล.



## APPENDIX A

### THE INTERVIEW FORM OF DEMOGRAPHIC DATA

วันที่เก็บข้อมูล.....

ชุดข้อมูล.....

#### แบบสัมภาษณ์ส่วนที่ 1 : ข้อมูลส่วนบุคคล

ทำเครื่องหมาย ✓ ในวงเล็บ ( ) หรือ เติมคำในช่องว่าง ให้ตรงกับคำตอบของผู้ป่วย

1. เพศ (สำหรับผู้วิจัย) ( ) เพศชาย ( ) เพศหญิง
2. อายุ ..... ปี
3. ที่อยู่ปัจจุบัน จังหวัด .....
4. จำนวนปีที่ศึกษารวมทั้งหมด ..... ปี (การศึกษาสูงสุด .....)
5. อาชีพ ..... ประเภทของงาน ..... ระยะเวลา.....
6. สถานภาพสมรส ( ) โสด ( ) คู่ ( ) แยก ( ) หย่า/หม้าย
- .
- .
- .
- .
- .
- .
- .
- .
13. ปัจจุบันท่านสูบบุหรี่หรือไม่  
( ) สูบบุหรี่ วันละ ..... มวน/ซอง ( ) ไม่สูบบุหรี่ ( ) หยุดสูบบุหรี่มา ..... ปี
14. ปัจจุบันท่านดื่มสุราหรือไม่  
( ) ดื่มสุรา วันละ ..... เป๊ก/แบน/กลม ( ) ไม่ดื่มสุรา ( ) หยุดดื่มสุรา ..... ปี

## APPENDIX B

### THE INTERVIEW FORM OF SYMPTOM EXPERIENCE

วันที่เก็บข้อมูล.....

ชุดข้อมูล.....

แบบสัมภาษณ์ส่วนที่ 2 : ประสพการณ์การเกิดอาการของผู้ป่วยโรคจมูกอักเสบจากภูมิแพ้

ทำเครื่องหมายถูก ✓ ในเครื่องหมายวงเล็บ ( ) หรือ เติมคำในช่องว่าง ให้ตรงกับข้อมูลที่ต้องการ

1. ท่านทราบว่าท่านมีอาการของโรคหวัดจากภูมิแพ้มานานประมาณกี่ปี ..... ปี ..... เดือน

2. ท่านมักมีอาการเกิดขึ้นในช่วงใดของวัน

( ) เช้า ( ) กลางวัน ( ) เย็น ( ) ก่อนนอน ( ) ระหว่างนอนหลับ

( ) ตลอดทั้งวัน ( ) อื่นๆ ได้แก่ .....

.....  
.....  
.....  
.....  
.....

11. อาการของโรคหวัดจากภูมิแพ้ที่เกิดขึ้นมีอาการอะไรบ้าง? ทำเครื่องหมาย ✓ ภายในเครื่องหมายวงเล็บ ( ) หน้าข้อที่มีอาการเกิดขึ้น

| อาการเมื่อเกิด<br>โรคจมูกอักเสบจากภูมิแพ้ | ความถี่<br>(วัน/สัปดาห์) | ระดับความรุนแรง |   |   |   | การรบกวนการทำงานประจำวัน |          |
|-------------------------------------------|--------------------------|-----------------|---|---|---|--------------------------|----------|
|                                           |                          | 0               | 1 | 2 | 3 | รบกวน                    | ไม่รบกวน |
| ( )                                       | .....                    |                 |   |   |   |                          |          |
| ( )                                       | .....                    |                 |   |   |   |                          |          |
| ( )                                       | .....                    |                 |   |   |   |                          |          |
| ( )                                       | .....                    |                 |   |   |   |                          |          |
| ( )                                       | .....                    |                 |   |   |   |                          |          |

## APPENDIX C

### THE INTERVIEW FORM OF SYMPTOM EXPERIENCE

วันที่เก็บข้อมูล.....

ชุดข้อมูล.....

