



**THE EFFECT OF SELF-CARE AGENCY DEVELOPING PROGRAM
ON SELF-CARE BEHAVIORS AND HEALTH STATUS
OF SCHOOL-AGE CHILDREN WITH SINUSITIS**

THANIMPORN PETCHARATNA

With compliments
of
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This quasi-experimental study was aimed to determine the effect of self-care agency developing program on self-care behaviors and health status of school-age children with sinusitis. The self-care theory by Orem (1995) was the conceptual framework for this study. Forty children who attended the Out-Patient Pediatric Department, Ramathibodi Hospital, between August and November, 2001, were recruited for study by purposive sampling. The samples were randomized into the experimental group and control group, with 20 subjects in each group. The experimental group received self-care agency developing program plus usual care, whereas the control group received only usual care. The questionnaires were used to collect data including background characteristics, self-care behaviors, and health status. The first and second measurements were taken on the first day and the fourth week of hospital visit, respectively. Data were analyzed using descriptive statistics, grouped t-test and analysis of covariate (ANCOVA)

The result revealed that the mean score of self-care behaviors in the experimental group was statistically significantly higher than the control group ($p < .001$). The mean scores of facial or sinus pain and perception of overall health in the experimental group were statistically significantly lower than the control group ($p < .05$). The remaining symptoms, including purulent rhinorrhea, cough, nasal congestion, headache and sputum, were not statistically different. These findings suggest that self-care agency developing program is useful in nursing care for pediatric patients with acute sinusitis.

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ถนิมพร เพ็ชรรัตน์: ผลของโปรแกรมพัฒนาศักยภาพการดูแลตนเองต่อพฤติกรรมการดูแลตนเองและภาวะสุขภาพของเด็กวัยเรียนโรคไซนัสอักเสบ (THE EFFECT OF SELF-CARE AGENCY DEVELOPING PROGRAM ON SELF - CARE BEHAVIORS AND HEALTH STATUS OF SCHOOL - AGE CHILDREN WITH SINUSITIS)
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การวิจัยที่ทดลองครั้งนี้มีวัตถุประสงค์ เพื่อศึกษาผลของโปรแกรมพัฒนาศักยภาพการดูแลตนเองต่อพฤติกรรมการดูแลตนเองและภาวะสุขภาพของเด็กวัยเรียนโรคไซนัสอักเสบ โดยกรอบแนวคิดของการวิจัยใช้ทฤษฎีการดูแลตนเองของโอเร็มและทฤษฎีโรคไซนัสอักเสบ กลุ่มตัวอย่างจำนวน 40 ราย คัดเลือกตามเกณฑ์ที่กำหนดเป็นผู้ป่วยเด็กโรคไซนัสอักเสบที่แผนกผู้ป่วยนอกเด็ก โรงพยาบาลรามารินทร์ระหว่างเดือนสิงหาคม ถึง พฤศจิกายน พ.ศ. 2544 แล้วสุ่มโดยการจับสลากแบ่งกลุ่มตัวอย่างเป็นกลุ่มทดลองและกลุ่มควบคุม กลุ่มละ 20 คน กลุ่มทดลองได้รับโปรแกรมพัฒนาศักยภาพการดูแลตนเองและการพยาบาลตามปกติ ส่วนกลุ่มควบคุมได้รับการพยาบาลตามปกติ การเก็บรวบรวมข้อมูลโดยทำให้เด็กตอบแบบสอบถามพฤติกรรมดูแลตนเองและภาวะสุขภาพครั้งแรกในวันแรกของการมารักษาที่โรงพยาบาล และครั้งที่ 2 ในสัปดาห์ที่ 4 ของการรักษา นำข้อมูลมาวิเคราะห์ด้วยสถิติบรรยาย สถิติกลุ่ม และการวิเคราะห์ความแปรปรวนร่วมด้วยโปรแกรมสำเร็จรูป SPSS/FW

ผลการวิจัยพบว่า ผู้ป่วยเด็กวัยเรียนโรคไซนัสอักเสบในกลุ่มทดลองภายหลังได้รับการช่วยเหลือตามโปรแกรมพัฒนาศักยภาพการดูแลตนเองมีคะแนนพฤติกรรมดูแลตนเองสูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ ($p < .001$) ส่วนคะแนนภาวะสุขภาพในเรื่องอาการเจ็บบริเวณใบหน้าหรือไซนัส และสุขภาพโดยรวมในกลุ่มทดลองต่ำกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ ($p < .05$) แต่คะแนนภาวะสุขภาพในเรื่องอาการน้ำมูกเป็นหนอง ไอ แน่นจมูก ปวดหัว และเสมหะของทั้ง 2 กลุ่มไม่แตกต่างกัน ($p > .05$) อย่างไรก็ตามผลการวิจัยได้แสดงให้เห็นถึงประสิทธิภาพของการพยาบาลระบบสนับสนุนและให้ความรู้ในการสร้างเสริมพฤติกรรมดูแลตนเองของผู้ป่วยเด็กวัยเรียนโรคไซนัสอักเสบ และลดอาการของโรคไซนัสอักเสบทำให้ภาวะสุขภาพดีขึ้น ซึ่งผู้วิจัยเห็นสมควรนำวิธีการตามโปรแกรมพัฒนาศักยภาพการดูแลตนเองไปใช้ในการพยาบาลผู้ป่วยเด็กวัยเรียนโรคไซนัสอักเสบและเป็นแนวทางในการพยาบาลผู้ป่วยเด็กโรคอื่นๆต่อไป

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CHAPTER I

Introduction

Background and Significance of the Study

Sinusitis is one of the most frequently reported chronic diseases, affecting 14.7 % of all Americans (Ray, et al., 1999: 408; Spector, et al., 1998 cited in Slavin, 1999: 4). This disease can occur among every group of people, commonly in children. Recently, the environment in daycare and an increase of the air pollution and ozone in atmosphere also have promoted an infection of upper respiratory tract and allergic inflammation that creates conditions which developed sinusitis (Schwartz, 1994: 58; Slavin, 1999: 5). The overall costs have been estimated at \$ 5.8 billion, and approximately \$ 1.8 billion of this was spent on patient under 12 years of age, more than costs in asthma (Ray, et al., 1999: 408). To date, there has no recent official assessment of the incidence of sinusitis in Thailand. There are some statistics from a tertiary care hospital, Ramathibodi Hospital, the Pediatric Out-Patient Unit, during 1998, showed that sinusitis accounted for more than one thousand patients aged less than 12 years old and increased to be more than two thousand in 1999. However, it has been estimated that 5 % to 10 % of all upper respiratory tract infections are complicated by sinusitis (Isaacson, 1996: 1297). The trend of this disease rapidly increases to be an important school-age children health problem.

In health status of children with sinusitis, many symptoms are affected on daily life of children. They are cough, nasal purulent discharge or congestion, headache or facial pain or fullness in the face, and malodorous breath that frequently occur (Slavin,

1997; Kaliner, 1997; Druce, 1993 cited in Ray, et al., 1999: 412). Other symptoms include sense of generalized illness, such as complained fever, nausea and vomiting, and trouble sleeping. These cause patients often have experience fatigue, irritability, as well as mood and cognitive disturbances that substantially interfere with their quality of life if compared to population norms (Gliklich & Meston, 1995: 104). Many cases had readmission or outpatient visits several times because unimproved or recurrent sinusitis, seem like them always sick caused of school absence. The complications of unimproved sinusitis may occur from inappropriately treat and care, such as chronic sinusitis, meningitis, osteomyelitis, or periorbital abscess. If acute sinusitis is developed chronic sinusitis can interfere with school and social performance because of the constant pain and nasal symptom (Pillitteri, 1999: 574). Several researches have shown relationships between sinusitis and asthma that sinusitis is common in patients who experience status asthmaticus. It has clearly demonstrated that treatment of sinusitis results in improvement of asthma signs and symptoms (Fuller, et al., 1990: 222; Diregwathanachai, 1997: 208). It affects not only the children feeling in trouble from sickness, but also their family anxiety and economic burden on the duration of illness. In addition, the treatment of sinusitis could contribute to the growing problem of antibiotic resistance, and over-the-counter medications (Isaacson, 1996: 1297). Therefore, the disease impacts not only on children's patients, but also on family and social.

The important of sinusitis management goals are the continuous cure of infection and care of prevention of complications and recurrence. From literature review, the acute sinusitis is cured if we control the infection and inflammation in the sinuses that include taking prescribed medications and nasal irrigation or nasal spray.

The prevention consists of to avoid from predisposing substances, to prevent of respiratory infection, and to keep strengthen of their health. The interview from the nurses in the respiratory unit, respiratory nurses and from the experience of the researcher contacting with sinusitis children at the Pediatric Out-Patient of Ramathibodi hospital showed some interesting data. There were some school-age children with sinusitis had done many inappropriately self-managements including forgot taking some medicine, especially the antibiotics, and forgot irrigating their nostril. They also did not understand or interest in the prevention or complications of sinusitis. Some of these children had recurrent sinusitis or turned to chronic sinusitis. These problems may result from a poorly understood of the disease and inappropriate management (Diregwatanachai, 1999: 674; Slavin, 1993 cited in Schwartz, 1994: 58). Therefore, both patients and caregivers need to have more information or guideline on an efficient management.

Most school-age children always enroll and spend much of daytime in school. They usually have to learn more about self-care practice, especially, routines of health-promoting behaviors. The children could develop thoughts, reasons and individual availability to learn. They can increase self-care agency ranged from level of learner and stage of growth and development, via many factors that influence learning such as motivation, available, interesting, and chance to practice (Suampan, 1993: 595). They would concern on their health and can make decision to deal with their problems. Even though, usually, the children with sinusitis can go to school, they should have an ability to engage in self-care. The Suwanan's study have found that self-care behaviors in the most school-age children were in the fair level, but a few in good level. The children in school-age always have less responsibility and poor health care

behaviors, if related adults are not concern to support and promote them, especially when they have illness. Wanchainawin (1998: 59-62) found that the most of samples who were school-ages children with asthma still had incorrect health behaviors, when they started to get asthma. These behaviors were the use of bronchodilator and control predisposing environments, which are the etiologies of asthma. The study of school-age children who have chronic disease showed that more than 25 % have inappropriate behaviors: no observed specific abnormal symptoms, frequency forgot to take medicines, never recalled follow ups, no teeth brushing before bed time and not telling their parents when they make mistake or feel uncomfortable (Thaiyapirom, 1989: k). Then, the children need some helps to deal with problems from illness and medical treatment regimen by themselves. They would develop self-care agency from adequacy knowledge and skills, also get some efficient helping methods to continue their health care behaviors (Pender, 1996: 82).

Therefore, the self-care behaviors in school-ages children with sinusitis are important and beneficial. This makes the researcher be interested in providing the supportive-educative nursing system based on Orem's theory in this study. The developing self-care agency of school-age children that lead to be appropriate self-care behaviors and good health was also emphasized as well.

The Conceptual Framework

The self-care agency-developing program for school-age children with sinusitis is based on Orem's nursing theory (Orem, 1991; 1995) and biomedical theory of sinusitis.

From the introduction, despite sinusitis is common in children, many symptoms effected patients oftenly have experienced fatigue irritability. These could

decrease a quality of study, work, social interaction, especially outdoor activities and sleep, mood and cognitive disturbances. The Orem's self-care theory believes that human capabilities of individuals to perform actions to take care of themselves (self-care) are developed from childhood through old age, and this process could be learned (Orem, 1991:145). The self-care of school-age children with sinusitis is the practice of activities that children initiate and perform on their own behalf to meet one's requirement resulting from sinusitis. They must perform their continual self-care behaviors to improve illness, prevent complication and recurrence, and promote their health in secondary promotion (Orem, 1995: 131). The behaviors would affect on school-age children capacities including their knowledge and skill, complexly acquired ability. This is the self-care agency for engaging in self-care behaviors.

Most self-care behaviors in children with sinusitis are specific to therapeutic self-care demand. There are continual self-care actions that formulate from requirement in self-care requisite resulting from sinusitis. These include universal, developmental, and health deviation self-care requisites, which exist and judge what children can do and what children should be done to meet the requisites (Orem, 1995: 191-209). The literature review in biomedical knowledge of sinusitis and of all three therapeutic self-care demands, according to Orem's theory, have been calculated and prioritized as follow:

1. To seek knowledge of sinusitis and secure continuously appropriate medical treatment.

They should seek information of their disease and question their health and self-care behaviors from parents or significant persons in family, physicians, nurses and teachers. They should follow up regularly.

2. To be effectively carry out medically prescribed treatment, as correctly and continuously.

The children have to be correctly and continuously taking prescribed medication, especially antibiotics, and techniques to spray and irrigate nasal as effectively.

3. To prevent predisposing substances of sinusitis, for relief severity of symptoms and preventing complications and recurrence sinusitis.

They should know and avoid to expose predispose factors such as allergens, irritants and pollutants by keeping away from them or using a mask if they have to close to them. The patients have to avoid from cold and dry air or changed climate, also swimming and diving, and do not have ice or cool drink.

4. To prevent upper respiratory tract infections.

They should avoid to contact respiratory infectious people and crowded environments such as movie theaters, or department stores.

5. To maintain strengthen body that promote internal healthy.

They should do general self-care behaviors including to have 3 meals which contain 5 groups of nutrition, to drink more than 8 glasses of water daily, to brush the teeth at least twice a day in the morning and before bed time, and to shower every day. They should exercise regularly and sleep at night more than 8 hours per day.

6. To be aware of and attend to abnormal symptoms of complications resulting from an ineffective management of sinusitis.

They should aware of the severe complications such as central nervous system. These include difficulty in balance, clumsiness, changes in mental status or lethargy.

If they feel terrible in vision or severe headache or severe others symptoms, they should notify to their parent for early visit to hospital before the appointment.

7. To be aware of and attend to discomfort or deleterious effects of prescribed medications.

They should aware of some signs and symptoms, such as gastrointestinal disturbance, from some kind of antibiotics which are not severe side effects. The allergic reaction results in a rash on the skin. If this reaction is appear to be more severe, they have to stop taking antibiotic immediately. The rebound congestion would occur if the long-term use of decongestant nasal spray. The prolong of antihistamine treatment also causes discharge thickness as well. Therefore, these situations have to be notified to their parents, teachers, doctors, nurses, or a significant adult person.

The ability to take those self-care requisites actions referred to self-care agency is complex. This acquired ability, to meet one's continuing requirements of care, includes to regulate life processes, maintain or promote integrity of human structure, function, development, and promote well-being. The self-care agency structure contains 3 levels of the capability and basic conditioning factors of the school-age children to conduct intentional activities toward a certain target. It is composed of ability and skill in learning, acknowledgement of external and internal events, self-value attention, self-understanding, concerning self-submission, ability in arranging priorities, and time management for activities. The 10 power components of self-care agency, as a supporting factor for the children, could conduct any activity of specific self-care deliberated. The components compose of interest and attention, abilities to control body and physical power, motivation. To have reasons, make decision, seek

knowledge, able to adjust the self-care behaviors, organize disciplinary actions, perform a continuous self-care behavior and combine it in routines of normal life also are included. This self-care agency has a relation with individual capacities, including their skills and knowledge for engaging in practical. A capability for self-care operations is the highest level of self-care agency that comprises of estimative, transitional and productive operation capability. The development and operability of self-care agency, individual abilities, can be affected by many influence factors. These are chronological and developmental age, genetic, culture, life experiences, health status, and resources in daily living. Although growth and development could limit child's self-care behaviors, the school-age children can learn and want to be responsible for their personal health-related cares. They need some guidance and supervision from a responsible adult, nurse and parents who are involved (Orem, 1991: 242-243). The school-age children with sinusitis have several continuously therapeutic self-care needs that the parents are incapable of to meet the needs all time. Therefore, children's responsibilities should be distributed among nurses, parents and children. The nursing system is essential to guide and support children to develop cognitive and knowledge. A nurse can plan to help the patients to accept their illness and develop self-care skill to improve and prevent the disease. It has been demonstrated that a process to promote normal growth and development by applied the helping methods in Orem's nursing theory is benefit. This causes children and family reach the nursing goal and intervention (Patumwan, 1997: 187). The helping methods (Orem, 1991: 14-19) applied to the self-care agency developing program compose of:

1.1 Teaching method is defined as an explanation and description by using self-care for sinusitis handbooks and nasal cavity anatomy pictures contained simply vocabulary and contents, and equipment for demonstrating nasal irrigation. It helps to develop an individual knowledge as well as particular skills that each school-age child needs to know. The contents include pathophysiology, causes and predisposing factors, symptoms, complications, medical problems, self-care behaviors, and training skill in irrigating nasal and/or spraying nasal. The nurse may stimulate children's interest in listening, observing, and asking pertinent questions related the activities by using colorful handbooks, emphasizing some important information, and making feedback questions.

1.2 Guiding is defined as a suggestion, instruction, direction, or supervision. These could assist children to make their own decision when they have to choose some activities which are appropriate for their preferences. The nurse can define a limitation or problem and discuss reasons for these activities.

For this program, the researcher used a strategy of the daily record on self-care behaviors and health status of the patients by doing self-report. These could remind them to do appropriate behaviors and follow their health status. The program would help them to give insight into the importance of understanding "how sick" and to know how to change their health status. The records would remind them to focus on self-care. The nurse could help the patients to participate in self-care by pointing some problems that may occur and could provide some solving methods for them. The children need a motivation to use their resources. The outcomes of the records will be evaluated and then some suggestion could be provided to enhance success. In

this study, the positive reinforces by praise or reward were used to promote their wellness when they performed good at their health behavior and lifestyle practices.

1.3 Providing a developmental environment is defined as to supply and regulate essential environment conditions. These would motivate children to accept responsibilities, to collaborate in establishment of appropriate goals that aim to control infection, prevent recurrence or complication. The patients would adjust their behaviors to achieve results specified by the goals, which include forms or changes in their attitudes and values to create abilities of self-care practice. They have to respond in the record of self-care behaviors and health status everyday by themselves. The parents and significant persons can promote and motivate the self-care actions together. These could provide the necessary resources to facilitate self-care behavior and give positive enforcement. Therefore, children can make their own decision, in order to perform specific behavior controls. The caregivers would to pay a respect, belief and trust on children decision and responsibility.

1.4 Supporting is defined as an encouragement action to sustain children in effort and prevent one from failing or from avoiding an unpleasant situation or decision. These may be occurred by giving physical and emotional support, with listen, speech of motive and providing necessary resources used by their own. Nurses and their parents should give a positive reinforcement to motivate the patients by praising or rewards. The nurses have to call and make the appointment to follow up until all the management has been taken.

The researcher acted as a teacher, director or model, to promote the children to learn all self-care behaviors for sinusitis. The strategies used in this program include teaching that emphasizes in simple contents, focuses on their requisite, demonstrates

practice. And repeated teaching is needed to perform if they require. To give some colored cartoon handbooks helps the children to gain knowledge and skill. Guiding could provide decision-making ability. Providing a developmental environment and supporting also could provide appropriate continuous behaviors, responsibilities. These would motivate the patients to achieve the goals of self-care behaviors and well-being.

In conclusion, the self-care agency developing program is based on the supportive and educative nursing system. This is the helping method to develop self-care agency of school-ages children with sinusitis. The program would increase the children’s abilities to meet their therapeutic self-care demands. All methods of operations in the program would enhance the self-care agency. They could increase appropriate self-care behaviors which improve illness, prevent complications and recurrence of sinusitis. The framework of this study is shown in figure 1:

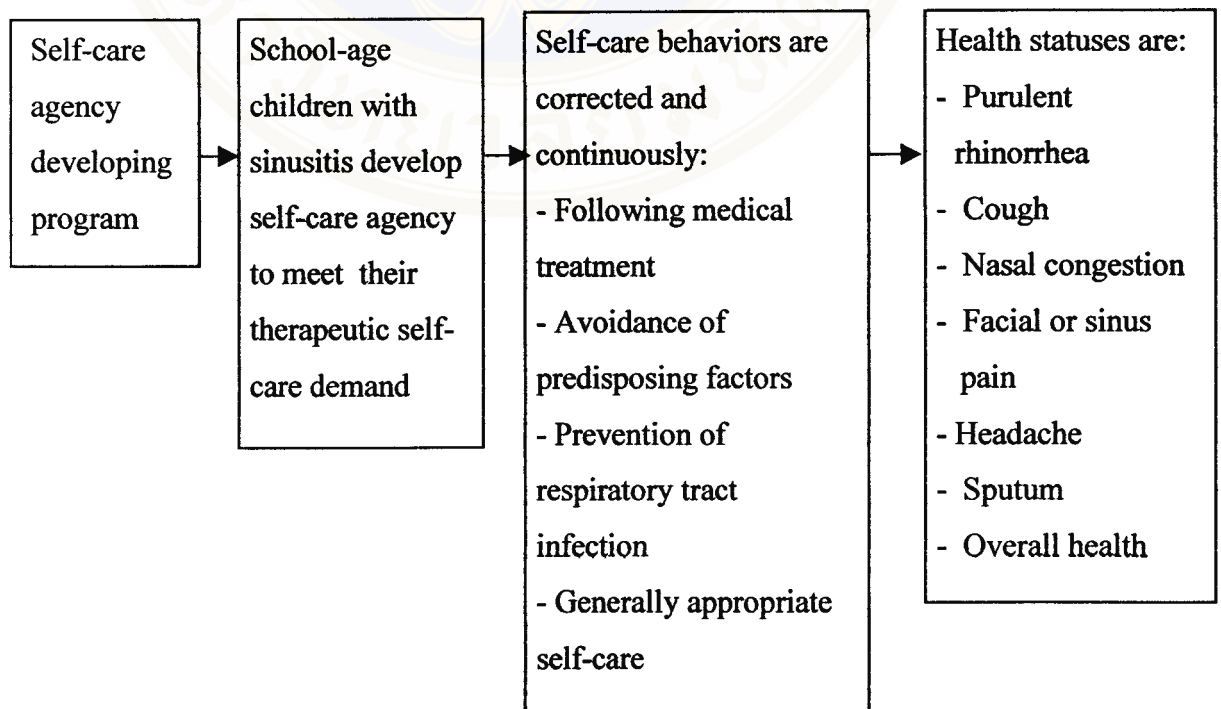


Figure 1: The research framework of relationship among variables

Research Question

Whether or not the self-care agency developing program will improve self-care behaviors and health status of the school-age children with sinusitis.

