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THE EFFECTS OF TEACHING PROGRAM ON KNOWLEDGE AND SELF-CARE BEHAVIORS IN SCHOOL-AGE CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Acute lymphoblastic leukemia in childhood is a chronic life-threatening disease, which should be cared and cured for continuously. The children always suffer from the complications of treatment and symptoms of the disease. Correct self-care behaviors of the patient provide effective treatment and help them to have a good quality of life. The purposes of this quasi- experimental research were to study the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia. The forty samples of the study were the leukemic children 7-10 years old, at Siriraj Hospital and Chulalongkorn Hospital. All samples were divided into 2 groups: the control group and the experimental group. The instruments used in this study were the teaching program plan and the handbook for leukemic children. The instruments for data collection consisted of demographic data form structured interviews of knowledge about leukemic children and interviews about self-care behaviors of school-age children with acute lymphoblastic leukemia. The data was analyzed using percentage, mean, t-test and ANCOVA.

The results were as follow: the group of school-age children with acute lymphoblastic leukemia after receiving the teaching program demonstrated statistically significantly higher scores on knowledge and self-care behaviors than before the teaching program. ($P < .001$) The group of school-age children with acute lymphoblastic leukemia after received teaching program demonstrated statistically significantly higher scores on knowledge and self-care behaviors than the group who received routine care. ($P < .001$)

These findings support the hypothesis that teaching program is effective to increase knowledge and self-care behaviors for school-age children. Furthermore the program is able to be applied for other illnesses and done in a group form.

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กาญจนา ครองธรรมชาติ : ผลของโปรแกรมการสอนต่อความรู้และพฤติกรรมการดูแลตนเองของผู้ป่วยเด็กวัยเรียนโรคมะเร็งเม็ดเลือดขาว (THE EFFECTS OF TEACHING PROGRAM ON KNOWLEDGE AND SELF-CARE BEHAVIORS IN SCHOOL-AGE CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA) คณะกรรมการควบคุมวิทยานิพนธ์: นงลักษณ์ จินตนาดิลก, พย.ด. , กอบกุล พันธุ์เจริญวรกุล, Ph.D. (Nursing), ศศิธร วรรณพงษ์, วท.ม. (สรีรวิทยา) 96 หน้า. ISBN 974 – 664 – 141 -7

มะเร็งเม็ดเลือดขาวในเด็ก เป็นโรคเรื้อรังที่คุกคามต่อชีวิตผู้ป่วย ต้องการการดูแลรักษาอย่างต่อเนื่อง จากสภาวะของโรคและผลข้างเคียงจากการรักษามักจะทำให้ผู้ป่วยไม่สุขสบาย เกิดความทุกข์ทรมาน การดูแลตนเองอย่างถูกต้องจะมีผลทำให้การรักษามีประสิทธิภาพ และผู้ป่วยจะมีคุณภาพชีวิตที่ดีขึ้น