#### แบบสัมภาษณ์ส่วนที่ 3 : วิธีการจัดการกับอาการ ของผู้ป่วยโรคภูมิแพ้ และผลจากการจัดการกับอาการ

1. เต็มคำลงในช่องว่าง และ ทำเครื่องหมาย ✓ ภายในเครื่องหมาย ( ) หน้าข้อที่ผู้ป่วยเกิดอาการ และสอบถามวิธีการจัดการอาการในแต่ละข้อ ดังนี้ “ท่านมีวิธีลดอาการ...อย่างไรบ้าง? ใช้แล้วอาการดีขึ้นไหม? ตอนนี้ยังทำอยู่ไหม?” เต็มคำในช่องว่างหรือทำเครื่องหมาย ✓ ภายในเครื่องหมายวงเล็บ ( ) ให้ตรงกับข้อมูลที่ถูกต้อง

วิธีการปฏิบัติตน และการรักษาเพื่อลดอาการของโรคภูมิแพ้ และผลจากการจัดการกับอาการที่ผู้ป่วยรับรู้

| อาการ / วิธีการปฏิบัติ | ผลของการจัดการอาการ<br>ในการเจ็บป่วยครั้งนี้ |                |       | การปฏิบัติตามวิธี<br>ดังกล่าวในปัจจุบัน |            | สาเหตุที่ไม่ปฏิบัติ<br>วิธีดังกล่าวใน<br>ปัจจุบัน |
|------------------------|----------------------------------------------|----------------|-------|-----------------------------------------|------------|---------------------------------------------------|
|                        | ดีขึ้น                                       | ไม่เปลี่ยนแปลง | เลวลง | ปฏิบัติอยู่                             | ไม่ปฏิบัติ |                                                   |
| อาการ .....            |                                              |                |       |                                         |            |                                                   |
| วิธีการจัดการกับอาการ  |                                              |                |       |                                         |            |                                                   |
| ( ) .....              |                                              |                |       |                                         |            |                                                   |
| ( ) .....              |                                              |                |       |                                         |            |                                                   |
|                        |                                              |                |       |                                         |            |                                                   |

8. ยาที่ได้รับจากการรักษาโรคภูมิแพ้ในการมารับการรักษาในครั้งนี้ และ  
วิธีการใช้(สำหรับผู้วิจัย)ได้แก่ .....

## APPENDIX D

### HUMAN RIGHTS FOR RESEARCH POPULATION

#### คำอธิบายโครงการวิจัย

**หัวข้อเรื่อง** ประสบการณ์การมีอาการ วิธีการจัดการกับอาการ และผลจากการจัดการกับอาการของผู้ป่วยโรคภูมิแพ้จากภูมิแพ้

#### วัตถุประสงค์และวิธีการวิจัย

การวิจัยครั้งนี้ต้องการทราบประสบการณ์ความเจ็บป่วยของผู้ป่วยโรคภูมิแพ้จากภูมิแพ้ ในเรื่องอาการ และระดับความรุนแรงของอาการโรค รวมถึงผลของการลดอาการโรคภูมิแพ้จากภูมิแพ้ ในเรื่อง การรับรู้ภาวะสุขภาพ ภาวะอารมณ์ ค่าใช้จ่ายในการป้องกันรักษาจากภูมิแพ้ และการสูญเสียรายได้ โดยผู้วิจัยจะสัมภาษณ์ท่านเกี่ยวกับประสบการณ์อาการเจ็บป่วย วิธีการจัดการกับอาการและผลลัพธ์ ซึ่งผู้วิจัยจะใช้เวลาสัมภาษณ์ประมาณ 30 นาที