Objectives of the Study

1. To compare the pretest and posttest scores of self-care behaviors between the group of school-age children with sinusitis who received self-care agency developing program plus usual nursing care (experimental group) and the group of school-ages children with sinusitis who received routine nursing care (control group).
2. To compare the pretest and posttest scores of health status between the experimental group and the control group.

Hypotheses

1. The self-care behavior scores of the experimental group are higher than those of the control group, the pretest of self-care behaviors used as the covariate.
2. The health status scores of school-age children with sinusitis in experimental group are lower than those in the control group.

Scope of the Study

This study aims to determine the effects of self-care agency developing program on self-care behaviors and health status in school-ages children with sinusitis whose symptoms are in acute stage. These patients aged 6 to 12 years old and visited to the Pediatric Out-patient Unit of Ramathibodi Hospital during July to October, 2001.

Definition of Term

1. **Self-care agency developing program** defined as designed helping methods based on the supportive-educative nursing system from Orem' s theory that consist of 4 methods: 1) teaching knowledge of sinusitis 2) guiding children to make decision what they should do or can do in activities of self-care behaviors 3) providing an environment for learned and practice skills 4) supporting children's abilities to give will as well as promise to have responsibility to meet therapeutic self-care demand.

2. **Self-care behaviors of school-age children with sinusitis** are defined as activities of school-ages children with sinusitis to improve illness, prevent complications and recurrence of sinusitis. These behaviors are determined by the self-care behaviors questionnaire developed by the researcher and modified some content from the questionnaire of the maternal caring behaviors for their school-ages children with allergic rhinitis, created by Muangchang (2000). The higher score indicates good self-care behaviors, while the lower score indicates poor self-care behaviors.

3. **Health status** is defined as the individual sense of improved symptoms and being healthy of school-ages children with sinusitis. The status is determined from the health status questionnaire developed by researcher and modified from a symptom scores assessment of Lund, et al. (1991). The lower score indicates a good health status, while the higher score indicates a poor health status.

Expect Outcomes and Benefits

1. In nursing practice

This program will be useful for nurses and health team to apply developing self-care agency that improve self-care behaviors and health status of the children with sinusitis. Correspondingly, the severity complication and recurrence could be

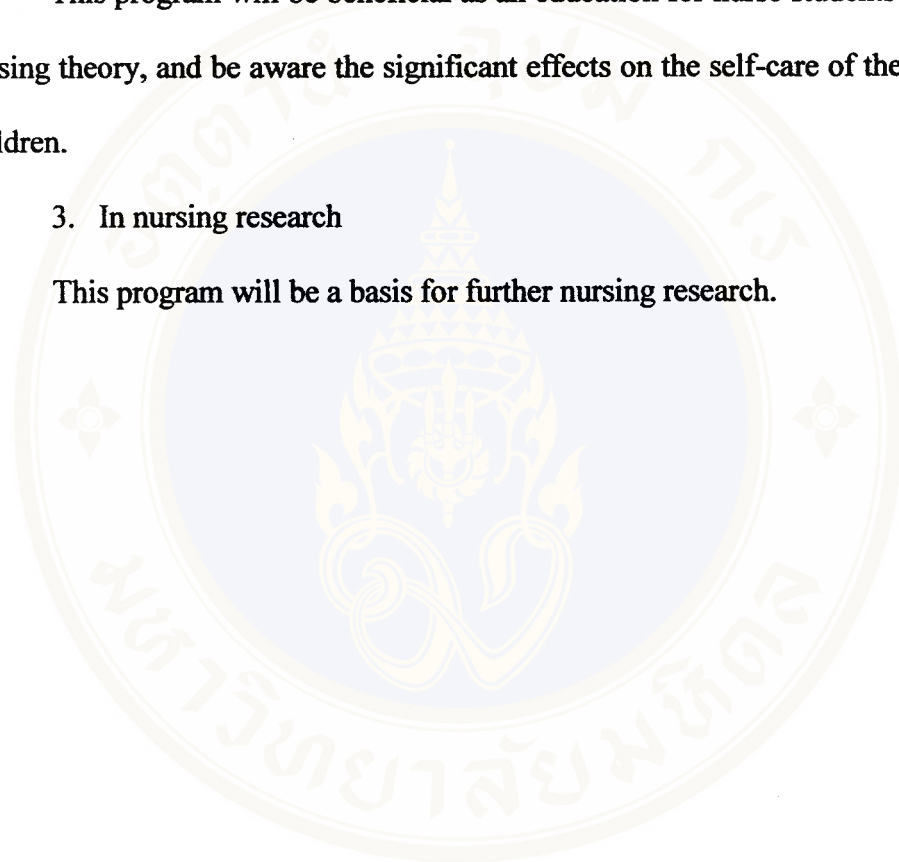
prevented, which reduce cost of sinusitis treatment. Furthermore, nurses and health team can apply this program to the other children who have health behavior problem for improving self-care behaviors, also their health status.

2. In nursing education

This program will be beneficial as an education for nurse students to develop a nursing theory, and be aware the significant effects on the self-care of the school-age children.

3. In nursing research

This program will be a basis for further nursing research.



Chapter II

Literature Review

This research is a study on effect of self-care agency developing program on self-care behaviors and health status of school-ages children with sinusitis. In this chapter, the contents of related literatures and researches are presented. These include issues of health status of children with sinusitis, self-care agency of school-ages children, therapeutic self-care demand of children with sinusitis, the influence factors on self-care behaviors of school-ages children, and self-care agency developing program.

Health Status of Children with Sinusitis

In the past decade, there were significant increases in the number of people who had sinusitis. The reason for this is still not clear at the present, but it is worst likely due to increasing amounts of pollution and ozone, which increase in large cities, also in Thailand. In children, it has demonstrated that an increase of incidence of upper respiratory infection (Lusk, et al., 1989: 1411) was noted. This may result from an increased in number of children in day care. Children had an average of six to eight experiences on upper respiratory tract infections (URIs) per year, with complication of complicates (5 % to 10 %) (Wald, 1991: 129; Aitken & Taylor, 1998: 244; Duchene, 2000: 45). In adult, an average of four days was lost from work each year because of acute sinusitis (Spector, et. al., 1998: s107).

Orem (Orem, 1995: 96) described health as an individual human being. This will be healthy or unhealthy in the sense of wholeness or integrity of the parts of the body, physiologic mechanisms, control of emotional reactions, and mental functioning as well as attitudes and motives. In situation of children having acute sinusitis, the symptoms of purulent or colored rhinorrhea, cough, nasal congestion and facial pain or headache frequently occur. The others signs and symptoms are fever, sore throat, nausea, vomiting, foul odor or lack of smell, hemoptysis or wheezing, fatigue and general ill feeling. Sinusitis symptoms could disturb their abilities in daily life activities especially may decrease their performance at school. All of these symptoms cause suffers not only children, but also their family.

Pathophysiology of sinusitis in children

Sinusitis is the condition in paranasal sinuses, which are air-filled cavities lined with mucus producing membranes in the bones of face, have membranes swelling and inflammation. It is a common complication of pediatric upper respiratory infection, non-allergic and allergic rhinitis, and can trigger lower respiratory disease, such as bronchitis and asthma (Schwartz, 1994: 58; Diregvatanachai, 1999: 674; Chan, et al., 1999: 328).

Sinusitis in children can present on four areas of sinuses. These include the ethmoid (behind and between the eyes), the maxillary (placed to either side of the nose), the frontal (in the forehead), and the sphenoid (a farther back in the head) (Schwartz, 1994: 58). The maxillary sinus is the most common site of sinusitis. Therefore, if sinusitis occurs in frontal or sphenoid sinuses, it increases high-risk complications of intracranial infection or meningitis (Slavin, 1999: 5).

In normal function of these sinuses, they are probably present to reduce the weight of the skull and to create resonance to the voice. They are lined with cilia, very fine hairlike projections, to move mucus toward the tiny hole (the ostium). This hole is like a pin hole, which provides drainage for the sinuses. The holes are found at the top of the largest sinus. They trap microorganisms, pollutants, irritants, and other foreign particles that escape the filtering apparatus of the nose into the mucus of the sinuses and then removed through the drainage ostia. This mucus moves constantly by those airway cilia (Slavin, 1999: 4).

The maxillary, anterior ethmoid and frontal sinuses drain into the middle meatus beneath the middle turbinate on the lateral nasal wall. The posterior ethmoid and sphenoid sinuses drain into the posterior-superior aspect of the nasal cavity known as the sphenoethmoid recess. Ventilation and drainage of the sinuses are important for maintaining health. Obstruction to these drainage sites will result in infection of the sinuses. In conclusion, the normal physiology of the paranasal sinuses has shown (1) the patency of the sinus ostia, (2) the function of the patency of the sinus ostia, (3) the function of the ciliary apparatus, and (4) the quality of secretion (Reiner, et al., 1978; Carson, et al., 1985 cited by Schwartz, 1994: 58; Zacharisen & Kelly, 1998: 760).

Several predisposing factors can lead to the retention of mucus (and trapped particles) in the paranasal sinuses. Loss of ostial patency is the most important of these factors in the development of sinusitis that the membrane is swelling, thereby impairing mucociliary clearance. In case of abnormalities of the cilia, including a reduced number of cilia, retarded movement and insufficient coordination of movement, the transport capacity is decreased. Obstruction of the ostia or

overproduction of secretion leads to retention of secretion and a low oxygen content in sinuses that creates an environment favorable to bacterial growth and purulence.

An edema of the nasal mucosa, characteristic of acute infection or allergic rhinitis also nonallergic rhinitis, resulted in ostial obstruction. It also decreases ciliary action in the paranasal sinuses, and increased mucus production and viscosity. The subsequent accumulation of mucus in the sinus gives an environment to be a low pH for secondary bacterial infection and converse of mucus to mucopus. These further impair of ciliary function and increase swelling around the ostia when the discharges drain into the nose, and then create a viscous cycle (Unganont, 1998: 377; Zacharisen & Kelly, 1998: 760-761; Slavin, 1999: 5). Once the infections are resolved, the motility of the cilia generally returns to normal levels. However, with severe empyema and scarring, the stratified squamous epithelium may replace those portions of the cilia, resulting in decreased clearance of bacteria (Slavin, 1991 cited by Schwartz, 1994: 59).

Predisposing factors of sinusitis in children

Several different irritants can cause sinusitis. The two most important factors leading to sinus infection are viral upper respiratory infections (URIs) and allergic rhinitis (Zacharisen & Kelly, 1998: 762; Slavin, 1999: 5; Manning & Bell, 2000: 91). The other common predisposing factors in sinusitis are nonallergic rhinitis, dental infections, trauma, cystic fibrosis, immune deficiencies, environmental factors (e.g., smoking and pollution), swimming or diving, and topical decongestants.

The children who have upper respiratory infection, which unimproved after 10 days, often get the complication to acute sinusitis. The most common pathogens cultured from children with acute sinusitis revealed *Streptococcus pneumoniae*,

Haemophilus influenzae, *Moracella catarrhalis*, and *Streptococcus pyogenes* (Mosges, 1999: 15; Duchene, 2000: 46). For allergic rhinitis children who have complicated with sinusitis, the symptoms that lead condition of acute sinusitis are sneezing, rhinorrhea, and congestion. The more severity is caused of irritants and allergens. They are every kind of dust, animal dander and hair: cat, dog, bird, rabbit, strong odors such as perfume, odor paint, spicy food, many types of fumes such as fire smoke, car smoke and cigarette smoke (Bunnag, 1994: 77). Some studies have shown that children in a home in which one family member smoke have a substantially increased incidence of sinusitis (Slavin, 1999: 6).

In addition, rapidly changing in temperatures such as before raining, too cool weather, too sunny weather, drinking cold water, eating cold food, direct blowing of electric fan, or sitting opposite the air conditioner could cause histamine to release. This reaction occurs because of stimulation of coldness (Bunnag, 1994: 77; Benjaponpitak, 1997: 152). These factors are the effects of membrane swelling and inflammation that increased of mucus in sinuses. This mucus becomes thickness and blocks ostia drainage and then retards ciliary movement that encourages infections. The other mechanical obstruction can also be a predisposing factor for sinusitis. These include hypertrophy of the adenoids, a deviated septum or concha bullosa, nasal polyps, trauma, foreign bodies, neoplasm, anatomic abnormalities and inborn errors, such as immotile of cilia syndrome (Schwartz, 1994: 58; Slavin, 1999: 5-6). Moreover, if not getting enough sleep and nutrient, the health weakens, which in turn worsens illness.

Signs and symptoms of sinusitis in children

Sinusitis is characterized as acute, recurrent acute, subacute, or chronic based on the duration and frequency of episodes. The illness duration in acute stage about 1 to 4 weeks, subacute stage about 4 to 12 weeks, and chronic stage is more than 12 weeks. Acute sinusitis is considered recurrent if 3 to 6 or more episodes occur within 1 year (Benson & Marons, 1993 cited by Bachert, 1999: 10; Unganont, 1998: 381). Signs and symptoms in each stage have some differences. Acute sinusitis, which is one of sample criteria in this study, has prominent symptoms including nasal congestion, purulent rhinorrhea, postnasal drip, facial or dental pain, headache, hyposmia, and cough. The typical signs are tenderness over the sinus cavities, mucosal edema, purulent nasal secretions, increased posterior pharyngeal secretions, and periorbital edema. In chronic sinusitis, the symptoms usually do not clearly be indicated the specificity.

Sinusitis has its own localized pain signals, depending upon the particular sinus affected. Headache upon awakening in the morning is a characteristic of sinus involvement. Pain when the forehead over the frontal sinuses is touched may indicate inflammation these sinuses. Infection in the maxillary sinuses can cause the upper jaw and teeth to ache and the cheeks to become tender to the touch. Since the ethmoid sinuses are near the tear ducts in the corner of the eyes, inflammation of these cavities often causes swelling of the eyelids and tissues around the eyes, resulting to be pain between the eyes. Ethmoid inflammation also can cause tenderness when the sides of the nose are touched, and also have a stuffy nose as well as loss of smell. Although the sphenoid sinuses are less frequently affected, infection in these areas can cause earaches, neck pain, and deep aching at the top of the head. However, most patients

with sinusitis have pain or tenderness in several locations, and symptoms usually do not clearly define which sinuses are inflamed.

Other symptoms of sinusitis can be fever, weakness, tiredness, a cough that may be more severe at night, and running nose or nasal congestion. In addition, drainage of mucus from the sphenoid (or other sinuses) down the back of the throat (postnasal drip) would cause a sore throat and irritate the membrane lining the larynx (upper windpipe). The pattern of pain and specific complaints may provide diagnostic profiles that allow localization to a particular sinus.

Complications

Neither sinusitis in children is cured nor have an appropriate treatment, chronic sinusitis are becoming. On rare occasions, acute sinusitis can result in brain infection and serious complications. The infection can spread from one sinus cavity to another. It can infect bone surrounding the sinuses (osteomyelitis) and spread to the brain, where it can cause meningitis or a brain abscess. It also can lead to cavernous sinus thrombosis. When sinusitis symptoms are more severe, the patients appearances are fever greater than 100.5°F, pain or swelling in the face or eyes, redness on the cheek or around the eyes, severe headache, and confusion or a stiff neck. Then the children should have to see their physician immediately.

The impact of sinusitis on school-ages children

The condition of pathology, signs and symptoms, complications, and side effects of the drugs could cause health deviation, which suffers and disturbs daily life activities. The disease can affect on physical, psychological, and social aspects.

1. **Physical aspects:** the children with sinusitis get nasal symptom as rhinorrhea and nasal obstruction, which annoy the children not being able to smell smoothly.

They will feel uncomfortable, get insomnia, feel weak, and always feel sleepy. The significant congestion causes them to breath through the mouth that interferes sleep, cause snoring, and can be associated with episodes of not breathing during sleep (sleep apnea). As the time they have mouth breathing, this results to have an inappropriate breath into the lung, with low moist temperature air, or much higher, and then many irritants are passing through. Additionally, nasal obstruction causes abnormalities of growth and development on psychological and intellectual aspects. Cough and facial pain or headache frequently occur and interfere the performances and abilities of children. The complications of sinusitis are serous such as osteomyelitis or meningitis that causes a severe danger to lives. Moreover, the main side effect of drugs for sinusitis, such as antibiotic, is gastrointestinal disturbance. Using antihistamine drugs combined with decongestion drugs could cause heart and hand trembling, irritability, insomnia, and drowsiness. An oral type of corticosteroid also irritates gastrointestinal mucous as well as causes osteoporosis, and frequent infection (Strom, 1998: s361-s362; Pearlman, 1988 cited by Wong, 1995: 1415; Zacharisen & Kelly 1998: 764-765).

2. Psychological and educational aspects: signs and symptoms of the disease make poor quality of children's lives due to purulent rhinorrhea, nasal obstruction, cough, and headache or facial pain. They will have educational problems and be absent from classes. Some of these symptoms may disturb sleep at night, then they will have insomnia. When the children go to school, they feel weak and their ability to learn is decreased. If acute sinusitis is developed to be chronic sinusitis, it can disturb children's mental health because they feel irritable, anxious and stressful. Using anticholinergic drug may be the etiology of disorientation, memory impairment,

decreased intellectual functioning, visual hallucination and acute psychosis in children (Simons, 1996: 185).

3. Social aspects: the symptoms of the disease cause poor personalities of children from frequently coughing, hawking up mucous, blowing their noses, and having bad breath. These symptoms may annoy people around them. Their friends may mimic and dislike them. The children may feel interfere and do not want to play with their friends. If acute sinusitis is developed to be chronic sinusitis, it can interfere school and social performance (Pillitteri, 1999: 574).

Management of sinusitis in children

Sinusitis can be cured by an effective management which includes many alternations of the treatment related to diagnosis. The management goals for treatment of the sinusitis include: (1) control of infection, in the closed sinus cavities; (2) reduction of tissue edema, normalization of gas exchange and sinus drainage; (3) facilitation of drainage; and (4) maintenance of patency of the sinus ostia, for clearing infection, preventing chronicity and recurrence infections. The pediatric sinusitis management needs a primary aggressive medical therapy, whereas surgery is reserved if the medical treatment fails, or the disease is recurrent or chronic. The principle of all sinusitis managements is described as follow (Schwartz, 1994: 61-62; Zacharisen & Kelly, 1998: 765-766; Uganont, 1998: 382-383; Direkwattanachai, 1999: 676-678; Mosges, 1999: 15-18; Duchene, 2000: 48-52; Manning & Bell, 2000: 91).

The medical treatment, such as medications, is used as a primary or secondary therapy or adjunctive therapies. The control of infection and inflammation could reduce tissue edema and facilitate of drainage. These are presented as follow:

1. The specific antibiotics for the spectrum of sinusitis organisms is required. A 14 to 21 day course is usually adequate for patients with acute disease, whereas chronic sinusitis should be treated for 8 weeks or longer. The choice of antibiotic is based on the predicted effectiveness in specific locations. The first-line drugs of choice for treatment of nonseverely acute sinusitis are ampicillin or amoxicillin. Both are effective against *Streptococcus pneumoniae* and *Haemophilus influenzae*. The recommended dose is 40 to 60 mg/kg/day 4 times daily for ampicillin and 3 times daily for amoxicillin. For children who are allergic to penicillin, trimethoprim sulfamethoxazole, twice daily, is the alternative drug of choice.

However, there has been an increasing number of beta-lactamase producing bacterial isolated, then, if no clinical improvements occur in 2 or 3 days, the antibiotic should be changed to beta-lactamase stable agent. The second-line drugs are included: amoxicillin-clavulanic potassium, cefaclor, cefuroxime axetil, pediazole (erythromycin-sulfisoxazole), cefixime, clindamycin, and metronidazole. The third-line drugs are azithromycin, roxithromycin, clarithromycin, ceftibuten, and loracarbef. Although there has been an increasing number of beta-lactamase producing bacterial isolated, amoxicillin is still are reasonable first-line antibiotic for most cases of uncomplicated sinusitis in clinical practice. Unfortunately, the clinical trial for antibiotics do not routinely include pretreatment and post-treatment cures as assessed by any procedures for culturing organism agents. That is also because of the difficulty in obtaining reliable specimens for culture and, when obtained, the 2 or 3 day delay in reporting culture results. Currently, a practice in using broad-spectrum antibiotics, such as amoxicillin-clavulanic potassium and cephalosporins, is likely to be increased.

As we know that many patients begin to feel better after a few days of therapy and then discontinue the antibiotic early. The most common cause of recurrent sinusitis is the failure of the patients to take the entire course of therapy as their physician prescribed. A missing of antibiotics use can prolong symptoms. This condition also contributes to the growing problem of bacterial resistance, which more important than ever that they assess and manage the illness correctly and that antimicrobial agents are prescribed judiciously.

2. Antihistamines are not indicated for use in acute bacterial sinusitis. Because of their anticholinergic action, which causes dryness of mucous membrane and interferes with the clearance of purulent mucous secretion. Even the newer, nonsedating antihistamines, that have no significantly anticholinergic effects. They are effective in the management of allergic rhinitis, when manifest profuse, thin, watery rhinorrhea, sneezing, and pruritus. These conditions are the underlying pathology leading to the development of sinusitis in some children.

3. Alpha - adrenergic decongestants, as a part of the sinusitis management, are controversial. In young children, the side effects may occur as cardiac stimulation, hypertension, or neurological disorder. There are oral decongestants such as pseudoephedrine and topical decongestants (oxymetazoline 0.05%). These drugs act to reduce turbinate swelling and improve ostial patency by their vasoconstrictive effects. Intranasal decongestants not only reduce nasal airway resistance but also compromise nasal mucosal blood flow. A frequent or sustained use topical nasal decongestants can lead to rhinitis medicamentosa which is a severe rebounded congestion as well as atrophic rhinitis, potentially led to decrease sinus drainage. These drugs may be particularly useful in children with acute viral or bacterial

infections before air travel. However, children should be advised not to use such agents for more than 3 to 7 days during acute exacerbation.

4. Nasal glucocorticoids spray, such as beclomethasone and fluticasone, have potent anti-inflammatory effects. These have been shown in recent studies to be efficacious adjuncts to antibiotic therapy. They reduce mucosal inflammation, prevent bacterial growth, and maintain potential normal mucosal regeneration. These actions increase area of the sinuses, promote drainage, contribute to the elimination of infectious organisms, and decrease the frequency and severity of acute and recurrent episodes. A proper nasal spray technique should be reviewed for each child. Specially, the aiming the tip of the bottle laterally and away from the nasal septum may decrease the risk of nasal septal perforation and epistaxis.