การศึกษาครั้งนี้ เป็นการวิจัยกึ่งทดลอง มีวัตถุประสงค์เพื่อศึกษาถึงโปรแกรมการสอน ต่อความรู้และพฤติกรรมการดูแลตนเองของผู้ป่วยเด็กวัยเรียนโรคมะเร็งเม็ดเลือดขาว กลุ่มตัวอย่างคือ ผู้ป่วยเด็กโรคมะเร็งเม็ดเลือดขาว อายุ 7-10 ปี จำนวน 40 ราย เลือกแบบเฉพาะเจาะจง ตามคุณสมบัติที่กำหนดไว้ จากโรงพยาบาลศิริราช และโรงพยาบาลจุฬาลงกรณ์ โดย แบ่งเป็นกลุ่มควบคุม 20 ราย และกลุ่มทดลอง 20 ราย ใช้แผนการสอนผู้ป่วยเด็กโรคมะเร็งเม็ดเลือดขาวและคู่มือมะเร็งเม็ดเลือดขาวในเด็ก เก็บรวบรวมข้อมูลโดยใช้แบบสัมภาษณ์ข้อมูลส่วนบุคคล แบบสัมภาษณ์ความรู้โรคมะเร็งเม็ดเลือดขาวในเด็ก และแบบสัมภาษณ์พฤติกรรมการดูแลตนเองของผู้ป่วยเด็กวัยเรียนโรคมะเร็งเม็ดเลือดขาว นำมาวิเคราะห์ข้อมูล หาร้อยละ ค่าเฉลี่ย ค่าที และ ANCOVA ผลการวิจัย พบว่า ผู้ป่วยเด็กวัยเรียนโรคมะเร็งเม็ดเลือดขาวกลุ่มที่ได้รับโปรแกรมการสอน หลังได้รับโปรแกรมการสอนมีความรู้และพฤติกรรมการดูแลตนเอง ดีกว่า ก่อนได้รับโปรแกรมการสอนอย่างมีนัยสำคัญทางสถิติ $P < .001$ และผู้ป่วยเด็กวัยเรียนโรคมะเร็งเม็ดเลือดขาวกลุ่มที่ได้รับโปรแกรมการสอน มีความรู้และพฤติกรรมการดูแลตนเอง ดีกว่ากลุ่มที่ได้รับการสอนตามปกติอย่างมีนัยสำคัญทางสถิติ $P < .001$

ผลการวิจัยครั้งนี้สนับสนุนว่า โปรแกรมการสอนที่มีประสิทธิภาพนั้นจะช่วยพัฒนาให้ผู้ป่วยเด็กวัยเรียนมีความรู้และพฤติกรรมการดูแลตนเองให้ดียิ่งขึ้นและจะเป็นรูปแบบการสอนที่เหมาะสม นำไปประยุกต์ใช้กับผู้ป่วยเด็กโรคอื่นๆ และนำไปใช้ในการสอนแบบกลุ่มในผู้ป่วยโรคมะเร็งเม็ดเลือดขาว

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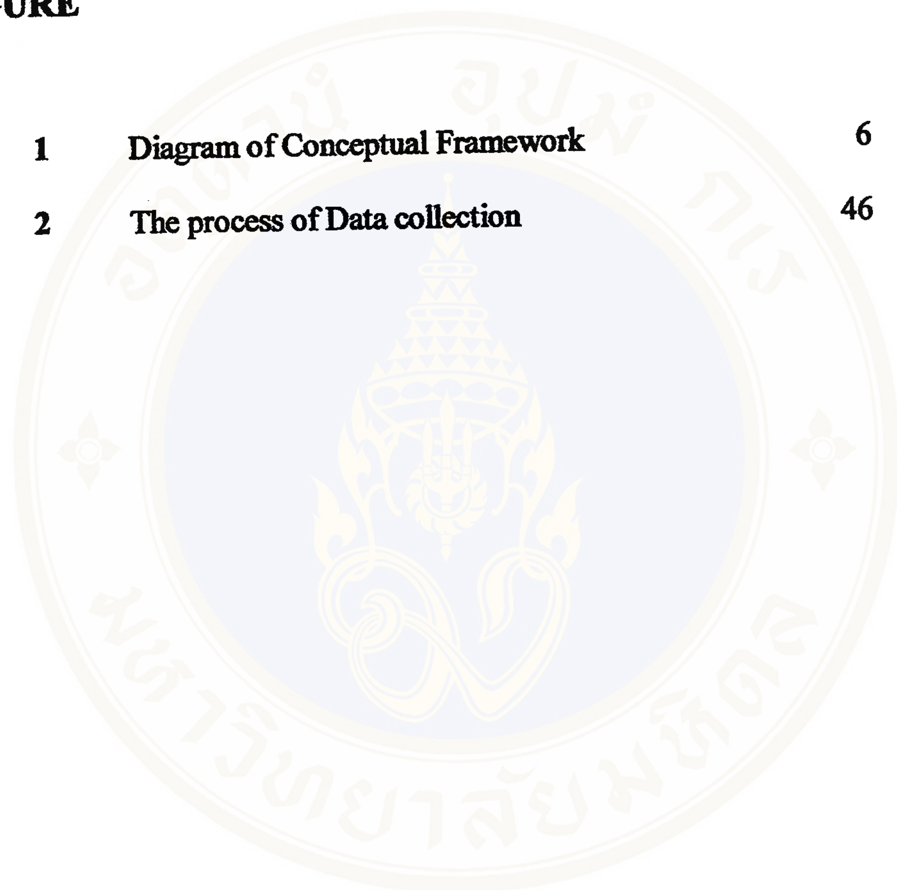