#### เหตุผลที่เชิญชวนให้ท่านเข้าร่วมโครงการวิจัย

โรคภูมิแพ้จากภูมิแพ้ เป็นโรคที่พบได้บ่อยในประเทศไทย มีประชากรวัยผู้ใหญ่เป็นโรคภูมิแพ้จากภูมิแพ้ประมาณร้อยละ 20 และมีผู้ป่วยโรคภูมิแพ้จากภูมิแพ้ที่ได้รับการตรวจรักษาในหน่วยตรวจผู้ป่วยนอกโรงพยาบาลรามธิบดีร้อยละ 36-37 ของผู้ป่วยที่ได้รับการตรวจทั้งหมด โดยผู้ป่วยต้องมารับการรักษาอย่างต่อเนื่องประมาณ 2-3 ครั้งทำให้ผู้ป่วยต้องเสียเวลาและค่าใช้จ่ายในการรักษาจำนวนมาก นอกจากการมารับการรักษาโดยแพทย์ในโรงพยาบาลแล้วผู้ป่วยยังสามารถหาความรู้ในเรื่องการปฏิบัติตนและการรักษาจากแหล่งความรู้อื่นด้วยตนเองมากขึ้น เช่น หนังสือ วารสาร อินเทอร์เน็ต รวมทั้งวิธีการรักษาในปัจจุบันมีความหลากหลายมากขึ้น มีทั้งการรักษาแบบชีวจิต การแพทย์ทางเลือกแขนงต่างๆ ทำให้วิธีการปฏิบัติตนของผู้ป่วยมีความหลากหลายมากขึ้น วิธีการเหล่านี้บางชนิดเกิดผลเสียต่อสุขภาพของผู้ป่วย ผู้วิจัยจึงมีความสนใจศึกษาวิธีการปฏิบัติตนของผู้ป่วยโรคภูมิแพ้จากภูมิแพ้ในการป้องกันและการดูแลตนเองเมื่อมีอาการของโรคภูมิแพ้จากภูมิแพ้ โดยให้ผู้ป่วยประเมินวิธีการปฏิบัติตนที่ผ่านมาว่าเกิดผลดีหรือผลเสียต่อสุขภาพและโรคของผู้ป่วย เพื่อเป็นประโยชน์ในการพัฒนาคุณภาพการพยาบาลผู้ป่วยโรคภูมิแพ้จากภูมิแพ้และการให้คำแนะนำผู้ป่วยต่อไป

### **ระยะเวลาที่เข้าร่วมการวิจัย**

ผู้วิจัยจะใช้เวลาในการสัมภาษณ์เป็นเวลาประมาณ 30 นาที

### **ประโยชน์ที่คาดว่าจะเกิดขึ้น**

ในการสัมภาษณ์หากพบปัญหาสุขภาพที่ควรแก้ไข ผู้วิจัยจะแจ้งให้ท่านทราบพร้อมทั้งให้การช่วยเหลือขั้นต้น หรือแนะนำให้ได้รับการดูแลรักษาตามขั้นตอนที่ถูกต้อง

ข้อมูลที่ได้รับจะใช้เป็นแนวทางในการช่วยเหลือท่านและผู้ป่วยรายอื่นๆ ให้ได้รับการดูแลที่เหมาะสมและมีประสิทธิภาพยิ่งขึ้น ป้องกันผลเสียทางสุขภาพที่อาจเกิดขึ้น

### **ความเสี่ยงหรือความไม่สบายใจที่อาจเกิดขึ้นกับผู้เข้าร่วมในการวิจัย**

ไม่มีความเสี่ยงหรืออันตรายในการเข้าร่วมวิจัย เนื่องจากการวิจัยครั้งนี้ไม่ได้กระทำการทดลองหรือปฏิบัติหัตถการใดๆ ที่มีการรุกรานร่างกาย แต่ในการสัมภาษณ์อาจทำให้สูญเสียความเป็นส่วนตัวรวมทั้งต้องใช้เวลาในการสนทนาและตอบคำถาม

### **ขอบเขตการดูแลรักษาความลับของข้อมูลต่างๆ**

ผู้วิจัยจะเก็บข้อมูลไว้เป็นความลับและข้อมูลที่เก็บรวบรวมมาได้ทั้งหมดจะเปิดเผยเฉพาะในภาพรวม สรุปผลการวิจัยด้วยเหตุผลทางวิชาการเท่านั้น ผู้ที่จะสามารถรับรู้ข้อมูลเหล่านี้ นอกจากผู้วิจัยและอาจารย์ที่ปรึกษาแล้วต้องได้รับความยินยอมจากผู้เข้าร่วมการวิจัยก่อน