5. Nasal saline irrigation have been demonstrated to improve mucociliary clearance in the nose during chronic sinusitis, but not to control sinus disease (Majima, et al., 1983 cited in Isaacson, 1996: 1300). A gentle squirt or spray of salt water or saline into each nostril once or twice daily can be helpful to improve mucous drainage by thinning nasal mucus. Benefits probably occur from the enhancing mucociliary transport via increased relative humidity and direct removal of pus, secretion, and crusted. The tonicity may have a role in decrease mucosal edema and promote ventilation via a mild vasoconstrictive effect. Keeping the lining of the nose moist is important to the own natural defense of the body. There are various methods of directing saline into the nasal passages. These include using a spray bottle filled with saline and spray into the nasal passages while gently sniffing in to trickle down the back of the throat; or using a bulb syringe gently squeeze saline flow to the back of the throat; or using a hand snuff method that saline is poured into the cupped palms and

snuffed up one nostril at a time. All three methods are also effective, but in consideration, the syringe method is the most appropriate and easiest for children.

Both the spray and snuff methods have to be taught to children, however, gently sniff or snuff that are too difficult may lead to more congestion when water is forced into the sinuses from the nasal passages. This is a risk for allowing pathogens to entry into the sinuses. The types of saline irrigation are reported in varies. They are hypertonic saline solution (2 % or 3.5 %) as well as isotonic normal saline solution (NSS, 0.9%). The nasal saline solution can be made at home: use one cup of boiled water and $\frac{1}{4}$ tsp. of non-iodized salt with or without $\frac{1}{4}$ tsp. of baking soda. According to theoretical reasons, the study for effectiveness of hypertonic saline solution, to decongest the swollen membrane of patients with sinusitis, was more than those of 0.9% NSS (Talbot, Herr & Parsons, 1997: 500). However, there were no different results in both solutions when compared with mean nasal symptom score and duration of illness. But when compared with uncommon side effects, the hypertonic saline solution was significantly assigned nasal irritation. These also include severe local burn and increased facial pressure that was more than those of 0.9 % NSS (Adam, et al., 1998: 41-42). Therefore, using nasal irrigation with 0.9 % NSS in children is more appropriate.

6. Mucolytics and expectorants have primarily been studied on sputum from lower respiratory tract disorders in adults. Although their uses has no been well studied in pediatric sinusitis, it is a widely clinical use. The drugs may provide symptomatic benefit in similarities of cough, tenacious mucus, and recurrent bacterial infections. The medications could decrease the thickness of mucus (mucolytics) and that help it drain even when swelling or obstruction of sinus openings.

7. Intravenous gamma globulin is indicated for using only in individuals with proven functional impairment of humoral immunity.

8. Antibiotic prophylaxis may have a role in the treatment for recurrent acute sinusitis. By analogy to otitis media, children with more than 3 episodes of acute sinusitis in 6 months, or 4 episodes in a year, may have benefit from chronic suppressive antibiotics (Isaacson, 1996: 1300).

It is very important to finish all of the medications even if the symptoms of infection seem to have gone away. Sometimes the medications do not completely clear away the infection. The child then requires a re-evaluation. The children need to keep in contact with their physicians.

Most patients with sinusitis that is caused by bacteria can be treated successfully with antibiotics about 85%, but 40 to 60% of the cases of acute sinusitis could resolve or improve without antibiotic. However the children with underlying allergic disease or asthma and infectious sinusitis need to be treated to relieve their allergy symptom with other treatments to reduce the symptoms of sinusitis. Unless the children followed the medical treatment, they should perform a non-medical treatment. The acute sinusitis can be prevented by avoiding cold or bacterial infection. The children have to reduce the number and severity of the attacks in order to possibly prevent sinusitis to become chronic. Non-medical treatments that the children with sinusitis could do to maintain the patency of the sinus ostia and the strengthen the body, which prevent chronic and recurrence sinusitis, including as follow.

1. Avoidance of predisposing factors that create condition, which enhance some worsen symptoms and complications. Those are the upper respiratory infection and allergic rhinitis that take a major role. Smoke irritates respiratory tract and

increases mucus then paralyzes cilia. Therefore, the children would care themselves to avoid from any irritants and allergens, also prevent respiratory tract infection.

2. Keeps strengthen the body in order to fight infection. Such adequate sleep for an essential rest as well as appropriate exercises, and having a sufficient 5 groups of nutrition are required. Drinking plenty of water, 8 to 10 glasses per day or more should help mucous to be thin that allows it to be drained easier.

3. Inhaling steam from a vaporizer or a hot cup of water, or hot showers can soothe inflamed sinus cavities and may allow for drainage. A hot water bottle; hot, wet compresses; or an electric heating pad applied over the inflamed areas of facial pressure also can be comfort and relieve pain.

The goals of those managements are to cure of the infection and relief of symptoms that could prevent complications and recurrence sinusitis. The children with sinusitis are supposed to follow these management correctly and continual for effective treatment.

The children with sinusitis may require re-evaluate from a specialist when (1) there is a need to clarify the allergic or immunologic basis for sinusitis, (2) sinusitis is refractory to the usual antibiotic treatment, (3) sinusitis is recurrent, (4) sinusitis is associated with unusual opportunistic infections, and/or (5) sinusitis significantly affects performance and quality of life. Re-evaluation is also appropriate when concomitant conditions are present that complicate assessment or treatment. These include chronic otitis media, bronchial asthma, nasal polyps, recurrent pneumonia, immunodeficiencies, allergic fungal disease, granulomas, and multiple antibiotic sensitivities.

Therapeutic Self-Care Demand of Children with Sinusitis

According to self-care concepts of Orem's theory, the school-ages children with sinusitis must perform their own care activities that are relevant to their health situation or requirements for care at the secondary levels of prevention, which is appropriate after the onset of sinusitis. These self-care activities are served for actions which direct to prevent complications and improve of health status. There are three types of self-care requisites including universal, developmental, and health deviation self-care deficits.

Universal self-care requisite is common to all human beings during all stages of life cycle, emphasis on maintenance of the integrity of human structure and function. Developmental self-care requisite is associated with conditions in developmental process and events occurring during various stages of life cycle (e.g., loss of a spouse or a parent, pregnancy). Health-deviation self-care requisite is associated with genetic, constitutional defects, human structural and functional deviations, as well as the effects from medical diagnosis and laboratory measurements (Orem, 1995: 108-109). These three types of requisites in children with sinusitis could help to investigate and understand what health care requirements exist. The requisites also provide some information to judge what can and what should be done to meet the goals of self-care. This term is named the therapeutic self-care demand.

The children should develop their powers to identify and conceptualize total demand for self-care action in situation of having acute sinusitis. The effective of this self-care would meet the following results: (1) the disease is cured, the pathologic process arrested, or the effects of the disease is kept under control; (2) complications of diseases are prevented; and (3) the causative agents of the disease is taken away

(Orem, 1995: 132). The consequences of this effectiveness would improve the health status and increase quality of children life.

The therapeutic self-care demands of school-age children with sinusitis based on Orem's concepts (1995) are the actions as follow:

1. To seek knowledge of sinusitis and secure continuously with an appropriate medical treatment.

The school-ages children with sinusitis should accept their illness. This makes than concern to improve symptoms and maintain their health. They should seek information of their disease and question their health and self-care behaviors from parents or significant persons in family, physicians, nurses and teachers. They are resources for the patients. Then, they can apply this knowledge and decide to choose what they can do. A regular see the doctors according to the appointments is an obligation. They have to learn and intend their self-care practices, as well as to interest to participate in effective self-care activities. This is an essential part of the self-care of sinusitis because the doctors could evaluate the progression of the disease and continue medical treatment appropriately.

2. To carry out medically prescribed treatment as effectively, correctly and continuously.

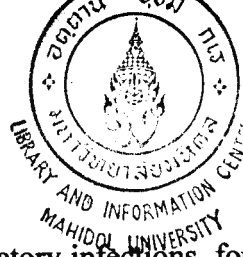
It is very important for children with sinusitis to follow the prescribed medical treatment. They have to correctly and continuously take the prescribed medication, especially antibiotics, and techniques to spray and irrigate nasal. These treatments could control infection and inflammation in the sinuses, then relieve symptoms and prevent complications.

3. To prevent predisposing substances of sinusitis for relief severity of symptoms and prevention of complications and recurrence of sinusitis.

As we know, sinusitis can be triggered by exposed many factors, such as allergens, irritants and pollutants, cold and dry air or climate changes, also swimming and diving. These reduce nasal function of sinus in which swelling and inflaming. They should know and attempt to avoid exposing those predispose factors by keeping away from them or using a mask if they have to close to them. For swimming and diving, they may be uncomfortable in swimming pool treated with chlorine, since it irritates the lining membrane of the nose and sinuses. Moreover, diving could cause of congestion with resulting from infection if the water is forced into the sinuses through the nasal passages.

Furthermore, some irritants such as smoke from car, cigarette or fire, dust and strong odors are also the precipitating factors. The children should avoid being near those irritants. They should not go into a cooking area especially for spicy food, a painted area, a smoke area, or a car smoke area. If it is necessary for them to go into these mentioned areas, they should use masks.

The changing weather, too hot or too cold weather, make symptoms of sinusitis become more severe. The children should always warm up their bodies during the rain, cold climate or during rapidly changing weather. They should put on thick clothes, gloves, socks, hats, and take a bath with warm shower during cold weather. They should dry their bodies and hair after showering or washing hair, and not sleep opposite the air conditioner or electric fan, as well as not play in the bright sunlight or have a cool drink or ice.



4. To prevent upper respiratory infections, for relief severity of symptoms and prevention of complications and recurrence of sinusitis.

Respiratory tract infection will cause these children get symptoms worse. The pathogens may grow to infect or are blown into the sinuses from the nasal passages. This creates a viscous cycle of infection and inflammation in the sinuses. They should avoid contact with respiratory infectious people and crowded environments such as movie theaters, or department stores. If it is necessary for them to go into these mentioned areas, they should use masks

5. To maintain a strengthen body that promotes internal healthy.

Beside external factors control, as above, they should promote internal healthy body by generating self-care behaviors. These include: to have 3 meals that cover 5 groups of nutrition, brush the teeth at least twice a day in the morning and before bed time, drink more than 8 glasses per day, which makes mucous to be thin and easy to drain. They should exercise regularly and sleep at night more than 8 hours per day.

6. To be aware of and pay on attention on abnormal symptoms, complications resulting from ineffective management of sinusitis.

Usually, an effective and appropriate management should improve symptoms at the first few days. But in some cases may be failure that leads to get worsen symptoms, or severe complications. It requires an early detect and investigation.

They should be aware the severe complications such as central nervous system disorders that occur as difficulty in balance, clumsiness changes in mental status or lethargy. If they feel terrible in vision, severe headache or severe other symptoms, they have to do an early visit to hospital before the appointment.

7. To be aware of and pay an attention on discomfort or deleterious effects of prescribed medications.

The children should be aware some signs and symptoms that may suggest severity of the side effects of medication. They would have a gastrointestinal disturbance from some kind of antibiotics, but not severity side effect. The allergic reaction resulting in rash or swell of the skin is the more severity to suggest stopping the antibiotic immediately. The long-term of nasal spray used continuously more than 7 days may cause a rebounded congestion and get sinusitis symptoms worse.

Self-care Behaviors of School-Age Children with Sinusitis

School-age children are referred to a child age between 6 to 12 years of age. In this stage, they have increased physical capacities, to perform tasks independently. These children can formulate goals and resist temptation in meeting them (Cole & Cole, 1989: 412). In addition, the children would become cognitively capable of taking responsibility on self-care. Piaget stated that the power of thought will increase, if the concrete operational thinking is emerged. The children are less dependent on care from their parents, and have much time for school social. In many cases, the children were expected from adults for a new independence and responsibility. The children have to learn more skills in basic self-care practices such as eating 5 groups of nutrients, taking daily hygiene tasks, as well as enhanced skills for preventive and health promotion behaviors. The children's abilities engaged in action to care for themselves are related to a self-care agency. These would vary with age, developmental state, life experience, cultural influences, health state and available resources (Orem, 1995: 212-213).

The ability to do for self-care behaviors is referred to self-care agency that Orem (1991: 145) defined as the complex acquired ability to meet one's continuing requirements for care. These abilities has 3 levels: capabilities for self-care operations, ten power components that enabling capabilities for self-care, and foundational capabilities and dispositions. These are ranked from low to high level. Each capability is a base of the higher level (Gast, et al., 1989 cited in Hanucharunkul, 1997: 33). Furthermore, all these abilities also related to internal or external factors that affect an individual's ability to engage in self-care. The amount of self-care required is called basic conditioning factors. These factors include age, gender, years of education, health state, sociocultural orientation, and health care system factors.

The foundations of self-care agency are related to ability and willingness for performing self-care behaviors, as well as deliberating actions of children. These foundations include physical and social environments that give roles and role expectations, personal values, self-as felt and known, ideal self, long-range goal orientations, as well as higher mental processes with sensory and motor neurologic function (Orem, 1995: 217).

The school-age children developing to those foundations could reason and make of right judgments and decisions in simple life situations and learn some skills that are beneficial for communication. Moreover, in stage of 6 to 12 years old, the child would develop a sense of autonomy and initiative in place. They are ready to engage in tasks and follow through to complete them. These tasks are the base for the children to be successful in adulthood. They are able to handle a great deal of responsibility and complete given tasks (Adele, 1999).

Chintanadilok (1996) have demonstrated that the school-age children were able to perform self-care activities i.e., eating, exercise, sleeping and resting, recreation, personal hygienic care, self-care during illness, mental health care, and prevention of diseases and accidents. Most of them showed self-care behaviors in a fair level, while 15% was good and 17.4% was poor. She found that the children's behaviors were relevant to some related factors including internal factors and environment or external factors. These internal factors consisted of physical and intellectual development, characteristics and child direct-experiences. The environment factors were environment of family (characteristic of caring, teaching, resources and model), of school (teaching/programs, resources, teacher and peer model, and health projects), and of social/community (resources, model, and mass media). She concluded that the learning process of self-care behaviors in school age children was related to these factors that affected perception and self-care skills.

Additionally, there were many findings that have shown the results of the mother performance with less dependent-care for children as the children grow older (Gafferey and Moor, cited by Moor, 1993: 209). This is consistent with the result of Moor's study in 1993 found the predictors of children's self-care performance from the samples, who were 9 to 18 years old. The study showed less self-care performance in the children and less dependent-care for children from their mothers as the children grow older. Similarly, the study of Chaigosol (1996: 57) found that mother's caring behaviors of a younger child with nephrotic syndrome was better than they did for the older one. She described that the mothers of the children, who grow up with more independent and responsible in their self-care behaviors, performed less caring for or doing for them. However, those mothers preferred to control, guide and train their

children to take care of their own health. From these results, the children would get sick, uncontrolled or unimproved illness and severe complications if the mothers do not concern the important of encouragement on self-care skills for their grown up children.

However, the school-age children who have illness always show self-care deficit due to a lack of knowledge, skill, motivation, health state, or other factors. The study on school-age children with asthma showed that most of them still have incorrect health behaviors when they start to get asthma. These results also showed that 64.3% of poor control group had an inconsistent drug administrative behavior, while 35.7% never took drugs and did self-administrative drug inhale. Moreover, both good (10%) and poor control groups (17.1%) of disease still played with hairy pets every day. Furthermore, the patients did play with friends who caught cold at 17.1% in good control group and 18.6% in poor control group (Wanchainawin, 1998: 59-62). Similarly, more than 25% of the study in school-age children having chronic disease had inappropriate behaviors: no observed specific abnormal symptoms, frequently forgot to take drugs, never recalled follow ups, no teeth brushing before bed time and not telling their parents when they make mistake or feel uncomfortable (Thaiyapirom, 1989: k).

The Influence Factors on Self-care Behaviors of School-ages Children

Orem stated that the assessment of self-care in patients comprises of age, sex, and development (Orem, 1995: 136). Although the self-care behavior of school-ages children related to their capability factors described, there are also more factors have proven an influence of self-care behaviors and health outcome in school-ages children. In Thailand, it has been shown several relevant basic conditioned factors that affect on

self-care behavior of school-ages children in health aspect. The researcher selected the factors that are potentially influence on self-care agency and self-care behaviors of school-ages children with sinusitis in this study. These include age, gender, education level, birth order, duration of illness, parents' or caregivers' education level, and family income, as the following:

Age is referred to maturity on the ability to understand and make decision, for look after themselves. Age is related to past experiences. The older they are, the more experiences they have in taking care of themselves. A mature person would think carefully and reasonably to behave correctly and appropriately to prevent the disease from getting worse. However, the study of Poomarintra (1992) found that age was insignificantly correlation with self-care behavior which corresponded to those of Jungsomjetpaisan (1995).

Gender is referred to a boy or girl. Juntramolee (1986) and Pearnchorb (1986) studied on school-ages children in level 5 to 6 of elementary school and showed the results that differences of sex could influence health care behaviors. The girl showed better health care behaviors than those of the boy ($P < .05$). Similarly, Chintanadilox (1996) found that girls had ability to do self-care behaviors more than boys, with a higher level of self-care practice than the boy did ($R = .30$, $p = .001$). In 1998, Boonyawatanangkool's study demonstrated a positive statistically significant difference between gender and self-care behaviors. That result was similar to Praditsan (1992) found sex been a statistically significant predictor of the child' self-care practice. Therefore, gender may be a factor that influence self-care behaviors of school-ages children with sinusitis.

Education level is crucial to develop knowledge and skill to behave and perform good attitudes for self-care (Orem, 1995: 331). Thus, the higher education people, the better perception and the more rightful health behaviors they have (Suwan, 1983: 182). The study of Kompayak, et al. (1993) have also found that the level of education was significantly related to health behavior of children and adolescent in Bangkoknoi school. This corresponds with the study of Pinsakol (1989) and Poomarintra (1992). Therefore, the education level may be a factor that influence self-care behaviors of school-age children with sinusitis.

Birth order is a characteristic of childcare according to order of birth and attitude of parents influencing to develop self-care behaviors. The first-born children, in most cases, have much sense of responsibility and autonomy more than the later born one. The last-born children are always tended by their parents, as a result to provide of decision making or doing of their own (Kaluger & Kaluger, 1986: 335-336). In contrast, Poomarin study (1992) showed that birth order did not correlate with self-care behaviors of school-age children. Therefore, the birth order may be a factor that influences self-care behaviors of school-ages children with sinusitis.

Duration of illness is a time that the children have experienced during illness. The longer duration they spend, the more skillful of self-care they learn (Orem, 1995:331). Similarly, Jungsomjetpaisan (1995) found that the duration of illness of school-age children with rheumatic heart disease correlated with self-care behaviors ($r = .1744, p < .05$). By contrast, the studies of Pinsakol (1990), in school-age leukemic children during chemotherapy, and of Thaiyapirom (1989), in school-age children with chronic illness, found similar results. The differences in duration of illness was not

associated with self-care behaviors of them. Therefore, the duration of illness may be a factor that influences self-care behaviors of school-ages children with sinusitis.

Education level of parents or caregivers are the other essential factors. The higher level they are, the more knowledgeable and capable of helping their children on health practices they perform. The ones who have lower education may lack of knowledge and action patterns for a desirable children behavior. The results from Sathapong, et al. (1986) showed that level of mothers' education was positively correlated with self-care practices of school-ages children. Wenhui (1997) found that parents' educational level was a significant predictor on the self-care behaviors of chiness school-age children ($r = .30$, $F = 13.27$, $p < .0001$). However, Thaiyapirom (1989) and Poomarintra (1992) found that level of parents' education did not correlate with self-care behaviors of school-ages children. Therefore, the education level of parents may be a factor that influence self-care behaviors of school-age children with sinusitis.

Family income is an important factor for the capability of a person to seek health care. The higher income persons would have a better chance to seek facilities or useful things for their health such as to find suitable health services (Pender, 1982; 161-162). In 1997, Asumpinzub's study found that family income was positively related to maternal caring behaviors for their children with congenital heart disease ($r = .2831$, $p < .01$). By contrast, Chalernpol's study (1997) demonstrated that no significant relationship between family income and maternal caring behaviors to prevent iodine deficiency. Therefore, the family income may be a factor that influences self-care behaviors of school-ages children with sinusitis.

Developing Self-Care Agency of School-Age Children

The self-care agency developing program has been applied to support the educative nursing system (Orem, 1995). The program provided in the present study is aimed to promote school-age children with sinusitis to develop their self-care capabilities, and then be able to take action meeting their calculated therapeutic self-care demand. There are several helping methods to develop such a program for the nursing system. These include teaching, guiding, providing an environment and supporting, which appropriate to children with sinusitis and they could perform self-care behaviors by themselves.

Teaching

Usually, humans could develop self-care agency by learning from family and social. The mature persons can respond their own requirements, or participate with the family. Learning is occurred from simple activities, such as normal hygiene care, to decide to have sufficient food, take care of bodily needs or complex activities, such as to take an oral medicine, and observe the side effects. These activities are initiated at first time, then selected the next, and finally, became usual behaviors.

The developing behaviors in children firstly come from teaching simple activities, using simple reasons, and emphasizing the significance of doing continuously self-care activities. To teach children to practice their health care behaviors is more important than to have only health knowledge. The behavior patterns are acquired by frequently repeated practices and become a habit. This is a desirable way that a nurse could promote those behaviors and emphasize the appropriate actions. Then, the children would succeed in as many undertakings as possible (Turner, 1989: 213).

There is a limitation on teaching at the Out-Patient unit due to a shortage of time but each program for children is oftenly last for 15 to 30 minutes (Whitman, 1992: 206). So, the information data for children with sinusitis have to be emphasized only on some important topics based on the therapeutic self-care demands for a successful cure. The teaching contents include knowledge of pathophysiology, causes, symptoms, complications, medical treatments that are take oral medicine, spray nasal, and irrigate nasal, predisposing factors, and requisites self-care behavior. These behaviors are to follow medical treatment, avoid predisposing factors, prevent upper respiratory infection and generally appropriate self-care. A training skill in irrigating nasal and/or spraying nasal and having oral medicine administration, as specific individually, also need to be informed. The nurse may stimulate the children' s interest in listening, observing, and asking the pertinent questions related to activities. Some colorful handbooks are a good tool to be emphasized the important information as well as perform the feedback questions.