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Chapter I

Introduction

Background and Significance of the study

Cancer is the life-threatening disease for the patients. It is the third sequent leading cause of death in Thailand, nexted to heart disease and accident. There are 563,100 Americans are expected to die of cancer, more than 1,500 people a day. (Statistics of American Cancer Society, 1999) About 30 percent of malignancy in children are Acute Lymphoblastic Leukemia (ALL) which is the most common type of leukemia. It is a cancer of the blood and develops in bone marrow, the body tissue that produces blood cells. When leukemia develops, the body produces large numbers of immature white blood cells that look and act differently from normal cells. There are 2,000 new cases reported each year in the United State. (Rees, Goodman, & Billmore, 1993:185; Macdonald, Haller, & Mayer, 1995: 312; National Institutes of Health, 1999: 1) The statistic of Thailand in 1997 found that male and female death from ALL 892 persons, Male 480 and female 412, but not detailed in age. (Statistics of Thai Public Health.,1997) Similarly in Thailand, ALL is the most frequent malignancy in children. There are 256,and 259 cases at Siriraj Hospital and 201 cases at Chulalongkorn Hospital are the new children's cases of ALL between 1987-1991, 1993-1997 and 1998-1999 respectively. (Pediatric hematological Unit at Siriraj Hospital, 1998; Statistic of Chulalongkorn Hospital, 1999)

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The common symptoms of ALL include fever, chill, and other flu-like symptoms; weakness and fatigue, infection, loss of appetite, and/or weight loss, or lymhadenophaty, hepatomegaly splenomegaly; easy bleeding or bruising; tiny red spots under skin; swollen or bleeding gums and bone pain. (Panja Kulpong 1997:36; Memorial Sloan-Kettering Cancer Center, 1998:3)

There are 80 percentage of the child with ALL can be cured in 5 years with effective chemotherapy and radiation. (American Cancer Society 1998 cited in Haase , Maver, & Reaman,1998:822) During this treatment, they may have suffered from side effects of chemotherapy: for example, anorexia, nausea, vomiting, stomatitis , allopecia and the function of bone marrow is depressed: pale, thrombocytopenia, bleeding and frequent infection.(Lilley, 1990:252-253) Sixteen cases of leukemic children age 4 -13 years old undergoing chemotherapy of Praditha Sinswang's study in 1995. They have suffering from side effects of chemotherapy, such as allopecia 100%, stomatitis 93.75%, fever 93.75%, nausea and vomiting 87.5%, bleeding 56.25% thrombophebitis 25%, hematuria 12.5%, and constipation 12.5%. Neutrophrile being less than 1,500 cell/mm^3 , the children are in serious condition because of overwhelming infection. (Opportunistic infection) (Pilliteri, 1995:1363) While neutrophile being less than 1,000 cell/mm^3 ,almost all of ALL are infected. They are readmission of infection before follow up.(Sumithra Thongprasert, 1997: 37; Vinai Suwatti, 1998:1610) This problem is leading cause of death 70 percentage of leukemic children. (Panja Kulpong, 1997:54)

School-age children are gradually able to accept more responsibility for caring themselves about general hygiene and discomfort. (Thomson, 1995:510)

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Nurse should advise leukemic children who are chronic disease about knowledge of leukemia and self-care for correcting their perception and behaviors.