### **สิทธิในการถอนตัวออกจากโครงการวิจัย**

ในการเข้าร่วมงานวิจัยนี้เป็นไปตามความสมัครใจของท่าน โดยท่านสามารถยกเลิกการเข้าร่วมโครงการวิจัยนี้ได้ตลอดเวลา โดยจะไม่มีผลต่อการรักษาพยาบาลที่ท่านสมควรได้รับแต่อย่างใด

### **กรณีมีเหตุจำเป็นหรือมีปัญหาข้อสงสัยกรุณาติดต่อผู้วิจัย**

นางสาวสุทธีณี สุดใจ

หอผู้ป่วยจักษุ โสตฯ สามัญชาย

โรงพยาบาลรามารบิดี

ถนนพระราม 6 แขวงทุ่งพญาไท

เขตราชเทวี กรุงเทพฯ 10400

โทรศัพท์ 0-2201-1613, 0-2201-1623

E-mail address: sut\_sudchai@yahoo.com.

เลขที่ .....

## หนังสือยินยอมโดยได้รับการบอกกล่าวและเต็มใจ

## (Informed Consistent Form)

ชื่อโครงการ ประสบการณ์การมีอาหาร วิธีการจัดการกับอาหาร และผลจากการจัดการกับอาหาร  
ของผู้ป่วยโรคภูมิแพ้จากภูมิแพ้

ชื่อผู้วิจัย นางสาวสุทธินิ สุดใจ

\* ชื่อผู้เข้าร่วมการวิจัย .....

อายุ ..... เลขที่เวชระเบียน .....

## คำยินยอมของผู้เข้าร่วมการวิจัย

ข้าพเจ้า นาย/นาง/นางสาว ..... ได้ทราบ  
รายละเอียดของโครงการวิจัย ตลอดจนประโยชน์ และข้อเสียที่จะเกิดขึ้นต่อข้าพเจ้าจากผู้วิจัยแล้ว  
อย่างชัดเจน ไม่มีสิ่งใดปิดบังซ่อนเร้น และยินยอมให้ทำการวิจัยในโครงการที่มีชื่อข้างต้น ข้าพเจ้า  
รู้ว่าถ้ามีปัญหาหรือข้อสงสัยเกิดขึ้นข้าพเจ้าสามารถสอบถามผู้วิจัยได้ ข้าพเจ้าสามารถไม่เข้าร่วม  
โครงการวิจัยนี้เมื่อใดก็ได้ โดยไม่มีผลกระทบต่อการรักษาที่ข้าพเจ้าพึงได้รับ นอกจากนี้ผู้วิจัยจะ  
เก็บข้อมูลเฉพาะเกี่ยวกับตัวข้าพเจ้าเป็นความลับ จะเปิดเผยได้เฉพาะในรูปที่เป็นสรุปผลการวิจัย  
การเปิดเผยข้อมูลเกี่ยวกับตัวข้าพเจ้าต่อหน่วยงานต่างๆที่เกี่ยวข้อง กระทำได้เฉพาะกรณีจำเป็น  
ด้วยเหตุผลทางวิชาการเท่านั้น

ลงชื่อ.....(ผู้เข้าร่วมการวิจัย)

.....(พยาน)

.....(พยาน)

วันที่ .....

## คำอธิบายของผู้วิจัย

ข้าพเจ้าได้อธิบายรายละเอียดของโครงการ ตลอดจนประโยชน์ของการวิจัย รวมทั้งข้อเสีย  
ที่อาจจะเกิดขึ้นแก่ผู้เข้าร่วมการวิจัยทราบแล้วอย่างชัดเจนโดยไม่มีสิ่งใดปิดบังซ่อนเร้น

ลงชื่อ.....(ผู้วิจัย)

วันที่ .....