The sinusitis handbook is a useful media that helps the children to easily remember and understand the disease and self-care behaviors, especially, at home. This handbook should contain a brief information of pathophysiology, causes, symptom, predisposing factors, complications, treatments, self-care behaviors and techniques to do nasal irrigation, to spray nasal and make an effective cough. The children would be enjoy reading this book that has colorful and cartoon illustrations. The benefit of this reading did occur eventhough in 6 to 8 years old children who took only 15 to 20 minutes for learning the program (Kuhapinantna, 1984: 53). The teaching strategy for school-age children with sinusitis in this program should using briefly and simply contents specific of therapeutic self-care demand of themselves, in

shortly duration. Using media as cartoon book and colored handbook as well as training the specify their practice if irrigation, spray or take oral medications should encourage them in learning and skillful for doing self-care behaviors. Many nursing researches in school-age children demonstrated that using a handbook for nursing health promotion and education program increased schooler's knowledge (Janjirawattana, 1992; Boonpeng, 1992; Krongthamachart, 2000; Pinjai, 1992; Wangsachanthanon, 1993), decreased self-care deficit (Munkunna, 1998; Pongsing, 1997), and enhanced self-care behaviors (Krongthamachart, 2000, Wangsachanthanon, 1993; Pinjai, 1992; Boonpeng, 1992).

Guiding is a suggestion, instruction, direction, or supervision. This can assist children to make their own decision when they must chose some activities which appropriate, in preference to one.

School-age children are able to make decisions based on a simple scientific knowledge of cause and effect. Their objectives and language abilities allow them to make observations by themselves. They would maintain their health status and be able to communicate with others (Whitman, 1992: 205-206).

The nurses should help the child to put both subjective and objective data together so that the child becomes aware that a heath need exists. These nurses have to identify the problem and give a guidance for children as well as reassure in making good self-care judgments every day and let the patients know that their judgments are sound. The same feeling of positive self-confidence will occur if the child is the decision maker. This causes an increasingly competent feeling and self-direction to be able to manage self-care, as a positive reinforcement. These feelings are important for maintaining their optimal self-care.

Providing in environment is defined as supplying and regulating of essential environment conditions that motivate children to accept responsibilities, to collaborate in establish appropriate goals and to adjust behavior to achieve results specified by the goals. These are a form or change of attitude and value which are creative abilities in self-care practice (Orem, 1995: 18). For this program, the researcher provide the environment within individual interact. After teaching the children will receive a sinusitis handbook that is easy to reread or refresh as they need. The daily record charts of self-care behaviors and health status could motivate them to observe their symptoms and adjust their self-care behaviors in daily living. They need to note in the record of self-care behaviors and health status everyday by themselves. The parents and significant persons may provide the necessary resources, guide the children to make their own decision and supervise them to do self- care behaviors. All caregivers have to pay a respect, belief and trust in children's decision and responsibility.

Supporting is an encouragement action to sustain children in effort and prevent one from failing or from avoiding an unpleasant situation or decision by giving physical and emotional support. To listen, to give a speech of motivation, to provide necessary resources, as well as to use their own decision are included.

When children are 6 to 8 years old, their sense of responsibility grows. They can be enjoy simple tasks by their capacities, with a short attention. Their capacities would be increased by repetition and then turn the children to be adult behaviors (Cole & Cole, 1989: 433). Koster (1990: 235) introduced that the children should be encouraged for an active participation to make their own health care choices through problem solving. This is the more important more than giving children awareness.

Such participations and supports from others through reinforcement of attempts and successes are also essential for the activation of self-care.

Motivation bridges the gap between knowledge and action. It is necessary to motivate the child to want or to do the own decision with a new health knowledge. Behaviors are changed as a result of their relationship to positive and negative consequences. These behaviors tend to be increased after a reward. This is a positive reinforcement. When the event is averted a negative reinforcement will be substituted (Bukatko & Doehler, 1992: 229). Nurses and their parents should give a positive reinforcement to motivate them by praise and rewards. In this program, the researcher gives a positive reinforcement to motivate them by praise and rewards such as a sticker, a pencil, or a small notebook for a good health care. This would make the children to have all medical appointments, or avoid all predispose factors. Making a telephone call to follow up, would stimulate and remind their self-care as well as provide some advices if they need.

All research designs are needed for testing the interventions of nursing. This is based on the supportive-educative of nursing system for school-age children, which focuses on many variables such as self-care practice, self-care deficit, knowledge, and health status, etc. The study by Pongsing (1997) on the effect of supportive-educative nursing system, in school-age children with thalassemia, found that the experimental group had significantly lower mean score on self-care deficit than those of the control group ($p < .001$). Munkunna (1998) studied the effect of the self-care agency developing program on self-care deficit and health status of the older children with thalassemia. The results showed that the mean score of self-care deficit was decreased significantly after receiving the program ($p < .001$). For health status, the frequency of

blood transfusion within 3 months after the program started was significantly lower than those of the 3 months period before the program ($p < .01$). However, the frequency of infection and a level of heamatocrit were not different.

Many studies have demonstrated that the utilization of the supportive-educative nursing system based on Orem's nursing theory could help nurses to have such a clear target for giving care to the patient and family. However, most of studies focused on exploration of knowledge, self-care deficit, and health status. There is no research used the supportive-educative nursing system in school-age children with sinusitis. The researcher realizes that sinusitis in children is a common infection disease, which has severe complications, and impacts on the child both of physical and psychosocial. These school-age children always perform an inappropriate self-care when they are sick. A nurse can assist the children to promote a success of their curing and prevention severe complication and recurrence sinusitis, by teaching, guiding, providing an environment and supporting them. Therefore, this self-care agency developing program is designed to help the school-age children with sinusitis. This would develop self-care agency and willing to increase appropriate self-care behaviors for a good health status.

CHAPTER III

METHODOLOGY

Research Design

This study is a quasi-experimental research which aims to determine the effect of self-care agency developing program on self-care behaviors and health-status of school-age children with sinusitis.

Population and Sampling

The population of this study was the school-age children, aged 6 to 12 years old, who have acute sinusitis or rhinosinusitis, from the Pediatric Outpatient Unit, Ramathibodi hospital. The following inclusion criteria are using for selected samples:

1. The sinusitis children were diagnosed by a pediatrician.
2. They can understand and communicate Thai language.
3. They have no history of psychotic or brain damage.
4. They agree to participate in this study.
5. They can be contacted to follow up by telephone once a week, by the researcher.

The samples were selected by a purposive sampling, with 40 cases for study, Polit & Hungler (1983; 427; 1999: 299) suggested that samples of 10 cases or fewer are general phenomena studies to compare between groups. However, the samples should be at least 20 to 30 cases for experimental research. Therefore, the researcher considered using the 40 cases as a sample size and divided into two groups: control

group, who received usual care, whereas the experimental group who received the self-care agency developing program plus usual care. The researcher will randomize sampling each day for study the control group or the experimental group. This design could prevent contamination from intervention by let the samples to a private room.

This study excluded the children who had severe complications (e.g., osteomyelitis, abscess, or meningitis), immunodeficiency syndrome and undergone sinus surgery or admission.

Setting

The researcher conducted this study at the Pediatric Outpatient Department, Ramathibodi Hospital, and the data were collected from children visiting on Mondays, Tuesdays and Fridays at 8:00 a.m. to 4:00 p.m. The routine cares in this clinic are measurement of weight and temperature, physical examination by the doctors with an aiding of X-ray or CT scan in some cases, and receiving medications as prescribed. The drugs are antibiotics, decongestant, nasal spray and irrigation, antihistamine, mucolytic and/or others. The doctors and nurses give some information of sinusitis and teach the mothers to do nasal irrigation. This unit does not have any media or teaching program related to self-care for school-age children.

Research Protocol

The Self-care agency developing program for school-age children with sinusitis was created by the researcher for three visits.

The first visit (duration of 40 to 50 minutes) consists of 5 steps.

Step 1: Building relationship.

The researcher individually interacts the child, and his or her caregiver then make a usual conversation, ask the patient by calling his or her nickname. Explanation on the objectives, benefits, and duration of this program to them is required. After encouraged their willing to participate in the study, the researcher will assess them by using personal data from the first pretest self-care behaviors and health status questionnaires. This step spends their time for 10 to 15 minutes.

Step 2: Prescribe children's therapeutic self-care demands

The researcher assume that the ability and power of the school-age children have learnt from their home and school to manage themselves in usually self-care behaviors in daily living. These behaviors were instructed in conceptual frameworks, then adjusted that instruction appropriately with individual characteristics. All information of activities that children should perform on their responsibility are needed to be explained. Moreover, a simple reason for those activities is to improve illness, prevent complications and recurrence sinusitis.

Step 3: Helping the children to learn of knowledge and skill to follow an individual instruction.

The researcher will teach children with a simple explanation, and use anatomy pictures or handbooks to be understood and remembered easily. The child's caregiver

will listen together. During teaching, the researcher will interact with the children with a two-way communication. The learning topics could be adjusted to instruct each individual. If the child cannot understand or remember, a longer time with more simple and interesting instruction are provided. The topics that children are supposed to know included:

- Anatomy of sinuses
- Pathophysiology of sinusitis
- Signs and symptoms of acute sinusitis
- The management of acute sinusitis emphasizing how to take medication as prescribed correctly and continuously.
- Self-care behaviors that improved symptoms, prevented complications and recurrence .

The instruction also includes doing nasal irrigation twice a day at morning and night. Avoiding from predisposing factors, observing abnormal symptoms that presented complications. maintaining their bodily strengthen also are accounted (The instruction of knowledge and skill contain more details in the conceptual framework).

The method of nasal irrigation to improve sinuses drainage, is as follow:

First, prepare 0.9 % saline solution (NSS 0.9%) in a cup or glass (solution may be warmed a little bit), that fill a 2.5 or 5 cc. rubber syringe with this solution, find piece of handkerchief or tissue, and a mirror.

Second, bring the child to stand or sit down in front of the mirror and keep a child's head upright.

Third, teach the child to introduce the nozzle of the syringe into one nostril, gently squirt the solution through the nose, just amount 0.5 to 1 cc. at each time, then swallow the solution after passing through the nasopharynx, as timing as squirts-stops-swallows, until syringe is empty. Warned that the patient don't breathe in when solution is squirted in the nostril. The procedure is repeated for the other nostril. The fluid is push less than 0.5 to 1 cc. if the child can not tolerate with it; and also more increase amount of solution, if the children could do more.

Forth, teach the child to blow gently their nose to clear of the reduced thickness of mucus from each nostril and use his/her finger to close the other side when blowing. The patient should clean this mucus by using tissues or handkerchiefs, and observe characteristics of mucus including color, amount, and thickness.

The child could repeat all procedure more than one irrigation on each side if the discharge is still thick or feeling nasal obstruction until the patient feels empty or clearly drainage.

Step 4: Guiding, supporting, and providing environment.

The researcher will work out with a child and his or her caregivers to determine problems and limitations related to doing their self-care behaviors. The researcher needs to instruct them to do nasal irrigate at least twice a day before meal in the morning and night. To guide them to adjust or do more is crucial if the child needs or feels nasal obstruction or has thick mucus.

The researcher has to give the handbook and daily records to the patients, which they may review their previous learn and remind them to do daily self-care

behaviors as well as observe their health status. This process is under the assistance of their caregivers.

The researcher needs to guide and teach the children to concern doing record of self-care behaviors. This is composed of items of daily behaviors including to take prescribed medications, do nasal irrigation, avoid from predisposing factors, prevent upper respiratory infection, and generally appropriate self care. Some behaviors can be adjusted to appropriate for each individual. The sinusitis health status record will contain these symptoms: nasal discharge, cough, nasal congestion, headache, facial pain, sputum, olfactory disturbance, and overall sickness.

Supporting and motivating the children are always needed to practice their self-care behaviors by setting a goal of practice together. The goal has to be appropriately and easily for individual to achieve at the first week. The researcher always tells them that she believes in the patients' own abilities and responsibilities. In addition, the researcher could do a motivation for positive behaviors and interest in daily records by giving rewards.

The caregivers are guided to support their children to engage to self-care behaviors. They act as facilitators in providing materials and emotion. They should believe in their children's abilities and responsibilities. These help them to succeed in their self-care behavior, and improve their illness. However, the parents should warn their children to be avoid from inappropriate behaviors, or give a positive reinforcement with praise or reward when more appropriate behaviors were performed.

The children are informed that the researcher will call them once a week, for guiding and reminding in self-care behaviors. If they have any problem, they can call

back all time. They should do the appointment with the researcher within 4 weeks to assess their behaviors and health status from the daily records.

Step 5: Follow up by telephone calling.

Telephone calling once a week is needed for supporting their self-care behaviors. The limitation and problems to do self-care behaviors may occur during they stay at home or school. Therefore, the researcher should guide them to adjust their behaviors for an appropriate practice of each individual. In many circumstances, they need a repeated support and motivation.

The second visit (When the children visit to follow up at the next 2 weeks, duration is 15 to 20 minutes)

The researcher will talk to them and question about their behaviors in the room then, assess their behaviors and health status from daily record charts.

The appropriate behaviors are emphasized: taking prescribed medication, nasal irrigation, avoiding predisposing factors and preventing respiratory infection.

The limitation and problems to do self-care behaviors will be guided and adjusted their self-care behaviors for an appropriate action of each individual. The children need to be encouraged to question and participate in solving problem.

Then, the researcher summarizes the results of self-care behaviors and of health status, as well as motivates them to continue doing appropriate behaviors.

The third visit: (When children visit to follow up at the end of the fourth week, duration is 10 to 15 minutes).

The children do the posttest.

The researcher summarizes the results of self-care behaviors and of health status, then informs the outcome to the children.

The researcher will talk to them again at the end of the intervention of the self-care agency developing program and thanks the children for their compliance.

Instrumentation

This research composes of two parts of instrument :

1. The intervention instrument is:

1.1 The handbook for school - age children with sinusitis that is created by the researcher comprised of knowledge and definition of sinusitis, anatomical pictures of sinuses, causes, sign and symptoms, predisposing factors, treatments of sinusitis, as well as accurate self-care behaviors that improve illness, prevent complication and recurrence.

2. Data collection instruments include:

2.1 Demographic data consist of personal data: age, gender, education level, family income, birth order, parents' or caregivers' education, and medical information, such as type of sinusitis, duration of illness, treatment, and examination.

2.2 The self-care behaviors questionnaire is created by the researcher and modified the contents from the maternal caring behaviors for the school-age children with allergic rhinitis created by Muangchang (2000). This questionnaire is used for measure the self-care behaviors, of school-age children with sinusitis, in 4 aspects of 25 items as followed. (1) take medication as prescribed: 8 items that are numbers 1 to 5 and 17 to19; (2) avoid from predisposing factors: 8 items that are

numbers 6 and 8 to 14; (3) prevent from respiratory infection: 3 items that are numbers 7, 15 and 16; and (4) general self-care behaviors for body strengthen: 6 items that are numbers 20 to 25. The 17 items are positive contents, which are numbers 1 to 4, 7, 10 to 12, 17 to 25, and 8 items are negative contents, which are numbers 5, 6, 8, 9 and 13 to 16. The questionnaire is the Likert scales type with 4 levels of evaluation with score 1 to 4. On this scale "Always" is a score 4, which means usually done every times or every day in 1 week. "Usually" is a score 3, which means almost done every times or 4 to 6 days in 1 week. "Sometime" is a score 2, which means done in sometimes or 1 to 3 days in 1 week. "Never" is a score 1, which means never done anytime in 1 week. The scores of negative contents are reversed. The possible total scores are between 25 and 100, which a higher score shows a higher appropriate self-care behavior whereas a lower score shows a less appropriate self-care behavior.

2.3 Health status questionnaire is adapted by the researcher from the sinusitis symptom assessment of Lund, et al. (1991:832-5). This assessment uses a visual analogue scores (VAS) that presents a scale from 0 to 10 on a 10 cm.-unmarked line, where 0 represents no symptoms and 10 is the most severe symptom imaginable. Symptoms to be scored are nasal blockage, nasal congestion, nasal pressure, headache, facial pain, facial pressure, olfactory disturbance, and nasal discharge. Any of these could be single presenting complaint in sinusitis. A score is also given to overall symptomatology ("how bad the patient feels"). The researcher has adapted the assessment contents in this questionnaire for 7 items: nasal discharge, cough, nasal congestion, headache, facial pain, sputum, and overall health status ("how healthy the child feels"). An evaluated change in quality and quantity are subsumed by nasal

discharge, cough, and sputum. The VAS is adapted to the Likert type scale, which is a number of colored circle to compare pieces of severity, with 6 levels of evaluation. Scores are 0 to 5: blank is “none symptom”, one colored circle is a “little symptom” and five colored circles are “very severe symptom”. The number of child chosen is assigned as a numerical value.

Validity

The self - care handbook , the questionnaires of self - care behaviors, and of health status in school-age children with sinusitis are developed based on relevant researches, as well as the textbooks. The self - care handbook is tried out and revised in three school-age children with sinusitis. The questionnaires of self - care behaviors, and of the health status of school-age children with sinusitis are revised from interviewed and tried out in six school-age children with sinusitis. The instruments are subjected to content validity from the major thesis advisor and co-advisor, as well as 5 experts in respiratory infections: one is a doctor, three are teachers in nursing, and one is a nurse.

Reliability

The questionnaire of self-care behaviors is tested for reliability by using Cronbach’s Alpha Coefficient from eleven cases of the samples (n=40) in this study. The reliability is .734. The health status questionnaire is tested for reliability by using Cronbach’s Alpha Coefficient, from all samples (n=40) of this study. The reliability is .897.

Data Collection

The process of data collecting is:

1. Preparing

1.1 The researcher requests a permit form from the Faculty of Graduate Studies, Mahidol University for permission to collect data at the Pediatric Out-patient Unit, Ramathibodi Hospital, then introduce herself to the director of this unit.

1.2 The researcher prepares a place for the intervention.

2. Collecting data

2.1 The researcher chooses the school-age children with sinusitis for an experimental group or control group by purposive sampling.

2.2 The researcher selects the school-age children with sinusitis by checking the OPD cards and reviews the children who met the inclusion criteria for this study.

2.3 The researcher introduces herself to the subjects. After that, she constructs relationship, explains the objectives, stages, benefits of this study, and informs the protection of this study on human rights. If the children and their mothers/fathers or significant persons agree, they will sign the consent form to participate in this study.

2.4 The researcher collects the demographic data from them. Then, the research assistants guide they do the questionnaires of health status and of the self-care behaviors by themselves. The research assistants in this study are the students of master degree of nursing, were prepared to understand the questionnaires of self-care

behaviors and of health status by receiving an explanation of the detail of each item. To decrease bias of the data, the blind technique is used.

2.5 The experimental group participates in self-care agency developing program after received usual care, the regular advise from the doctor and nurse. The researcher starts the procedure of this program in the room, which a quiet and friendly environment, following step by step according to the program.

2.6 The control group perceives only usual care and is appointed in the next four week for posttest.

2.7 The researcher prepares and analyzes all information data.

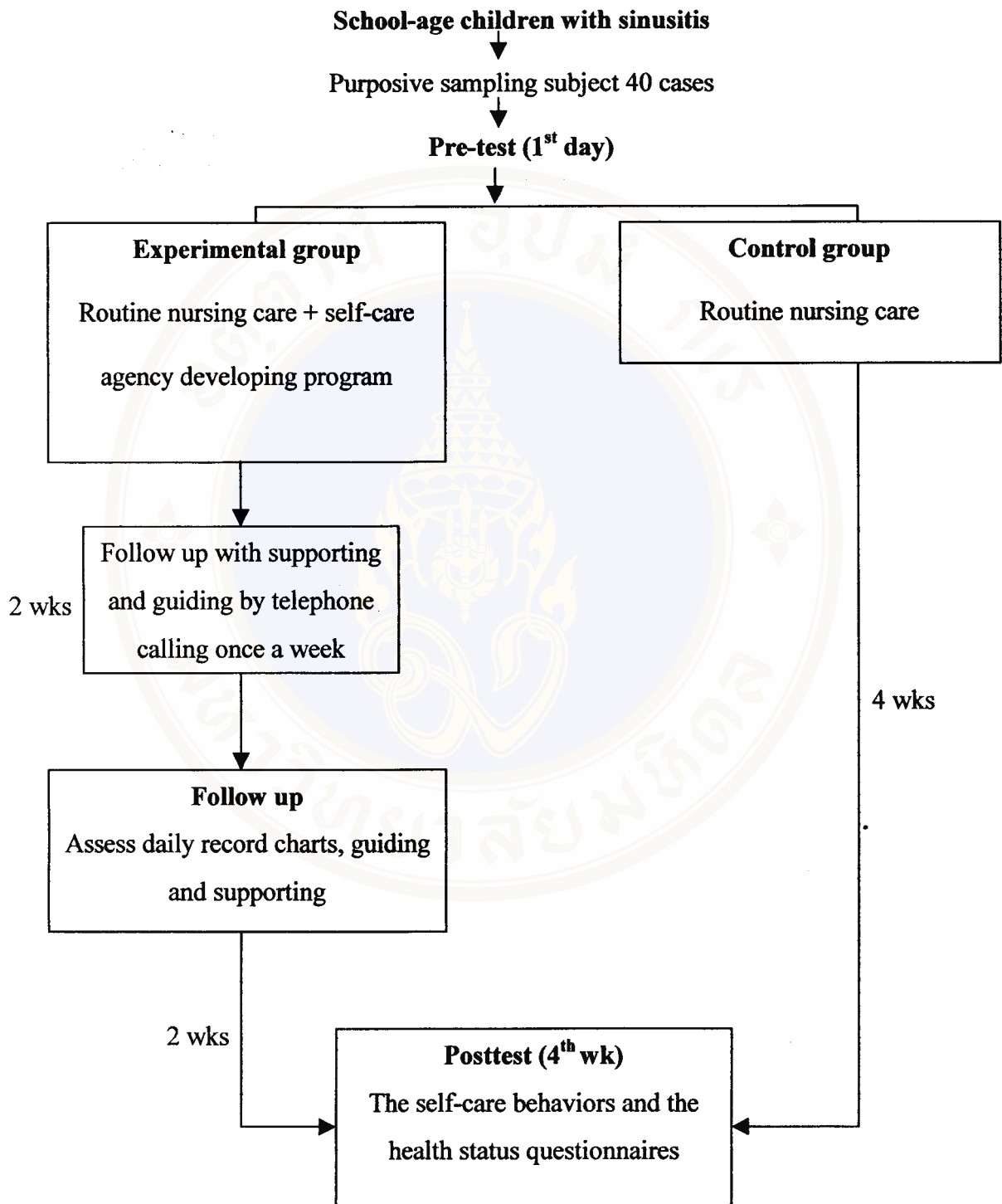


Figure 2: The process of data collection

Protection of Human Subjects

The committee undertook the researcher with the permission on human rights related to research involving human subjects, Faculty of Medical of Ramathibodi Hospital, Mahidol University.