Self-care is the most important for leukemic children because they have been suffer from the complication during undergoing chemotherapy and their disease. So, Health team should teach, guide and counsel individuls and groups to help the children to maintain health. In addition, their mothers should be supported in caring their children.

Researcher thinks that teaching program will be effective by using

- interaction among researcher ,children and their mothers
- appropriate teaching media
- cooperation of children's mothers

From these reasons, the teaching program will be used with leukemic children to increased their knowledge and self care behaviors. And it will be the effective program to teach with their children.

Research Question

Is this teaching program appropriate to teaching the school age children with acute lymphoblastic leukemia for improving their knowledge and self-care behaviors?

Purpose of the study

1. To compare the scores of knowledge about leukemia and self-care behaviors of school-age children with ALL between before and after teaching program.

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2. To compare the scores of knowledge about leukemia between the group of school-age children with ALL who received teaching program and the group of school-age children with ALL who received routine care.

3. To compare the scores of self-care behaviors between the group of school age children with ALL who received teaching program and the group of school-age children with ALL who received routine care.

Conceptual Framework

This teaching program based on Orem's self-care, King's Interaction and teaching learning theory.

Orem (1991) defined as the universal self-care requisites, which are common to all human being during all stages of life cycle. The leukemic children are chronic illness who spends a long time to cure and care. Their lives are suffering from disease and complication of treatment. They do not go to school because of easy infection in the initial diagnosis. The strategies to help them to do their activities for effective self-care: general hygiene, nutrition, medication, rest, exercise, elimination and follow up.

King (1981) defined as Interaction focuses on the concerns of the client. It is important to build the relationship between nurse and client. Small talk is a technique to make a good relationship. The client to respect that the researcher can find the base of information. The data is planning for teaching and advising the self-care.

Health education for adult uses problem - center but health education for children uses content and media center for this intervention. It is easy to understand the content: leukemia in childhood can be cured and needed to continuous correct

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treatment. This teaching program can be practice. School-age children using activities for compliance such as tell the story, drawing, painting that they are enjoy and bring to practice.

This teaching program using media for the children. They can understand their disease and self-care. The process of teaching program has interaction by answering the question, painting at home and giving reward for them. In this process was under the assistance of their mothers to reviewed the previous learned knowledge with the handbook So, this program will bring a good attitude to them and should improve their knowledge and self-care behaviors.

Hypotheses

1. The group of school-age children with ALL who after receiving teaching program have higher scores of knowledge than before receiving teaching program.

2. The group of school-age children with ALL who after receiving teaching program have higher scores of self-care behaviors than before receiving teaching program .

3. The group of school-age children with ALL who after receiving teaching program have higher scores of knowledge than the group of school-age children with ALL who after receiving routine care.

4. The group of school-age children with ALL who after receiving teaching program have higher scores of self-care behaviors than the group of school-age children with ALL who after receiving routine care.