หมายเหตุ : กรณีผู้เข้าร่วมการวิจัยไม่สามารถอ่านหนังสือได้ ให้ผู้วิจัยอ่านข้อความในใบยินยอมฯนี้ให้แก่ผู้เข้าร่วมการวิจัยฟัง  
จนเข้าใจแล้ว และให้ผู้เข้าร่วมการวิจัยลงนามหรือพิมพ์ลายนิ้วหัวแม่มือรับทราบในการให้ความยินยอมดังกล่าวข้างต้นไว้ด้วย

\*ผู้เข้าร่วมการวิจัย หมายถึง ผู้ยินยอมตนให้ทำวิจัย



คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

ถนนพระราม 6 กทม. 10400

โทร. (662) 245-5704, 201-1296 โทรสาร (662) 246-2123

Faculty of Medicine, Ramathibodi Hospital, Mahidol University

Rama VI Road, Bangkok 10400, Thailand

Tel. (662) 245-5704, 201-1296 Fax (662) 246-2123

**Documentary Proof of Ethical Clearance Committee on Human Rights  
Related to Researches Involving Human Subjects  
Faculty of Medicine, Ramathibodi Hospital, Mahidol University**

0152/2003 (I)

|                               |                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Title of Project</b>       | Symptom Experience, Symptom Management Strategies and Outcomes of the Patient with Allergic Rhinitis |
| <b>Protocol Number</b>        | ID 04-46-03                                                                                          |
| <b>Principal Investigator</b> | Miss.Sutthinee Sudchai                                                                               |
| <b>Official Address</b>       | Department of Nursing<br>Faculty of Medicine, Ramathibodi Hospital<br>Mahidol University             |

The aforementioned project has been reviewed and approved by Committee on Human Rights Related to Researches Involving Human Subjects, based on the Declaration of Helsinki.

Signature of Chairman

Committee on Human Rights Related to  
Researches Involving Human Subjects

Prof. Krisada Ratana-olarn, M.D., FRCST, FICS.

Signature of Dean

Prof. Prakrit Vathesatogkit, M.D., ABIM.,FRCP.

Date of Approval

April 9, 2003

## APPENDIX E

### LIST OF EXPERTS

1. Associate Professor Supawadee Prakunhungsit, MD.  
Department of Otolaryngology, Faculty of Medicine, Ramathibodi Hospital,  
Mahidol University.
2. Assistant Professor Chai Euswas, MD.  
Department of Otolaryngology, Faculty of Medicine, Ramathibodi Hospital,  
Mahidol University.
3. Assistant Professor Sujinda Rimsritong, MS (Nursing)  
Department of nursing, Faculty of Medicine, Ramathibodi Hospital,  
Mahidol University.
4. Lecturer. Pornthip Malathum, Dr., Ph.D. (Nursing)  
Department of nursing, Faculty of Medicine, Ramathibodi Hospital,  
Mahidol University.
5. Ms. Suvimon Suntisuktana, MS (Health Educator)  
Eye ear nose and throat nursing division,  
Department of Nursing,  
Faculty of Medicine, Ramathibodi Hospital,  
Mahidol University.

## BIOGRAPHY

|                              |                                                                                                                                                                                                                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NAME</b>                  | Sutthinee Sudchai                                                                                                                                                                                                                                                                                          |
| <b>DATE OF BIRTH</b>         | March 4, 1974                                                                                                                                                                                                                                                                                              |
| <b>PLACE OF BIRTH</b>        | Bangkok, Thailand                                                                                                                                                                                                                                                                                          |
| <b>INSTITUTIONS ATTEND</b>   | Ramathibodi School of Nursing,<br>Faculty of Medicine,<br>Ramathibodi Hospital,<br>Mahidol University, 1996:<br>Bachelor of Nursing Science<br>Mahidol University, 2005:<br>Master of Nursing Science (Adult Nursing)                                                                                      |
| <b>POSITION &amp; OFFICE</b> | Eye ear nose and throat Nurse,<br>Department of nursing,<br>Faculty of Medicine,<br>Ramathibodi Hospital, Mahidol University<br>270 Rama 6 Rd. Thung-phayathai,<br>Ratchathevee, Bangkok,<br>Thailand 10400<br>Tel. (66)2-2011613, (66)2-2011623<br>E-mail: rasuj@mahidol.ac.th.<br>sut_sudchai@yahoo.com. |
| <b>HOME ADDRESS</b>          | 127/1 Moo3, Srikun, Donmuang,<br>Bangkok, Thailand 10210                                                                                                                                                                                                                                                   |