The researcher will introduce herself to the sample. The objectives of the research, and the data collection were informed to the samples before they agree and consent to participate in this study.

The study will be approved by our institutional ethics committee, and the informed consent will be provided to the parents of each child.

Data Analysis

All data are analyzed by using SPSS program for window (Statistical Package for Social Science).

1. The descriptive statistic is used to describe demographic data including frequency, percentage, mean, range, and standard deviation of the sample demographics. The differences of the sample are analyzed by Chi-square Test, Fisher's exact test, Kolmogorov-Smirnov Test, and grouped *t-test*.

- 2 The statistical differences of posttest self-care behavior scores between groups are analyzed by using ANCOVA (Analysis of covariance), and adjusted pretest self-care behavior scores as covariate.

The item that the subject gave a response of "no situation", meaning the children not have this behavior due to disappear of the situation, showed no score. Therefore, this item could not evaluate the self-care behavior of children in that situation. Then, the total score (the full score of the self-care behavior questionnaire)

is adjudged based on the total score of the response situation and on the principle of percentage.

The assumption of analysis of covariance was tested. Histogram and normal Q-Q plots were used to examine the baseline characteristics of self-care behavior scores of the subjects in the both groups, and the data showed normal distribution. They were further examined by Kolmogorov-Smirnov Test of normality, and were confirmed with statistically significant. The regression analysis of self-care behavior score as the variance in posttest self-care behaviors ($\beta = .442$, $t = 3.04$, $p < .01$). All variables had linear correlation. Thus, this led to compare the posttest scores of self-care behavior between the experimental group and the control group by analysis of covariance (ANCOVA) by adjusting pretest self-care behavior scores as the covariate. Analysis of covariance can adjust for pretest self-care behavior in the both groups so that the final analysis will indicate the effects of intervention in the experimental group .

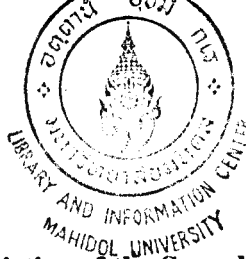
3. The statistical differences of posttest health status scores between groups are analyzed using independent *t-test*.

CHAPTER IV

RESULTS

This quasi-experimental research was conducted to determine the effect of self-care agency developing program on self-care behaviors and health status in school-age children with sinusitis. The sample was school-age children who age 6 to 12 years old having acute sinusitis and came to visit the doctors at the Pediatric Out-Patient Department, Ramathibodi Hospital. Forty subjects were sampling divided into two groups: experimental group and control group. The results of this study were analyzed by using the Statistical Package for the Social Science for Windows (SPSS/FW). The findings were presented under the following topics:

- Part 1. Background characteristics of the sample
- Part 2. The self-care behaviors scores of the sample
- Part 3. The health status scores of the sample



Part 1. Background Characteristics of the Sample

All of 40 eligible subjects were approached to participate in this study. The background characteristics of subjects in both groups are presented in Table 1 to 7. The mean age for the control group and the experimental group was almost equal (mean = 8.4, SD = 1.8 and mean = 8.8, SD= 1.9, respectively) that were not statistically significant ($t = .758, p > .05$). The mean family income in the control group (26,300) was similar to those of the experimental group that were not statistically significant ($t = .160, p > .05$)

Table 1. Comparison of gender, Children’s education level and birth order between control and experimental group.

Characteristics	Control group (n=20)		Experimental group (n=20)		P
	f	%	f	%	
Gender ^a					
Male	11	55	11	55	1.00
Female	9	45	9	45	
Children’s education level ^b					
Grade 3 of kindergarten	3	15	1	5	.56
Grade 1-3 of primary education	8	40	9	45	
Grade 4-6 of primary education	9	45	9	45	
Grade 1 of secondary education	-	-	1	5	
Birth order ^b					
Only child	3	15	4	20	1.00
First	10	50	7	35	
Middle	5	25	5	25	
Last	2	10	4	20	

a = a value from chi-square test

b = a value from Kolmogorov-Smirnov test

f = frequency

From Table 1, most subjects in the both groups were male (55%, similarly) and had education level in grade 1-3 and grade 4-6, that was rather equal (40%, 45% in the control group and 45%, 45% in the experimental group, respectively). The 1st of birth order was found 50% in the control group and 35% in the experimental group.

Table 2. Comparison of present sinus symptoms, duration of present sinusitis and episode of last year sinusitis between control and experimental group.

Characteristics	Control group (n=20)		Experimental group(n=20)		P
	f	%	f	%	
Present sinusitis symptoms*					
Purulent rhinorrhea ^a	16	80	12	60	.30
Cough ^c	17	85	15	75	.70
Nasal congestion ^c	16	80	17	85	1.00
Facial or sinus pain ^a	7	35	6	30	1.00
Headache ^a	9	45	11	55	.75
Duration of present sinusitis (days)^b					
< 7	9	45	8	40	
8 – 14	6	30	2	10	.56
15 – 30	5	25	10	50	
Episode of last year sinusitis					
Never	13	65	13	65	1.00
1-2	7	35	7	35	

a = a value from chi-square test, b = a value from Kolmogorov-Smirnov test

c = a value from Fisher's Exact test

f = frequency, ns = not significant ($p > .05$)

* = one individual patient may have more than one symptom

Table 2 show all of the subjects in the both groups reported history of present sinusitis symptoms. More than 70% of the subjects in the both groups reported history of cough, nasal congestion, and purulent rhinorrhea. All subjects in both groups were acute sinusitis. The majority had the duration of present symptom less than 7 days in the control group (45%) and 15 – 30 days in experimental group (50%). Most of subjects never had sinusitis in last year (65% in both groups). However, these parameters in both groups showed no statistical differences.

Table 3. Frequency and percentage of positive paranasal film in control and experimental group.

Characteristics	Control group (n=20)		Experimental group(n=20)	
	f	%	f	%
Positive paranasal film *				
Maxillary sinus	4	20	5	25
Ethmoid sinus	2	10	2	10
Frontal sinus	1	5	1	5
Pansinusitis	1	5	1	5

* = one individual patient may have multiple area of sinusitis

f = frequency

Only 13 subjects, 7 in the control group and 6 in the experimental group, were investigated by X-ray films. The most area of sinusitis was maxillary sinus that was 20% and 25% in the control group and experimental group, respectively (Table 3.).

Table 4. Comparison of treatments between control and experimental group.

Characteristics	Control group (n=20)		Experimental group (n=20)		χ^2
	f	%	f	%	
Treatment*					
Normal saline	20	100	20	100	.000 ^{ns}
Antibiotics	20	100	20	100	.000 ^{ns}
Nasal spray	7	35	6	30	.000 ^{ns}
Decongestant	17	85	16	80	.100 ^{ns}
Antitussis	6	30	5	25	.000 ^{ns}
Antihistamine	11	55	11	55	.000 ^{ns}

* = one individual patient may have more than one treatment

ns =not significant (p>.05)

f = frequency

From table 4, the sinusitis treatments of subjects in the both groups were mostly a combination of nasal wash with antibiotic and nasal spray or decongestant or antihistamine or antitussis. All of the subjects in both groups were received both normal saline with antibiotic.

Table 5. Comparison of predisposing allergens and Predisposing environment in family

between control and experimental group.

Characteristics	Control group (n=20)		Experimental group (n=20)		χ^2
	f	%	f	%	
Predisposing allergens*					
Air changing	13	65	15	75	.12 ^{ns}
Dust	15	75	14	70	.00 ^{ns}
Smoke	10	50	10	50	.00 ^{ns}
Smell	10	50	10	50	.00 ^{ns}
Predisposing environment in family*					
Hairy pet	9	45	12	60	.40 ^{ns}
Smoker	12	60	7	35	1.60 ^{ns}
Cold infected person	12	60	10	50	.10 ^{ns}
Chronic cough ^c	2	10	3	15	1.00 ^{ns}
Wood or charcoal for cooking ^c	3	15	3	15	1.00 ^{ns}
Carpet in bedroom ^c	4	20	0	0	.11 ^{ns}
Closed to a main road ^c	3	15	7	35	1.20 ^{ns}

* = one individual patient may have more than one treatment

c = a value from Fisher's Exact test

ns =not significant (p>.05)

f = frequency

Table 5 shows more than of 39 subjects in the both groups had history of predisposing allergens, which were always reported air-changing allergen (65% in the control group and 75% in the experimental group). Whereas reported dust allergen

was 75% in the control group and 70% in the experimental group. Thirty-five subjects were reported history of predisposing environment, which had smoker and cold infected person in family (60%, equally), and 45% having a hairy pet in the control group, whereas 35%, 50% and 60%, respectively, in the experimental group (Table 5).

Table 6. Comparison of atopic disease of children, atopic disease of father and atopic disease of mother between control and experimental group.

Characteristics	Control group (n=20)		Experimental group (n=20)		χ^2
	f	%	f	%	
Atopic disease of children*					
Asthma or allergy	8	40	9	45	.00 ^{ns}
Respiratory infection > 6 times/year	7	35	9	45	.10 ^{ns}
Atopic disease of father*					
Asthma or allergy	8	40	9	45	.00 ^{ns}
Atopic disease of mother*					
Asthma or allergy	8	40	9	45	.10 ^{ns}

* =The chosen answer was more than one

ns =not significant ($p > .05$)

f = frequency

The majority of subjects in both groups had the atopic diseases, which were asthma or allergy and had cold > 6 times/year (40% and 35% in the control group and 45% and 45% in the experimental group) (Table 6).

Table 7. Comparison of father's and mother's education level and family income between control and experimental group by chi-square.

Characteristics	Control group (n=20)		Experimental group (n=20)		χ^2
	f	%	f	%	
Father's education level					
Primary education	1	5	2	10	.158 ^{ns}
Secondary education	4	20	3	15	
Diploma	5	25	4	20	
Bachelor degree or equivalent	10	50	11	55	
Mother's education level					
Primary education	1	5	2	10	.316 ^{ns}
Secondary education	4	20	4	20	
Diploma	5	25	5	25	
Bachelor degree or equivalent	10	50	9	45	
Family income					
Inadequacy	3	15	4	20	.632 ^{ns}
Adequacy	7	35	10	50	
Adequacy and remain	10	50	6	30	

ns = not significant ($p > .05$)

f = frequency

From Table 7, the largest group of fathers and the mothers of the subjects, in both groups, had graduated in Bachelor degree (50% and 50% in the control group, and 55% and 40% in the experimental group, respectively). A half of the subjects in the control groups had adequacy and remain of family income, whereas a half of the experimental group had adequacy of family income.

From most background characteristics, when analyzed by Chi-square test, or Komoqorov-Smirnov test or Fisher's Exact test, there were no statistically significant differences between the control group and the experimental group in those parameters as presented in Table 1 - 7.

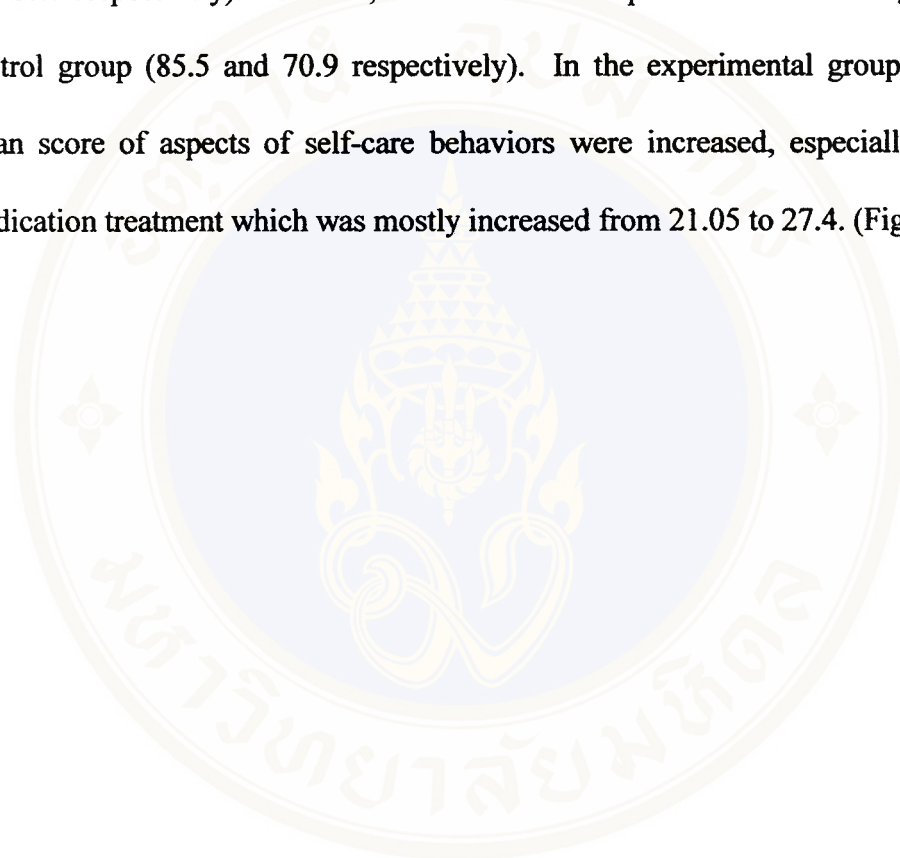


Part 2. The self-Care Behaviors Scores of the Sample

Table 8. The min-max, mean, standard deviation, and skewness for score of each aspect of self-care behavior score in control and experimental group

Aspects self-care behaviors scores	Possible range	Control group (n=20)				Experimental group (n=20)				
		Min-max	Mean	SD	Skewness	Min-max	Mean	SD	Skewness	
Pretest score										
1. Follow medication treatment	8-32	13-23	18	3.16	0.06	13-31	21.05	4.50	0.35	
2. Avoidance of predisposing factors	8-32	14-32	20.85	4.32	0.65	14-30	20.7	4.97	0.36	
3. Prevention of respiratory tract infection	3-12	5-12	9	1.97	-0.37	6-12	9.1	1.68	-0.39	
4. Appropriately general self-care	6-24	12-24	19.45	2.98	-0.55	14-24	19.65	3.07	-0.37	
Total behaviors score	25-100	56-84	69.8	8.22	-0.19	54-87	72.1	10.23	-0.19	
Posttest scores										
1. Follow medication treatment	8-32	12-32	20.1	5.97	0.62	19-32	27.4	3.87	-0.46	
2. Avoidance of predisposing factors	8-32	13-30	20.6	4.47	0.59	19-31	26	3.57	-0.28	
3. Prevention of respiratory tract infection	3-12	6-11	8.75	1.52	-0.03	7-12	9.9	1.65	-0.29	
4. Appropriately general self-care	6-24	13-24	19.3	2.87	0.01	16-24	21.2	2.48	-0.67	
Total behaviors scores	25-100	53-97	70.9	9.81	0.89	66-98	85.5	8.86	-0.46	

From Table 8, the results show that most scores of pretest and posttest aspects of self-care behaviors in experimental group were higher than those in the control group. The pretest mean score of avoidance of predisposing factors in the experimental group was slightly lower than the mean score in the control group (20.85 and 20.7 respectively). However, the mean score of posttest was much higher than the control group (85.5 and 70.9 respectively). In the experimental group, all posttest mean score of aspects of self-care behaviors were increased, especially the follow medication treatment which was mostly increased from 21.05 to 27.4. (Figure 3).



Self-care Behaviors Scores

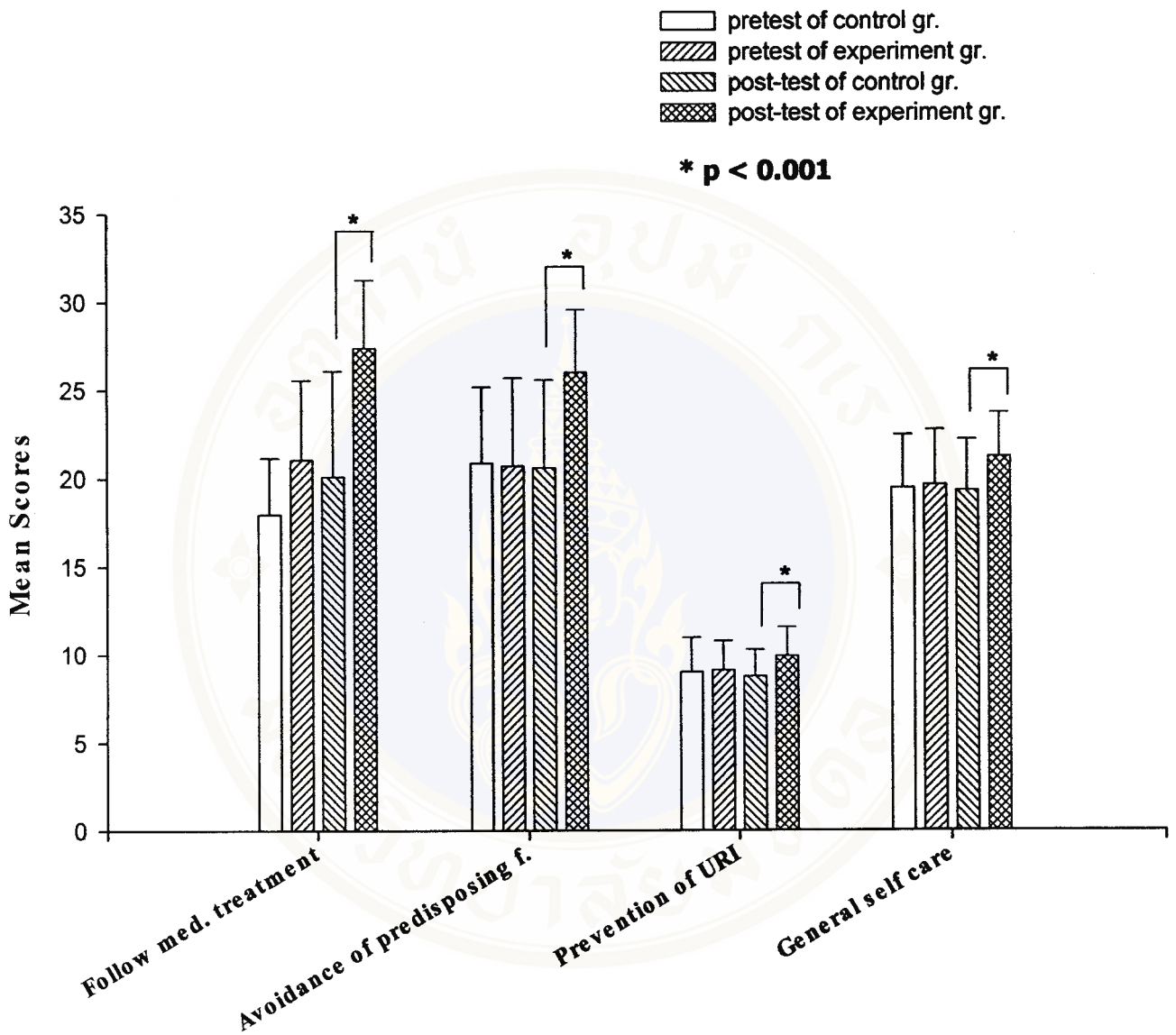


Figure 3. The histogram of self care behaviors score

Table 9. Comparison of posttest self-care behaviors scores between control and experimental group by ANCOVA

Source of variance	df	SSy	MSy	F	P
Covariate	1	732.711	732.711	10.467	.003
Main effect	2	2735.234	1376.617	19.537	.000
residual	37	2590.089	70.002		
Total	40	250064.0			

$$R^2 = .525 \text{ (Adjudged } R^2 = .499)$$

The comparison of posttest self-care behaviors scores between the experimental group and the control group by analysis of covariance (ANCOVA) that adjusting pretest self-care behavior scores as the covariate. It was found that a statistically significant differences between the subjects of two groups were noted ($F = 10.467, p < .01$).

Part 3. The Health Status Scores of the Sample

There were seven items of health status scores: purulent rhinorrhea, cough, congestion, facial pain, headache, sputum, and overall sickness. The pretest and posttest score were presented in Table 10 and Table 11.

Table 10. The min-max, mean, standard deviation and skewness for pretest and posttest score of health status in control and experimental group

Health status (items)	Possible range	Control group (n=20)				Experimental group (n=20)				
		Min-max	Mean	SD	Skewness	Min-max	Mean	SD	Skewness	
Pretest scores										
Purulent rhinorrhea	0-5	1-4	2.10	1.07	.64	0-5	2.30	1.26	-.11	
Cough	0-5	0-5	2.05	1.50	.84	0-5	2.85	1.69	-.17	
Nasal congestion	0-5	0-5	2.20	1.74	.53	0-5	2.65	1.69	.04	
Facial or sinus pain	0-5	0-5	.75	1.07	1.22	0-4	1.10	1.25	.87	
Headache	0-5	0-5	2.05	1.54	.58	0-5	1.30	1.49	1.33	
Sputum	0-5	1-4	1.60	1.14	.90	0-5	2.00	1.38	.87	
Overall health	0-5	1-5	1.80	1.10	1.74	0-5	2.05	1.70	.41	
Total health status scores	0-35	4-26	12.55	5.79	.85	6-34	14.35	7.13	1.25	
Posttest scores										
Purulent rhinorrhea	0-5	0-4	1.45	1.23	.87	0-4	1.25	1.33	.97	
Cough	0-5	0-5	1.45	1.43	1.37	0-4	1.30	1.17	.86	
Nasal congestion	0-5	0-5	1.25	1.33	1.27	0-5	1.10	1.12	2.29	
Facial or sinus pain	0-5	0-4	.90	1.29	1.66	0-1	.15	.37	2.12	
Headache	0-5	0-4	1.10	1.45	1.08	0-4	.35	.99	3.19	
Sputum	0-5	0-4	1.40	1.35	.73	0-4	.75	1.07	1.70	
Overall health	0-5	0-5	1.25	1.29	1.73	0-2	.55	.65	.89	
Total health status scores	0-35	4-30	8.80	7.24	1.573	0.18	5.45	4.87	1.34	

Table 10 shows that, on the first visit day, the pretest mean score of health status in the control group were the most severity for nasal congestion, followed by purulent rhinorrhea(mean = 2.20 and 2.10, respectively). One case in the experimental group has the most severity for cough, followed by nasal congestion (mean = 2.85 and

2.65, respectively). On the last visit day (on the fourth week), the posttest mean scores for all items were not low to zero, just decreased the mean scores of severity lower by 2. In the control group, the least severity symptom was facial or sinus pain (mean =.90), similarly to the experimental group (mean =.15). The total pretest mean score of the health status in the control group and the experimental group had been 12.55 and 14.35, respectively, whereas the total posttest mean score of the health status score in the control group and the experimental group were 8.8 and 5.45, respectively (Table10 and Figure 4).

Health Status Scores

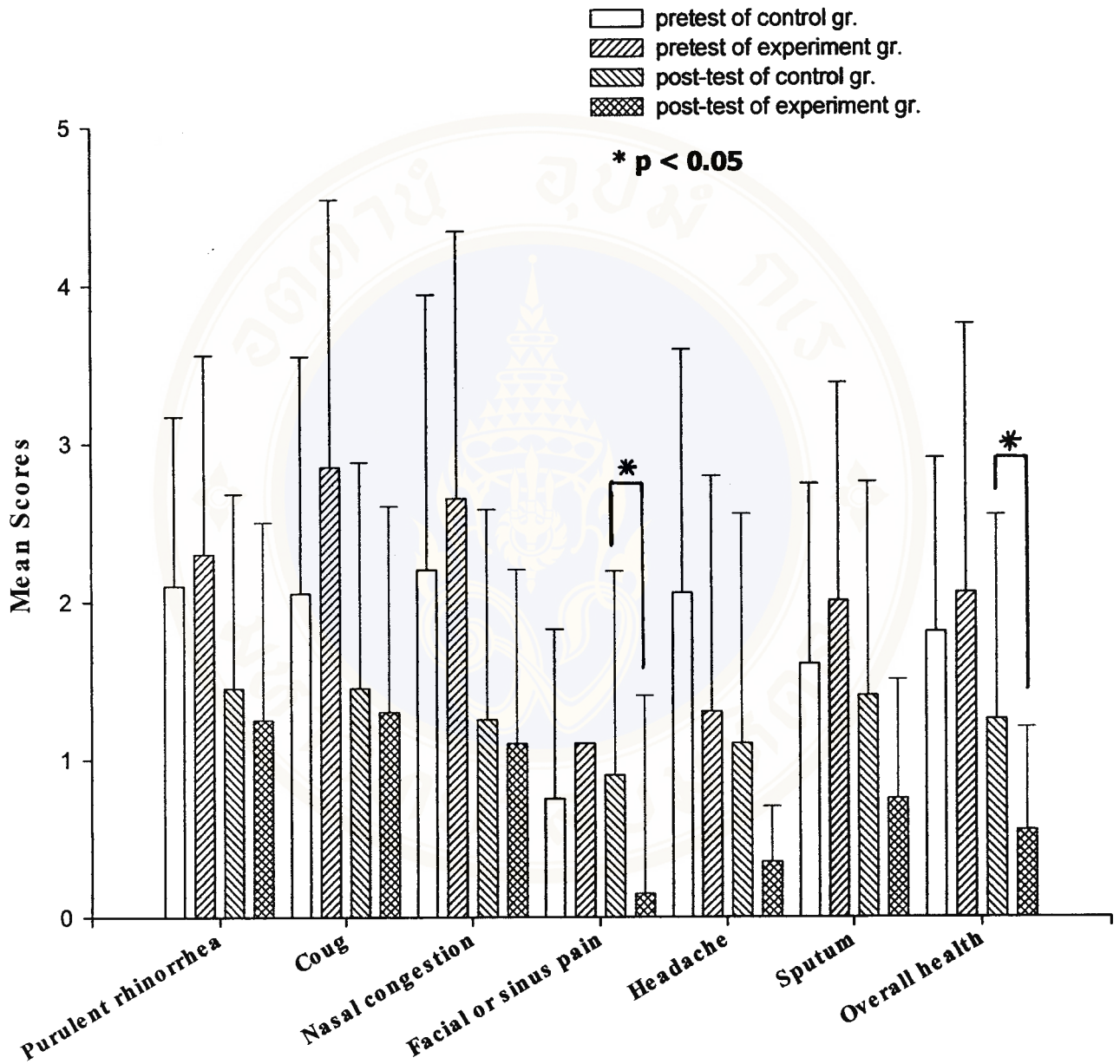


Figure 4. The histogram of health status score

Table 11. Comparison of posttest mean and standard deviation of health status scores between control and experimental group by independent t-test

Health status scores	Control group (n=20)			Experimental group (n=20)			P
	Min-max	Mean	SD	Min-max	Mean	SD	
Posttest							
Purulent rhinorrhea	0-5	0.4	1.45	0-4	1.3	1.33	.63
Cough	0-5	0.5	1.45	0-4	1.3	1.17	.72
Nasal congestion	0-5	0.5	1.25	0-5	1.1	1.12	.70
Facial or sinus pain	0-5	0.4	.90	0-1	.4	.37	.02
Headache	0-5	0.4	1.10	0-4	1.0	.99	.06
Sputum	0-5	0.4	1.40	0-4	1.1	1.07	.10
Overall health	0-5	0.5	1.25	0-2	.7	.65	.04
Total health status scores	4-30	8.80	7.24	0-18	5.45	4.85	.09

From Table 11, the posttest mean score of facial pain of the experimental group had a statistically significant difference than those of the control group ($p < .05$), as well as overall health showed a statistically significant difference ($p < .05$). The experimental group (mean = 5.45) trended to be lower in mean score of health status than those of the control group (mean = 8.80) but no statistically significant of difference ($t = 1.716, p > .05$).

CHAPTER V

DISCUSSION

This is a study on the effects of self-care agency developing program on self-care behaviors and health status in school-age children with sinusitis. The subjects were 6-12 years old of acute sinusitis who visited at the Pediatric-Outpatient in Ramathibodi Hospital. These children were purposively randomized and divided into two groups. The researcher compared the results from these two groups of population, as one is the children who received the self-care agency developing program plus usual care, which is experimental group. The other group is the children who received only usual care from health team, which is control group. The findings of this study showed that the self-care behaviors score of school-age children with sinusitis in the experimental group was statistically significant higher than the control group ($p < .01$). Whereas, the health status scores in both groups were not significant difference ($p > .05$). The researcher provided the discussion according to the hypotheses of the study as follows.

Hypothesis 1 “the self-care behaviors scores of the experimental group are higher than those of the control group, the pretest of self-care behaviors used as the covariate”

From the finding in this study, the mean score of self-care behaviors in experimental group after receiving the program were statistically significant higher than the control group ($p < .01$).

This result supported the Hypothesis 1. For the pretest, the mean score of self-care behaviors in the control group and the experimental was 69.8, SD = 8.22 and 70.9, SD = 9.81 respectively, whereas the mean score of the posttest was 72.1 (SD = 10.23) and 85.5 (SD = 8.86), respectively ($p < .001$) (Table 12, Appendix D). For the content of each aspect (as shown in Table 10), the pretest mean scores in both groups were rather high in appropriately general self-care. This is in accordance with the study by Pongsing(1998) on self-care deficit in school-age children with thalassemia and Jantawathana and Sukdongsa's studies(2001) of health care behaviors in school-age cardiac patients. The data showed that most of the samples had much high scores in general self-care behaviors. However, after received the program in this study the subjects have increased mean scores especially in aspect of follow medical treatment and follow by aspect of avoidance of predisposing factors (as shown in Table 8 and Figure 3). In addition, when considered in each item, the posttest mean scores had higher than the pretest and than the control group almost all items (shown in Table 13, Appendix D). At the pretest, the children had much low mean scores of nasal irrigation both in the morning and in the evening. The reason of this low score may be the children have never known before that they could do nasal irrigation by themselves. Further, they did not know of how harmful it is if they lack of knowledge or skill to do nasal irrigation. However, after received the program, the experimental group did nasal irrigation more often than before and than the control group. This score is important in self-care behaviors that related to health deviation, self-care requisites of sinusitis children. For example, some school-age child with sinusitis always does nasal irrigation by him/herself. If the parents less control or helping by their parent and could adjust to do less when he/she feels better or have less nasal discharge and/or

nasal congestion. If the nasal saline solution is not adequate they could request their parent to get some more from convenient drug stores. That could assume that they begin to increase responsibility and be less depend upon the adult family member. This causes them to recognize signs to altered health state by themselves, then they could ask their parent health for some care needed (Peggy, 1974 cited by Ling, F., 2000:5). The children require less assistance for care as they become older and perform responsibility (Orem, 1995).

However, the mean scores of one item in experimental group at the posttest was lower than the pretest. It was an exercise or play sports item. This caused of them feeling sickness and need more rest than they did as usual. The lowest pretest mean score was in item of often drinking cool water or ice and showed a slight improvement of this score at the posttest, they could find only cool water for drinking. That might be increasing severity of sinusitis symptoms which were irritable the children. It was noted that the most important self-care behavior is item of forgot to take medicine, which should shown 4 mean score in experimental group, was shown the mean score at 3.70. Therefor, they should further correct this behavior in order to perform their responsibility with more strategy of helping.

The explanation for effectiveness of this program will be discussed. This program is based on supportive and educative nursing system (Orem, 1995), that perform in this study. The program was designed in (1) teaching (2) guiding (3) providing in environment and (4) supporting. The designed to evaluate the effects of this program was congruent with the study of Munkunna, R's (1998). The results showed a decrease of self-care deficit and less frequency of blood transfusion in older children with thalassemia after received self-care agency developing program. Again,

it is rather confirmed to the study of Prasongtunskul, S. (2001) on health behaviors of school-age children with rheumatic heart disease. The data demonstrated a decrease of self-care deficit. Also, in accordant to the study of Krongthamachart, K. (2000) on knowledge and self-care behaviors of school-age children with acute lymphoblastic leukemia, as well as to the study of Natiles, P. (1998) on knowledge and self-care behaviors of school-age children with thalassemia. In addition, Pongsing, Y. (1997) studied on self-care behaviors of school-age children with thalassemia, and Thaiyapirom, N. (1980) studied on health behaviors of children with chronic illness. These patients were provided with a systemic teaching and the instruction had statistical differences in expect outcomes, which are knowledge, self-care deficit or self-care behaviors. These outcome indicate the self-care agency (Orem, 1995).

Teaching with an aid of media either using handbook or videotape, in these studies was proved as a useful tool encourage children learning. As showed in Janejirawattana study (1995), the cartoon book “come to know the hospital” provided to the school-age children before admission increased more perception score. However, a handbook, which a documents in hands at home, could more convenient for children.

The important intervention shown in several studies have been emphasized in encourage children to have knowledge or perception in their health or self-care practice. These would provide capabilities for self-care behavior, such as the results of Boonyawatanangkool, K. (1998) that school-age children with cancer had a higher self-care behavior as well as corrected perception of side effects of chemotherapy. Jengsomjitpaisan, W. (1995) also showed in her study that there was a relationship between health perception and self-care behavior in school-age children with

rheumatic heart disease. In addition, Poomarintra, K. (1992) also demonstrated the relationship between knowledge of health care and self-care behaviors in school-age children ($p < .00$). These results showed that, after teaching knowledge, the school-age children improved self-care ability. However, the nursing intervention could provide more effectiveness if a systemic nursing is used such as supportive and education nursing system (Orem, 1995).

Guiding from the researcher assists the children making their decision in daily self-care behaviors. The Orem's theory (1995:113) stated that self-care is a deliberated with goal oriented action. Some of subjects in the experimental group, who often forgot taking medicine as prescribed, asked for the resolution of this problem. The researcher advised them to re-considerate in what choice they could do and chose the most preferably one for themselves. This choice should be appropriately self-care behaviors and could be done. These were encouraged the children to involve in a decision making (Whitman, et al., 1992:223). Then, they preferred to do their self-care more items than the caregiver or the researcher told them.

Providing an environment was a motivation to the children for attempting to do self-care. The children were appointed to record their daily important self-care behaviors and sinusitis symptoms. They prefer in record by sticker that could encourage them to attend in practicing self-care behaviors and concern in observing their sinusitis symptoms for record. Once they were aware of their self-care behaviors or their health status they would then take appropriately behaviors to correct those (Whitman, et al., 1992:180). The children also could get a chance to do self-care by themselves and their caregivers may be an assistant or facilitator. They could develop to ask questions related to their limitation or problems, especially they had more

chance and time to ask the researcher, as shown in a higher posttest mean score of item 17, asking sinusitis information, (Table 13 in Appendix D).

Supporting is an encouragement for children by giving positive reinforcement. The children got some stickers for doing the record. This motivates them to continue their practices. In case of forget to take their medicine the children were supported by the researcher and their caregiver to remind them and provide a medicine container for an easy use. That helped them resolve this problem. The supportive made telephone calling to follow up once a week. It was interesting that two children called back to ask some problems. The one, who is 8 years old, asked for her fear that headache may caused of irrigating nasal. The other one, who is 9 years old, asked for how he could from hair of his dog if he have to play with the pet. The researcher explained the reason and guided her/his practice on the telephone calling. This was proved to be an effective continuously distant care method (Thanasilp, 2001, Mankanan, 1998, Thongmee, 2000, Leungtriratna, 200:69-78).

In accordance with the four methods, the self-care agency developing program to improve self-care behaviors of school-age children with sinusitis was substantiated. When the self-care behaviors were increased, the better health status was likely to increase. If the children are healthy, they will develop continuing self-care behaviors for maintaining their health (Koster, 1983:40). Moreover, there was no formal health education program for developing self-care agency in school-age children in Ramathibodi Hospital. It has been demonstrated that the children who received the supportive and education nursing system or nursing instruction could perform better in self-care behaviors. Furthermore, the researcher realized that the collaboration in

health team is needed for maintaining continuity care. The most effectiveness in patients' outcomes of well being or healthy would occur.

Hypothesis 2 "The health status scores of school-age children with sinusitis in experimental group are lower than the control group."

The results in this study supported the Hypothesis 2 in 2 items of 7 items of the health status. The statistical differences were items of facial or sinus pain and overall health ($p < .05$). The others, that were purulent rhinorrhea, cough, nasal congestion, headache, and sputum, showed no significant differences of mean scores between the control and the experimental group ($p > .05$). However, the posttest mean score of these in the experimental group was significantly lower than those in the pretest ($p < .001$, mean = 14.35 and SD = 5.45), as well as in the control group ($p < .05$, mean = 12.55, and SD = 8.80).

The facial or sinus pain is one of the most common symptom and likely to be the best predictor of acute sinusitis (Schwartz, 1994: 59; Unganont, 1997: 25; Williams, 1992: 705). Then it would be an appreciable result. The improvement of this symptom was affected by a short effect from the treatment in this program. The increase of self-care behaviors in aspect of following medical treatment, such as irrigating nasal and taking medicines and/or spraying nasal as prescribed, especially continuous taking the antibiotics were obvious. Acute sinusitis symptoms could be improved by antibiotics that control bacterial infections, immediately within 48-72 hours after received the treatment if it was effective. (Direkwattanachai, 1999: 676; Suwattanapongcheig, 2002: 37; Unganont, 1997: 27). The benefits of the other treatments included nasal saline irrigation, decongestant or corticosteroid nasal spray. These enhance mucous drainage and decrease inflammation which relieve sinusitis

symptom. In addition, the long term benefits of promotion and prevention self-care behaviors of the patients are accounted.

Although, after received intervention, the experimental group had lower mean scores in all items of health status than the control group, the significant differences were especially in facial or sinus pain item and overall health. There were no significantly different in the items of purulent rhinorrhea, cough, nasal congestion, headache, and sputum. These could explain that the appropriately self-care behaviors would promote all health status if the effectively antibiotic treatment is used. The important in sinusitis treatment is the simplest use and most effective antibiotics as well as an enough of treatment duration (Duchene, 2000: 52; Likitnukul, 2001: 174). The antibiotics are divided in first, second and third line drugs. A selection should be considered the different in each patient response and type of pathogens that increase frequency of beta-lactamase positive (Schwartz, 1994: 61; Lund, 1997: S46-47; Direkwattanachai, 1999: 676; Unganont, 2001: 92-93). The research could not control the affects of antibiotic treatment that all of patients received in the both groups. A significant difference of sinusitis symptom would relate with the type, duration and efficacy of antibiotic that require further study.

In addition, the rhinorrhea, cough, nasal congestion, headache, and sputum are common symptom of other respiratory diseases that were allergic or nonallergic rhinitis, common cold or other upper respiratory infections (Lusk & Stankiewicz, 1997: S53; Direkwattanachai, 1999: 675; Duchene, 2000: 48). From history of atopic disease of the children in both groups that similarly had allergy or asthma (40 % and 45 % in the control and experimental group, respectively) and had upper respiratory tract infection > 6 episodes/year (35 % and 45 % in the control and experimental

group, respectively). Then, after received the program, the both groups only have improved their health status mean scores, similarly, but no item score was lower to be zero. The patients who have asthma or allergy were found some pathology that relate to individual immunity including eosinophils, histamine, and leukotrienes. This causes mucosa swelling, mucous secretions and perhaps ciliary function of nasal and sinuses (Furukawa, 1992:516, Slavin, 1992: 534, Sangsupawanich, 2001: 123). Some nasal symptoms could remain and need a longer control by an appropriate of medical administration and self-care behaviors. Walker and White studied two groups of 100 healthy individuals (age range 17-50 years) and of 100 chronic rhinosinusitis patients (age range 14-70 years). The results also found no zero score of sinus symptom (mean = 8.8) in healthy group. Moreover, the smokers had a higher scores than those of non-smokers ($P = 0.02$) (Walker & While, 2000: 428).

Although, the longer effectiveness of all aspects of self-care behaviors could help the children to achieve their health improvement, the caregiver is supposed to help them to remove indoor allergens such as mite, cockroach, mold, pollen as well as hairy pet from their environment. The protection of children's airways from the source of allergens should do for long periods of time. The allergens may be small particles of $< 5\mu\text{m}$ diameter that become airborne and remain so for long periods (Liccardi, et al., 2001: 708-709). Thus, the present study should have a longer time to follow up the effectiveness of appropriately self-care behaviors on health status.

Unfortunately, the small sample size and relatively short duration study precluded the ability to determine difference in the importance clinical outcomes such as recurrent rate of acute sinusitis, asthma exacerbation, missed days from school or work, or cost of sinusitis management. Moreover, the limitations of measurement the

importance health status which objective data precluded the ability to determine difference in severity, physical examination and radiology or laboratory evaluation were also present. It would be possible that a study with more subjects and more outcome measurements might detect more significant differences.

According to those explanations, it was suggested that the experimental group, who had significantly better self-care behaviors at the posttest, had significantly lower mean score in some item of health status. Therefore, this may indicate that the self-care agency developing program trends to help the patients to have less of all signs and symptoms of sinusitis. The researcher appreciates that the children decreased suffering from sinusitis symptoms, which indicated from getting better of overall health at the posttest. Moreover, the mean scores of pretest cough, nasal congestion and purulent rhinorrhea were 2.85, 2.65 and 2.30, respectively, which could estimate in moderate level of severity (of a possible maximum of 5), changed to be 1.30, 1.10, and 1.25, respectively at the posttest assessment. The importance of promotion of appropriately self-care behaviors in school-age children is essential. It helps the patients to improve health status, maintain of their health and other outcomes.

CHAPTER VI

CONCLUSION

The conclusion of this study is presented in three parts as follows: 1) summary of the study, 2) implication and recommendation, and 3) limitation of the study.

Summary of the Study

This study was a quasi-experimental research that studied the effect of self-care agency developing program in school-age children with sinusitis. The sample consisted 40 school-age children (6-12 years old) with acute sinusitis, who visited at Pediatric-Out Patient Department, Ramathibodi Hospital. They were chosen by purposive sampling. This subjects was divided into two groups: an experimental group, who received self-care agency developing program plus usual nursing care, and a control group, who received only usual nursing care from the health team.

The instruments used in this research consisted of: 1) providing knowledge of self-care as a sinusitis handbook, anatomy of sinusitis pictures 2) data collection instruments as demographic data, self-care behavior questionnaire, and health status questionnaire. The samples of both groups were asked to complete the pretest and posttest. The data were obtained and computerized using the Statistical Package for the Social Sciences for Windows (SPSS/FW).

The frequency distribution was used to describe the demographic data. The chi-square test was used to compare frequency of the background characteristic data. The mean and standard deviation of age and family income were determined by independent *t-test*. The Chi-square, Fisher's Exact and Kolmogorov-Smirnov testing

were used to test the differences of the all variables between the two groups. The independent *t-test* was applied to test the research hypothesis of the health status scores differences, and analysis of covariance (ANCOVA) was used to test the research hypothesis of the self-care behavior scores differences. Data collection was performed during August to December, 2001.

The research findings of this study were concluded as the follow:

1. The posttest self-care behavior scores in the experimental group were higher than those in the control group, the pretest scores were used as the covariate, indicated by a statistically significance of $p < .001$.

2. The health status scores in experimental group were lower than those in the control group indicated by a statistically significance of $p < .05$ in items of facial or sinus pain and overall health status, but not significant in items of purulent rhinorrhea, cough, nasal congestion, headache, and sputum.

Limitations

Internal validity

The other instructions of nursing care and treatments provided from pediatricians or other staffs could not be controlled by the researcher.

External validity

This quasi-experimental research used a small sample size and selected by purposive sampling and randomized into groups. Therefore, the results could be generalized to a population similar to the sample but not to other population groups.

Implication and recommendations

Implication and application of research findings:

The self-care agency developing program, a nursing intervention, provides a continuous care to promote self-care behaviors of school-age children with sinusitis. The effective use of the program depends on the nurse's understanding in the contents and technique. The contents of this program were emphasized on the simple important information. The strategies to be used, thus, would depend upon specific problems or limitations and needs of individual patient. The technique of supportive-educative system can be used in addition to usual nursing care. These include teaching, guiding, providing an environment and supporting in material or media. These are handbooks and anatomy pictures of sinusitis which could enhance children's knowledge.

The instruction of self-care agency developing program should be distributed to all of the school-age children with sinusitis and also give them the advise on the benefit of this instruction. Although, this program was performed in a short time for only 1 month and the children were in an acute phase, on a short treatment, they have learnt a good experience to deliberate their own cares and be encouraged to have appropriately self-care behaviors.

Recommendations for further research

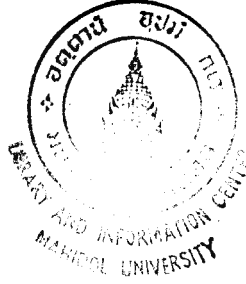
1. Improvement the instruments of self-care behaviors by adding practices in item of follow medical treatment to emphasize in taking antibiotics, to prevent respiratory infection and to avoid predisposing factors. The objective data, such as parent's observation, should be included.

2. Improvement the measurement of health status outcomes by adjusting the health status scale and adding other objective data, such as physical examination,

laboratory, CT scan or X-ray results or severity rate diagnosed by a pediatrician. In addition, the children's ability to do usual activities and emotional problems, or cost and course of the treatment should be presented.

3. The finding did not indicate a significant improvement of the posttest mean score of health status in the experimental group as compared with the control group. The repeatedly prospective study should be performed to determine the improvement in a longer follow-up period after treatment.

4. Control any effect that can influence the inclusion to outcomes by using the criteria history of treatment, the similarity of medical treatment or a group of pediatrician.



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APPENDIX A

LIST OF EXPERT

List of expert for questionnaire for self-care behaviors and health status of school-age children with sinusitis

1. Assoc.Prof. Suwat Benjaponpitak, M.D.
Senior staff of member of the division of pediatric respiratory, Faculty of Medicine, Ramathibodi Hospital, Mahidol University
2. Assoc.Prof. Wilai Leesuwana, M. Ed.
Nursing Department, Faculty of Medicine, Ramathibodi Hospital, Mahidol University
3. Asst.Prof. Kanjana Siricharoenwong M.S.N
Pediatric Nursing, Kuakarun College of Nursing
4. Lect. Renu Pookboonmee D.N.S.
Department of Nursing, Faculty of Medicine, Ramathibodi Hospital, Mahidol University
5. Mrs. Sermsri Santati
Respiratory nurse of pediatric division (nursing), Faculty of Medicine, Ramathibodi Hospital, Mahidol University

APPENDIX B

หนังสือยินยอมโดยได้รับการบอกกล่าวและเต็มใจ

(Informed consent Form)

ชื่อวิจัยผลของโปรแกรมพัฒนาศักยภาพการดูแลตนเองต่อพฤติกรรมการดูแลตนเองและภาวะ
สุขภาพของเด็กวัยเรียนโรคไข้น้ำอึกเสบ

ชื่อผู้วิจัย น.ส. ถนิมพร เพ็ชรรัตน์

ชื่อผู้ถูกวิจัย.....

อายุ.....เลขที่เวชทะเบียน.....

คำยินยอมของผู้มีอำนาจกระทำการแทนผู้ถูกวิจัย

ข้าพเจ้า นาย/นาง/นางสาว.....ซึ่งเป็นผู้มีอำนาจกระทำ
การแทน ค.ช./ค.ณ.....ในฐานะ.....ได้ทราบรายละเอียดของโครงการวิจัยตลอดจนประโยชน์ และข้อเสี่ยงที่จะเกิดขึ้นต่อผู้ถูกทำวิจัยจากผู้วิจัยแล้ว
อย่างชัดเจน ไม่มีสิ่งใดปิดบังซ่อนเร้น และยินยอมให้ทำการวิจัยในโครงการที่มีชื่อข้างต้น และ
ข้าพเจ้ารู้ว่าถ้ามีปัญหาหรือข้อสงสัยเกิดขึ้นข้าพเจ้าสามารถสอบถามผู้วิจัยได้ และข้าพเจ้าสามารถไม่
ให้ผู้ถูกทำวิจัยเข้าร่วมโครงการวิจัยนี้เมื่อใดก็ได้ โดยไม่มีผลกระทบต่อการรักษาที่ผู้ถูกทำวิจัยได้รับ
นอกจากนี้ผู้วิจัยจะเก็บข้อมูลเฉพาะเกี่ยวกับตัวผู้ถูกทำวิจัยเป็นความลับและจะเปิดเผยได้เฉพาะใน
รูปที่เป็นสรุปผลการวิจัย การเปิดเผยข้อมูลเกี่ยวกับตัวผู้ถูกทำวิจัยต่อหน่วยงานต่างๆที่เกี่ยวข้อง
กระทำได้เฉพาะกรณีจำเป็นด้วยเหตุผลทางวิชาการเท่านั้น

ลงชื่อ.....(ผู้มีอำนาจกระทำการแทน)

.....(พยาน)

.....(พยาน)

วันที่.....

คำอธิบายของผู้วิจัย

ข้าพเจ้าได้อธิบายรายละเอียดของโครงการ ตลอดจนประโยชน์ของการวิจัย รวมทั้งข้อเสี่ยง
ที่อาจจะเกิดขึ้นแก่ผู้ถูกทำวิจัยให้ผู้มีอำนาจกระทำการแทนทราบแล้วอย่างชัดเจน โดยไม่มีสิ่งใดปิด
บังซ่อนเร้น

ลงชื่อ.....(ผู้วิจัย)

วันที่.....



บันทึกข้อความ

ส่วนราชการ

คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี

โทร. ๒๐๑-๑๕๔๒

ที่

ทม ๐๘๐๖/๗๕๕๘ วันที่ ๒๗ ตุลาคม ๒๕๕๔

เรื่อง

อนุญาตให้เก็บข้อมูล เพื่อประกอบการทำวิทยานิพนธ์

เรียน คณบดีบัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล

ตามหนังสือบัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล ที่ ทม ๐๘๐๒.๐๑(ศย)/๒๖๘๒ ลงวันที่ ๒๓ กรกฎาคม ๒๕๕๔ แจ้งว่า นางสาวณิมาพร เพ็ชรรัตน์ นักศึกษาระดับบัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล หลักสูตรปริญญาโท สาขาวิชาการพยาบาลเด็ก มีความประสงค์ขอเก็บข้อมูล เพื่อทำวิทยานิพนธ์ เรื่อง ผลของโปรแกรมพัฒนาศักยภาพการดูแลตนเองต่อพฤติกรรมกวดดูแลตนเองและภาวะสุขภาพของเด็กวัยเรียนโรคไขข้ออักเสบ โดยเก็บข้อมูลจากผู้ป่วยเด็กวัยเรียนที่มีอายุระหว่าง ๖-๑๒ ปี ซึ่งป่วยเป็นโรคไขข้ออักเสบ มารับการรักษาที่แผนกผู้ป่วยนอกเด็ก โดยใช้แบบสอบถาม เป็นเครื่องมือในการวิจัย ตั้งแต่วันที่ ๒๖ กรกฎาคม ๒๕๕๔ ถึงวันที่ ๖ ธันวาคม ๒๕๕๔ ความละเอียดแจ้งแล้ว นั้น

คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี ได้พิจารณาแล้วไม่ขัดข้อง ยินดีอนุญาตให้นักศึกษาเก็บข้อมูล เพื่อประกอบการทำวิทยานิพนธ์ ดังกล่าว

จึงเรียนมาเพื่อทราบ

(ศาสตราจารย์กฤษฎา รัตนโอฬาร)

รองคณบดีฝ่ายวิชาการ ปฏิบัติราชการแทน
คณบดีคณะแพทยศาสตร์โรงพยาบาลรามาธิบดี



คณะแพทยศาสตร์ โรงพยาบาลรามธิบดี มหาวิทยาลัยมหิดล

ถนนพระราม 6 กทม. 10400

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เอกสารรับรองโดยคณะกรรมการจริยธรรมการวิจัยในคน

คณะแพทยศาสตร์โรงพยาบาลรามธิบดี

๕๑๐/๒๕๔๔ (I)

ชื่อโครงการ ผลของโปรแกรมพัฒนาศักยภาพการดูแลตนเองต่อพฤติกรรมดูแลตนเอง
และภาวะสุขภาพของเด็กวัยเรียน โรค ไข้น้ำสออักเสบ

เลขที่โครงการ/รหัส ID ๐๕-๔๔-๐๒ ย

ชื่อหัวหน้าโครงการ นางสาวณิมพร เพ็ชรรัตน์

ที่ทำงาน ภาควิชาพยาบาลศาสตร์
คณะแพทยศาสตร์ โรงพยาบาลรามธิบดี
มหาวิทยาลัยมหิดล

ขอรับรองว่าโครงการดังกล่าวข้างต้นได้ผ่านการพิจารณาเห็นชอบโดยสอดคล้องกับแนว
ปฏิบัติฯ เสด็จฯ จากคณะกรรมการจริยธรรมการวิจัยในคน คณะแพทยศาสตร์ โรงพยาบาลรามธิบดี

ลงนาม

(ศาสตราจารย์นายแพทย์กฤษฎา รัตน์โอฬาร)

ประธานกรรมการจริยธรรมการวิจัยในคน

ลงนาม

(ศาสตราจารย์นายแพทย์ประกิจ วาทีสาธกิจ)

คณบดีคณะแพทยศาสตร์ โรงพยาบาลรามธิบดี

วันที่รับรอง : ๑๕ กันยายน ๒๕๔๔

APPENDIX C

Background Characteristics Form

ส่วนที่ 1 ข้อมูลส่วนบุคคล (ของผู้ป่วย)

1. อายุ _____ ปี _____ เดือน

2. เพศ ชาย หญิง

3. การศึกษา _____

4. เป็นบุตรคนที่ _____

5. รายได้ของครอบครัว _____ บาทต่อเดือน

และเพียงพอสำหรับครอบครัวหรือไม่ ไม่เพียงพอ พอใช้เดือนต่อเดือน พอใช้และมีเหลือเก็บบ้าง

6. การศึกษาของบิดาและมารดา หรือผู้ดูแล (ถ้ามี)

บิดา

มารดา

ผู้ดูแล (ถ้ามี) เกี่ยวข้องเป็น _____

 ประถมศึกษาหรือต่ำกว่า ประถมศึกษาหรือต่ำกว่า ประถมศึกษาหรือต่ำกว่า มัธยมศึกษา มัธยมศึกษา มัธยมศึกษา ต่ำกว่าปริญญาตรี ต่ำกว่าปริญญาตรี ต่ำกว่าปริญญาตรี ปริญญาตรีหรือสูงกว่า ปริญญาตรีหรือสูงกว่า ปริญญาตรีหรือสูงกว่า

7. ขณะป่วยครั้งนี้หนูมีอาการข้อใดบ้าง

.
.
.

11. ผลตรวจร่างกายโดยแพทย์ (จากแฟ้มบันทึกประวัติเจ็บป่วย)

 การส่องจมูก พบว่า.....
..... การ x-ray พบว่า (บันทึกได้มากกว่า 1 ข้อ) frontal sinuses ethmoid sinuses sphenoid sinuses maxillary sinuses pansinusitis อื่นๆ.....

การตรวจอื่นๆ (ระบุ) พบว่า.....

Health Status Questionnaire

คำชี้แจง 1) มีข้อคำถามทั้งหมด 7 ข้อ ให้พิจารณาทีละข้อ แต่ละข้อให้ทำเครื่องหมาย X ลงบนวงกลม
ซึ่งมีสีแดง ● หรือสีน้ำเงิน ● ตามจำนวนที่หนูรู้สึกว่าตรงกับความรุนแรงของอาการของหนูในวันนี้

2) ตัวเลือกวงกลม เริ่มตั้งแต่

วงกลมที่ไม่มีสีแดง คือ ○ หรือ ○ จำนวน 1 วงกลม หมายถึง ไม่มีอาการนั้น

วงกลมที่มีสีแดงคือ ● หรือสีน้ำเงิน ● จำนวน 1 วงกลม หมายถึง มีอาการน้อยที่สุด

วงกลมจำนวนมากขึ้น หมายถึง มีอาการมากขึ้นตามลำดับ สูงสุด คือ

วงกลมจำนวน 5 วงกลมคือ ●●●●● หรือ ●●●●● หมายถึง มีอาการมากที่สุด













3) ต้องการให้ทำแบบสอบถามนี้ 2 ครั้ง วันนี้ทำเป็นครั้งแรกใช้ตัวเลือกวงกลมสีแดง ●

วันนัดตรวจครั้งต่อไปทำเป็นครั้งที่ 2 ใช้ตัวเลือกวงกลมสีน้ำเงิน ●













คำตอบแต่ละข้อไม่มีถูกหรือผิด คำตอบที่ถูกต้องที่สุด คือคำตอบที่ตรงกับอาการของหนูจริงๆ เท่านั้น

1. น้้ำมูก

ก. น้้ำมูกมีมากเท่าไร

					
ไม่มีเลย	มีเล็กน้อย				มากที่สุดจนสั่งไม่หมด
					
ไม่มีเลย	มีเล็กน้อย				มากที่สุดจนสั่งไม่หมด

7) วันนี้หนูคิดว่าสุขภาพของหนูเป็นอย่างไร

					
แข็งแรงดี	ป่วยเล็กน้อย				ป่วยหนัก
					
แข็งแรงดี	ป่วยเล็กน้อย				ป่วยหนัก

Self-care Behaviors Questionnaire

คำชี้แจง แบบสอบถามนี้มีวัตถุประสงค์เพื่อประเมินพฤติกรรมการดูแลตนเองของเด็กวัยเรียน โรคไข้น้ำสออักเสบ
โปรดทำเครื่องหมาย ✓ ลงในช่องที่แสดงถึงการกระทำที่หนูได้ทำจริงในเรื่องต่างๆ ที่เกี่ยวกับการ
ดูแลตนเองเมื่อเป็น โรคไข้น้ำสออักเสบ

คำถามทั้งหมดมีจำนวน 25 ข้อ ให้พิจารณาทีละข้อ แล้วเลือกคำตอบที่ตรงกับการกระทำของหนูมากที่สุด
คำตอบแต่ละข้อไม่มีถูกหรือผิด คำตอบที่ถูกต้องที่สุดคือคำตอบที่ตรงกับการกระทำของหนูจริงๆเท่านั้น

ความหมายของคำตอบ

- ปฏิบัติเป็นประจำ หมายถึง ทำเหตุการณ์นั้นทุกครั้ง หรือ ทำทุกวันตลอด 7 วันใน 1 สัปดาห์
- ปฏิบัติบ่อยครั้ง หมายถึง ทำเหตุการณ์นั้นเกือบทุกครั้ง หรือ ทำ 4-6 วันใน 1 สัปดาห์
- ปฏิบัติน้อยครั้ง หมายถึง ทำเหตุการณ์นั้นบางครั้ง หรือ ทำ 1-3 วันใน 1 สัปดาห์
- ไม่เคยปฏิบัติ หมายถึง ไม่เคยทำเหตุการณ์นั้นเลยสักครั้ง หรือ ไม่ได้ทำเลยใน 1 สัปดาห์
- ไม่พบเหตุการณ์ หมายถึง ไม่พบเหตุการณ์นั้นเลย

ข้อคำถาม	การปฏิบัติ				ไม่พบ เหตุการณ์
	เป็นประจำ	บ่อยครั้ง	น้อยครั้ง	ไม่เคย ปฏิบัติ	
1) หนูล้างจมูกด้วยน้ำเกลือในตอนเช้า เมื่อน้ำมูก หรือแน่นจมูก					
2) หนูล้างจมูกด้วยน้ำเกลือในตอนเย็นเมื่อ มีน้ำมูก หรือแน่นจมูก					
.					
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24) หนูแปรงฟันตอนกลางคืน					
25) หนูออกกำลังกายหรือเล่นกีฬา					



Table 12. Comparison the mean and standard deviation of health status scores between pretest and posttest in the control and the experimental group by paired t-test

Health status scores	N	Mean	SD	df	p
Control group (n=20)					
Pretest	20	12.55	5.79	19	.03
Posttest	20	8.80	7.24		
Experimental group(n=20)					
Pretest	20	14.35	7.13	19	.000
Posttest	20	5.45	4.87		

Table 13. The mean and of pretest and posttest item score of self- care behaviors between control (normal letters) and experimental group (italic letters).

	Pretest										posttest											
	Mean		Always		Often		Sometimes		Never		Mean		Always		Often		Sometimes		None			
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Self-care behaviors																						
(items in aspect)																						
Follow medication treatment																						
1.	Doing nasal wash in the morning.	2.00	5	25	2	10	7	35	6	30	2.00	5	25	2	10	7	35	6	30	2.00	5	25
		<i>1.00</i>	<i>16</i>	<i>80</i>	<i>4</i>	<i>20</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.80</i>	<i>16</i>	<i>80</i>	<i>4</i>	<i>20</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.80</i>	<i>16</i>	<i>80</i>
2.	Doing nasal wash in the evening.	1.85	3	15	2	10	2	10	13	65	2.30	6	30	4	20	6	30	4	20	2.30	6	30
		<i>2.15</i>	<i>3</i>	<i>15</i>	<i>5</i>	<i>25</i>	<i>3</i>	<i>15</i>	<i>9</i>	<i>45</i>	<i>3.55</i>	<i>14</i>	<i>70</i>	<i>3</i>	<i>15</i>	<i>3</i>	<i>15</i>	<i>0</i>	<i>0</i>	<i>3.55</i>	<i>14</i>	<i>70</i>
3.	Blowing the nasal discharge	1.75	10	50	5	25	5	25	0	0	2.60	8	40	6	30	6	30	0	0	2.60	8	40
		<i>2.10</i>	<i>9</i>	<i>45</i>	<i>5</i>	<i>25</i>	<i>5</i>	<i>25</i>	<i>1</i>	<i>5</i>	<i>3.60</i>	<i>13</i>	<i>65</i>	<i>6</i>	<i>30</i>	<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>3.60</i>	<i>13</i>	<i>65</i>
4.	Doing nasal spray as prescribed.	3.25*	1	16.7	2	33.3	2	33.3	1	16.7	3.10*	5	50	2	20	3	30	0	0	3.10*	5	50
		<i>3.10*</i>	<i>2</i>	<i>22.2</i>	<i>7</i>	<i>78.8</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.84*</i>	<i>16</i>	<i>84.2</i>	<i>3</i>	<i>15.8</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.84*</i>	<i>16</i>	<i>84.2</i>
5.	Forget eating medicine as prescribed.	2.50	4	20	4	20	6	30	6	30	3.20	2	10	6	30	9	45	3	15	3.20	2	10
		<i>3.22</i>	<i>0</i>	<i>0</i>	<i>5</i>	<i>25</i>	<i>7</i>	<i>35</i>	<i>8</i>	<i>40</i>	<i>3.70</i>	<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>3</i>	<i>15</i>	<i>16</i>	<i>80</i>	<i>3.70</i>	<i>1</i>	<i>5</i>
6.	Observing sinusitis complication.	3.18*	8	47.1	6	35.3	1	5.9	2	11.8	3.57*	9	64.3	4	28.6	1	7.1	0	0	3.57*	9	64.3
		<i>3.16*</i>	<i>10</i>	<i>52.6</i>	<i>3</i>	<i>15.8</i>	<i>5</i>	<i>26.3</i>	<i>1</i>	<i>5.3</i>	<i>3.67*</i>	<i>11</i>	<i>73.3</i>	<i>3</i>	<i>20</i>	<i>1</i>	<i>6.7</i>	<i>0</i>	<i>0</i>	<i>3.67*</i>	<i>11</i>	<i>73.3</i>
7.	Asking for sinusitis information.	1.50	0	0	3	15	4	20	13	65	1.90	4	20	2	10	2	10	12	60	1.90	4	20
		<i>2.30</i>	<i>7</i>	<i>35</i>	<i>2</i>	<i>10</i>	<i>1</i>	<i>5</i>	<i>10</i>	<i>50</i>	<i>2.40</i>	<i>6</i>	<i>30</i>	<i>3</i>	<i>15</i>	<i>4</i>	<i>20</i>	<i>7</i>	<i>35</i>	<i>2.40</i>	<i>6</i>	<i>30</i>
8.	Keeping appointment	3.50	14	70	2	10	4	20	0	0	3.45	14	70	3	15	1	5	2	10	3.45	14	70
		<i>3.80</i>	<i>17</i>	<i>85</i>	<i>2</i>	<i>10</i>	<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>3.95</i>	<i>19</i>	<i>95</i>	<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.95</i>	<i>19</i>	<i>95</i>	

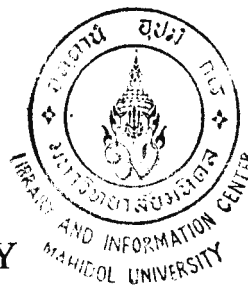
* = This mean calculated by omitted the mothers who answered "no situation"

Table 13. (Continued) The mean and of pretest and posttest item score of self-care behaviors between control (normal letters) and experimental group (italic letters).

Self-care behaviors (items in aspect)	Pretest										posttest										
	Mean		Always		Often		Sometimes		Never		Mean		Always		Often		Sometimes		None		
	N	%	n	%	n	%	n	%	n	%	Mean	n	%	n	%	n	%	n	%	n	%
Avoidance of predisposing factors																					
1. Drinking cool water or ice.	2.20	7	35	5	25	5	25	3	15	2.15	7	35	3	15	10	50	0	0	0	0	0
	<i>2.15</i>	<i>8</i>	<i>40</i>	<i>5</i>	<i>25</i>	<i>3</i>	<i>15</i>	<i>4</i>	<i>20</i>	<i>2.80</i>	<i>2</i>	<i>10</i>	<i>4</i>	<i>20</i>	<i>10</i>	<i>50</i>	<i>4</i>	<i>20</i>	<i>4</i>	<i>20</i>	
2. Playing with hairy pets.	2.95	4	20	3	15	3	15	10	50	2.55	4	20	6	30	5	25	5	25	5	25	
	<i>2.25</i>	<i>8</i>	<i>40</i>	<i>3</i>	<i>15</i>	<i>5</i>	<i>25</i>	<i>4</i>	<i>20</i>	<i>3.10</i>	<i>0</i>	<i>0</i>	<i>3</i>	<i>15</i>	<i>12</i>	<i>60</i>	<i>5</i>	<i>25</i>	<i>5</i>	<i>25</i>	
3. Playing with hairy dolls.	3.10	10	50	4	20	4	20	2	10	3.45	10	50	9	45	1	5	0	0	0	0	
	<i>3.05</i>	<i>12</i>	<i>60</i>	<i>1</i>	<i>5</i>	<i>3</i>	<i>15</i>	<i>4</i>	<i>20</i>	<i>3.40</i>	<i>10</i>	<i>50</i>	<i>8</i>	<i>40</i>	<i>2</i>	<i>10</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
4. Using mask when met anyparticle.	2.20	3	15	4	20	7	35	6	30	2.40	4	20	4	20	8	40	4	20	4	20	
	<i>2.35</i>	<i>4</i>	<i>20</i>	<i>4</i>	<i>20</i>	<i>7</i>	<i>35</i>	<i>5</i>	<i>25</i>	<i>3.25</i>	<i>9</i>	<i>45</i>	<i>8</i>	<i>40</i>	<i>2</i>	<i>10</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	
5. Using mask when met anysmoke.	2.60	5	25	8	40	1	5	6	30	2.40	4	20	4	20	8	40	4	20	4	20	
	<i>2.75</i>	<i>7</i>	<i>35</i>	<i>4</i>	<i>20</i>	<i>6</i>	<i>30</i>	<i>3</i>	<i>15</i>	<i>3.25</i>	<i>9</i>	<i>45</i>	<i>8</i>	<i>40</i>	<i>2</i>	<i>10</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	
6. Using mask when met strong anysmell.	2.35	4	20	5	25	5	25	6	30	2.45	4	20	5	25	7	35	4	20	4	20	
	<i>2.30</i>	<i>3</i>	<i>15</i>	<i>5</i>	<i>25</i>	<i>7</i>	<i>35</i>	<i>5</i>	<i>25</i>	<i>3.15</i>	<i>7</i>	<i>35</i>	<i>10</i>	<i>50</i>	<i>2</i>	<i>10</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	
7. Swimming or diving	2.90	4	20	3	15	4	20	9	45	3.00	1	5	5	25	7	35	7	35	7	35	
	<i>2.75</i>	<i>5</i>	<i>25</i>	<i>2</i>	<i>10</i>	<i>6</i>	<i>30</i>	<i>7</i>	<i>35</i>	<i>3.55</i>	<i>1</i>	<i>5</i>	<i>1</i>	<i>5</i>	<i>4</i>	<i>20</i>	<i>14</i>	<i>70</i>	<i>5</i>	<i>25</i>	
8. Getting blow through face when sleeping.	2.55	6	30	2	10	7	35	5	25	2.20	7	35	3	15	9	45	1	5	1	5	
	<i>3.10</i>	<i>1</i>	<i>5</i>	<i>4</i>	<i>20</i>	<i>7</i>	<i>35</i>	<i>8</i>	<i>40</i>	<i>3.50</i>	<i>1</i>	<i>5</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	<i>13</i>	<i>65</i>	<i>13</i>	<i>65</i>	

Table 13. (Continued) The mean and of pretest and posttest item score of self- care behaviors between control (normal letters) and experimental group (italic letters).

Self-care behaviors (items in aspects)	pretest						posttest														
	Mean		Always		Often		Sometimes		None		Mean		Always		Often		Sometimes		None		
	n	%	n	%	N	%	N	%	N	%	n	%	n	%	n	%	n	%	n	%	
Prevention of respiratory tract infection																					
1. Keeping warm even cool weather.	3.35	10	50	7	35	3	15	0	0	0	3.25	10	50	5	25	5	25	5	25	0	0
	<i>3.35</i>	<i>11</i>	<i>55</i>	<i>5</i>	<i>25</i>	<i>4</i>	<i>20</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>3.55</i>	<i>14</i>	<i>70</i>	<i>3</i>	<i>15</i>	<i>3</i>	<i>15</i>	<i>3</i>	<i>15</i>	<i>0</i>	<i>0</i>
2. Playing with a person who have cold symptom.	3.00	2	10	3	15	8	40	7	35	2.90	1	5	5	3	15	13	65	3	15	3	15
	<i>3.10</i>	<i>1</i>	<i>5</i>	<i>3</i>	<i>15</i>	<i>9</i>	<i>45</i>	<i>7</i>	<i>35</i>	<i>3.20</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>5</i>	<i>25</i>	<i>6</i>	<i>30</i>	<i>6</i>	<i>30</i>	<i>9</i>	<i>45</i>
3. Going to crowded area.	2.65	4	20	5	25	5	25	6	30	2.60	3	15	4	20	11	55	2	10	2	10	
	<i>2.65</i>	<i>2</i>	<i>10</i>	<i>6</i>	<i>30</i>	<i>9</i>	<i>45</i>	<i>3</i>	<i>15</i>	<i>3.15</i>	<i>1</i>	<i>5</i>	<i>1</i>	<i>5</i>	<i>12</i>	<i>60</i>	<i>6</i>	<i>30</i>	<i>6</i>	<i>30</i>	
Appropriately general self-care																					
1. Eating food in meat group.	3.60	13	65	6	30	1	5	0	0	3.85	17	85	3	15	0	0	0	0	0	0	0
	<i>3.55</i>	<i>14</i>	<i>70</i>	<i>3</i>	<i>15</i>	<i>3</i>	<i>15</i>	<i>0</i>	<i>0</i>	<i>3.85</i>	<i>17</i>	<i>85</i>	<i>3</i>	<i>15</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
2. Eating food in fruit or vegetable group.	3.50	12	60	6	30	2	10	0	0	3.30	9	45	8	40	3	15	0	0	0	0	0
	<i>3.10</i>	<i>7</i>	<i>35</i>	<i>8</i>	<i>40</i>	<i>5</i>	<i>25</i>	<i>0</i>	<i>0</i>	<i>3.40</i>	<i>11</i>	<i>55</i>	<i>6</i>	<i>30</i>	<i>3</i>	<i>15</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
3. Drinking at least 8 glass of water / day.	2.80	7	35	5	25	5	25	3	15	2.55	5	25	6	30	4	20	5	25	5	25	
	<i>2.35</i>	<i>6</i>	<i>30</i>	<i>2</i>	<i>10</i>	<i>5</i>	<i>25</i>	<i>7</i>	<i>35</i>	<i>3.00</i>	<i>6</i>	<i>30</i>	<i>9</i>	<i>45</i>	<i>4</i>	<i>20</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	
4. Teeth brushing in the morning	3.50	15	75	1	5	3	15	1	5	3.45	11	55	7	35	2	10	0	0	0	0	
	<i>3.85</i>	<i>17</i>	<i>85</i>	<i>3</i>	<i>15</i>					<i>3.95</i>	<i>19</i>	<i>95</i>	<i>1</i>	<i>5</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
5. Teeth brushing at night.	2.90	7	35	7	35	4	20	2	10	2.90	9	45	3	15	5	25	3	15	3	15	
	<i>3.50</i>	<i>15</i>	<i>75</i>	<i>1</i>	<i>5</i>	<i>3</i>	<i>15</i>	<i>1</i>	<i>5</i>	<i>3.75</i>	<i>17</i>	<i>85</i>	<i>1</i>	<i>5</i>	<i>5</i>	<i>25</i>	<i>5</i>	<i>25</i>	<i>0</i>	<i>0</i>	
6. Exercise or play sport.	3.10	10	50	3	15	6	30	1	5	3.25	8	40	9	45	3	15	0	0	0	0	
	<i>3.30</i>	<i>11</i>	<i>55</i>	<i>5</i>	<i>25</i>	<i>3</i>	<i>15</i>	<i>1</i>	<i>5</i>	<i>3.25</i>	<i>9</i>	<i>45</i>	<i>7</i>	<i>35</i>	<i>4</i>	<i>20</i>	<i>4</i>	<i>20</i>	<i>0</i>	<i>0</i>	



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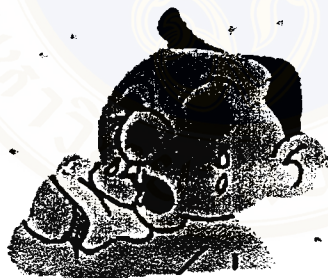
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คู่มือคนเก่ง



เมื่อหนูเป็น

ไซ้ส้อกเสบ



หนูต้องทำอะไร ???

รู้จัก... ไช้สน... หรือจ้ง?

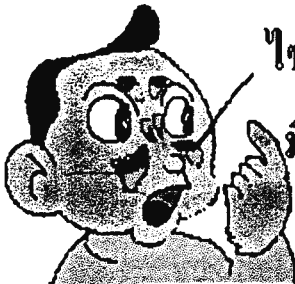
ไชน้สน คือโพรงอากาศที่อยู่แถวข้างจมูกมีหลายแห่ง
คือ บนหน้าผาก ระหว่างตา 2 ข้าง แก้มข้างจมูก
และข้างในด้านหลังช่องจมูก



นี่ไงละ.. ไชน้สน

ไชน้สนอักเสบ เกิดจากเชื้อโรคเข้าไปในไชน้สนทำให้
น้ำมูกกลายเป็นหนองสีเข้ขวงเหลืองอยู่ข้างในไชน้สน
น้ำมูกจะเหนียวทำให้ไหลออกมาที่ช่องจมูกไม่คงได้
เนื้อเยื่อในไชน้สนก็จะอักเสบ บวมแดง

อาจจะเจ็บหรือตื้อๆที่แถวจมูกและหายใจไม่คงสะดวก



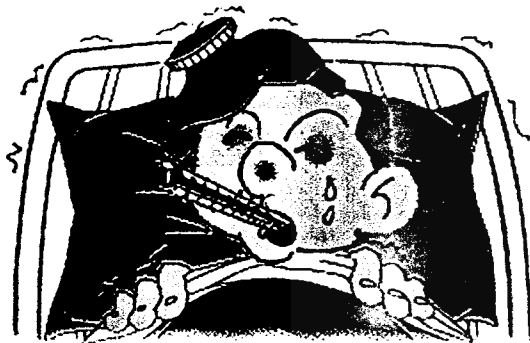
ไชน้สนอักเสบ

มีหนองด้วย

อาการของไฉนส์อักเสบ คือ...



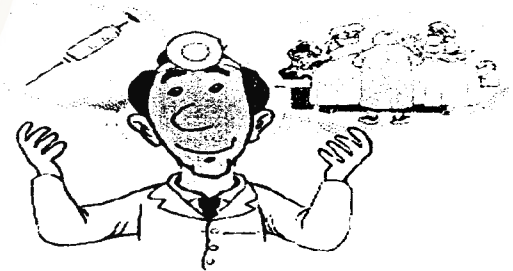
- ☆ น้ำมูกเหนียว เป็นหนองสีเขียวเหลือง อาจไหลลงจมูก หรือลงคอ
- ☆ แน่นจมูก หายใจไม่ค่อยสะดวกต้องหายใจทางปาก
- ☆ ไอมาก
- ☆ ปวดหัวหรือไปหน้าบริเวณไซนัส มักเป็นมากรตอนเช้า หรือเวลาก่อนนอน
- ☆ ได้กลิ่นเหม็นในจมูกหรือในปาก หรือดมอะไรไม่ได้กลิ่นเลย
- ☆ บวมรอบๆตา
- ☆ มีไข้ คลื่นไส้ อาเจียน



การรักษา

1. กินยาแอสไพรินตามแพทย์สั่ง
2. ล้างจมูกวันละ 2 ครั้ง เช้าและก่อนนอน หรือทุกครั้งที่ได้จมูก น้ำมูกเหนียวขึ้น

- * แต่ถ้ากินยาไม่ครบ หรือไม่ติดต่อกันตามที่คุณหมอสั่ง เชื้อโรคอาจติดอง ทำให้รักษาไม่หายอาจเกิดโรคแทรกซ้อน และ
 - ต้องเปลี่ยนไปใช้ยาราคาแพง และกินนานขึ้น
 - ต้องใช้ยาฉีด
 - ต้องเจาะหรือผ่าตัดเพื่อล้างโพรงไซนัส



โรคแทรกซ้อน

- ◆ เชื้อโรคลามไปที่ช่องหูทำให้หูอักเสบ
- ◆ เกิดฝีรอบๆดวงตา ตาแดง ปวดหัว
- ◆ เชื้อโรคลามเข้าสมอง ทำให้สมองอักเสบ
- ◆ เป็นปอดอักเสบและทำให้อาการหอบเหนื่อยรุนแรงขึ้น

สิ่งที่ทำให้เกิดไข้อันอักเสบได้บ้างหรือ

ทำให้อาการรุนแรงขึ้น

☆ เป็นหวัด ตัดจุกนานๆ สูดหรือสูบน้ำมูกแรงๆ



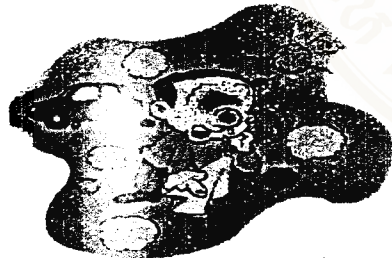
เด็บบีบหัวทำให้สำลักไหล

☆ แพ้ขนสัตว์ เล็งง เช่น หมา แมว
กระต่าย นก แพ้ขนตุ๊กตาไรฝุ่น นุ่น
หญ้า เกสรดอกไม้ เชื้อรา

ซากแมลงสาบ

☆ อากาศเปลี่ยนแปลงเร็ว เช่น จากร้อนไปเย็น เย็นไปร้อน
หรือ ร่างกายถูกความเย็นหรือ เป็งกนานๆ เช่น ถูกฝน
วางน้ำ แล้วไม่รีบเปลี่ยนเสื้อผ้า

☆ สิ่งที่เราเจอเกือบจุก
เช่นควันบุหรี่ ควันไฟ
ท่อไอเสีย กลิ่นฉุนๆ
จากพริก พริกไทย กลิ่นสี
น้ำหอม แก๊ส สารเคมี



ไข้อัน...ควันยาจุก...แดดร้อน...
น้ำมูกก็ไหล...ไซ้ตักปัด...

- ☆ สำลักน้ำเข้าปากหรือจุก เวลาวางน้ำหรือดำนน้ำ
- ☆ อากาศเย็นจัดและแห้ง เช่นในห้องแอร์ หรือ ในฤดูหนาว
- ☆ ดื่มน้ำเย็น โดงเฉพา: ๓๐นเป็นหวัด

😊 หนูจะหายเร็วขึ้น ถ้า . . .

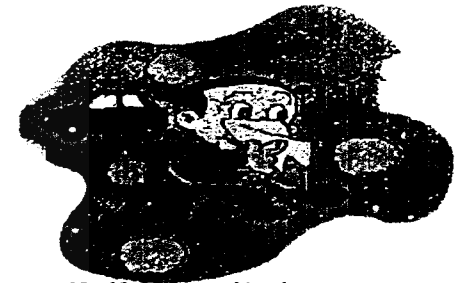
- ✓ ใช้น้ำเกลือล้างจุก ทุกเช้าและก่อนนอน
- ✓ กินยามาเชื้อโรคทุกวันจนกว่าจะหมด
- ✓ ใช้ยาพ่นจุกและกินยาตามที่คุณหมอสั่ง
- ✓ สูบน้ำมูก และไอขับเสมหะได้ถูกต้อง



X หลีกเล็งงกลิ่นบุหรี่ กลิ่นสี
น้ำหอม แก๊ส ควันไฟ ท่อไอเสีย
และสิ่งที่แพ้ เช่น ขนสัตว์ เล็งง
(หมา แมว กระต่าย นก) ขนตุ๊กตา
นุ่น ไรฝุ่น เกสรดอกไม้ หญ้า เชื้อรา

หากหลีกเล็งงไม่ได้

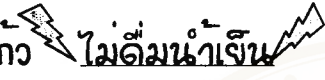
ให้ใช้ผ้าปิดจุกทุกครั้ง



หลบไม่ได้ก็เอาผ้าปิดจุกดีกว่า

- X ไม่เข้าไปใกล้หรือเล่นกับคนที่ เป็นหวัด ไอ จามหรือ
ไปสถานที่ที่มีคนมาก เช่น ศูนย์การค้า โรงพยาบาล
- X หลีกเล็งงอากาศที่เปลี่ยนแปลงเร็ว เช่น จากเย็นไปร้อน
หรือร้อนไปเย็น

หนูจะหายใจเร็วขึ้น ถ้า . . .

- ✓ ระวังน้ำเข้าจมูกและปากเวลาดื่มน้ำหรือวางน้ำ
- ✓ ดื่มน้ำอุ่นมากๆ อย่างน้อยวันละ 8-10 แก้ว  ~~ไม่ได้ดื่มน้ำเย็น~~
- ✓ รักษาร่างกายให้อบอุ่น ถ้าอากาศเย็นให้ใส่เสื้อผ้าหนาๆ
- ✓ มาตรวจตามที่คุณหมอนัดทุกครั้ง
- ✓ รักษาร่างกายให้แข็งแรง โยง . . ออกกำลังกายและเล่นกีฬาทุกวัน . . นอนหลับพักผ่อนให้เพียงพอวันละ 8-10 ชั่วโมง . . กินข้าว 3 มื้อและกินครบ 5 หมู่ทั้งเนื้อสัตว์ ไข่ นม ผัก และผลไม้ทุกวัน . . แปรงฟันทุกเช้าและก่อนนอน



อีอี..ออกกำลังกายทุกวัน
ร่างกายแข็งแรงจะ

คำแนะนำวิธีล้างจมูก



1. เติรงม่น้ำเกลือที่ไม่เจือสีแ้วแกวเล็กน้อยแล้วคูลงในขวดจุกขนาด 5 ซีซี และเติรงม่นะดาศทิตชูหรือผ้าเช็ดหน้า 1 ผืน
2. นอนหรือนั่งในท่าที่รู้สึกสบาย เบงหน้าเล็กน้อย
3. โสปลางหลอลจึองงาเข้าไปในช่องจุกข้างใดข้างหนึ่ง
4. คอองๆด้นน้ำเกลือเข้าไปในช่องจุกซ้าๆ ครั่งละ 0.5 - 1 ซีซี พร้อมก้บกลืนลงคอตามจ้งหวะ:ด้น-หญุด-กลืนจนหมดหลอด
5. สลับทำก้บช่องจุกอีกข้างด้วยวิธีเดีจวกัน
6. ถ้าจึนมากจึนอาจเพิ่มปริมาณน้ำเกลือที่ด้นในจุกแต่ละครั่งมากจึนเท่าที่สาารถจจะทนได้
7. สั่งน้ำจุกเบาๆ ทีละข้าง โสกระดาศทิตชูหรือผ้าเช็ดหน้า แล้วสั่งเกตดูลักษณะน้ำจุก หากจ้งมีมากและเหนีจวจึนหรือค้อจจุกมาก ให้ทำ ซ้าถ้งแต่ซ้อ / อีกครั่ง

ล้างจุกทุกเช้าและก่อนนอน วันละ 2 ครั่ง

☆☆หากน้ำจุกน้อยลง ไม่เหนีจว ไม่ค้อจจุก ไม่จึบถ้อ

บริเวณไซนัส จึงทำน่องลงเฉพา:เมื่อน้ำจุกมาก☆☆

หนูจะใช้ฟันจุมูกอย่างไรมีดี ???

> ก่อนฟันจุมูก หนูต้องล้างจุมูกด้วยนะ >

★ หนูสามารถใช้ฟันจุมูกได้ตามคำแนะนำของคุณหมอ ★
การฟันจุมูกทำให้เหงาใจโล่งสะดวก ไม่คัดจุมูกหรือแน่นจุมูก
วิธีฟันจุมูก คือ

1. เช่างาหลอดจากรอกก่อนถือไว้ตรงหน้า
2. ถ้างปลาจหลอดจางให้ชี้ขึ้นไปท่หัวตา
3. สอดปลาจหลอดจางเข้าไปเล็กน่อง
ในรูจุมูกข้างหนึ่ง
4. กดฟันจาง 1 ครั้ง พร้อมกับสูดเหงาใจแรงๆ
5. ทำซ้ำกับรูจุมูกอีกข้าง จะรู้สึทว่าจุมูกโล่งดี



หนูควรใช้จางนครบตามท่คุณหมอสั่ง



แต่หากหนูมีอาการแพ้งา คือ มีผื่นแดงขึ้นตามตัว
ริมฝีปากชา หรือ ใจสั้น เหงาใจล่ำบาก

ควรรีบตามคุณหมอสหรือพ้งาบาลทันท่

หากหนูมีอาการผิดปกติ คือ ปวดหัวมาก ไข้สูง อาเจ็จน
เห็นภาพซ้อน คอแข็ง หรือโบหน้าบวมแดง ปวดมาก

ควรรีบมาพคณหมอสทันท่ก่อนวันนัค

หนูรูไทม ??? ไออย่างไรจึงถูกถออง

★ การไอท่ถูกถออง จะช่วงขบเสมหะออกได้ดี ★

1.2.3. ไอ..คัก คัก วิธีทำ เหงาใจเข้าลึกๆ กลั้นเหงาใจไว้ลัคครุ
ไอถูกถอองอย่างนี้หายเร็วแน่ นับ.. 1..2..3 แล้วไอออกมาถิดๆกัน



★ ควรดื่มน้ำมากๆ อย่งานน่องวันละ
8 ถึง 10 แก้ว ★

★ ช่วงงให้ไอขบเสมหะออกมาได้ข่างขึ้น ★



ไขมันอิ่มันเสบรักษาหางไต้่าง
หากหนูไต้ปฏิบัติตามคำแนะนำ
ในคู้มือนี้

หนูจะหางเร็ว มีสุขภาพแข็งแรง



ขอให้คนแก่งมีสุขภาพแข็งแรงเร็วจันะคะ

จัดทำโดย น.ส. กนิมพร เพ็ชรรัตน์ นักศึกษาปริญญาโท
ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์ รพ. รามาธิบดี

ใช้เพื่อประกอบงานวิจัยเรื่องผลของโปรแกรมพัฒนาตักยภาพการดูแลตนเอง
ต่อพฤติกรรมกรรมการดูแลตนเองและภาวะสุขภาพของเด็กวัยเรียนโรคไขมันอิ่มันเสบ
อาจารย์ที่ปรึกษา ผศ.ดร. จริยา วิกยะศุกร

รศ.พญ. อรุณวรรณ พุกทธิพันธ์

คณะผู้ทรงคุณวุฒิ บพ. สุวัฒน์ เบญจพลพิทักษ์

รศ. วิไล สีสุวรรณ

ผศ. กาญจนา ทิริเจริญวงศ์

อ. เรณู พุกบุญมี

อ. เสริมตรี สันตติ