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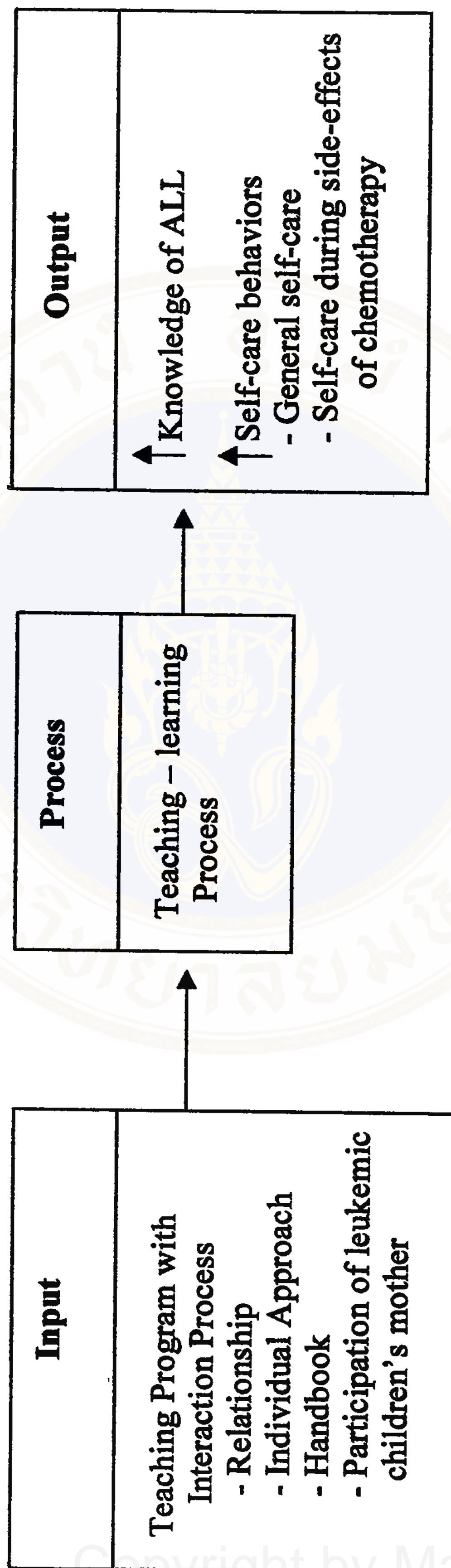

Figure 1 Diagram of Conceptual Framework

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Scope of the study

This study was conducted on school-age children with ALL who were follow up at Kumal 1 unit, Hematological Clinic, Pediatric Department of Siriraj Hospital and Hematological Clinic at Pho Bho Raw 9, Pediatric Department of Chulalongkorn Hospital, during May- December, 1999.

Definition of terms

Knowledge about leukemic children defined as characteristics, signs and symptom, treatment, side effect of chemotherapy, and self-care of children with ALL. They were measured by structured interviews of knowledge about leukemia developed by the researcher.

Self-care behaviors defined as activities of school-age children with ALL about general self-care and self-care during side effect of chemotherapy. They were measured by structured interviews of self- care behaviors for school-age children with ALL developed by the researcher. This interview divided into 2 parts:

1. General self-care behaviors are the activities in basic need of life style.

Self-cares in school-age children with ALL are:

- General hygiene
- Nutrition
- Medication
- Rest
- Exercise
- Elimination
- Follow up

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2. Self-care behaviors during side effect of chemotherapy are activities to relieves symptoms that are uncomfortable. Symptoms of complication of chemotherapy are

- Anorexia , nausea and vomiting
- Stomatitis
- Infection
- Anemia
- Alopecia
- Bleeding
- Diarrhea
- Constipation

Teaching program is teaching strategy or combination of strategies for particular learning. In this study, teaching program composes of the intervention protocol and handbook for leukemic children: knowledge and self-care behaviors.

The interventional protocol planning of teaching program has 3 interacting periods:

The first period, it composes of interaction among a child and his / her mother and a nurse (researcher) for building the relationship. Then, it continues teaching the program of knowledge and self-care behaviors of children with ALL. During teaching his / her mother is listening with him / her. Finally, the nurse gives a handbook for leukemic children: knowledge and self-care behaviors to the case. Case has homework to reading the content and painting the cartoon in the handbook. The

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mother is participation in this homework. They are granted an appointment within 2 weeks.

The second period is follow up by clarified the knowledge and self-care behaviors of the subject and evaluating his / her homework.

The third period is the last 2 weeks after the second period. When the researcher ended the protocol and conduct posttest.

Expected Outcomes and Benefits

This teaching program will be model for nurse or health team to teach the leukemic children and their mothers to improve knowledge and self-care behaviors. Furthermore, it will have an effective teaching media to used with school-age children with acute lymphoblastic leukemia.

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Chapter II

Review Literature

The purpose of this research is to study the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia. The researcher study to reviewed literature about cancer and related researches to guide this research.

1. Acute lymphoblastic leukemia in childhood.
2. Self-care behaviors of school-age children with acute Lymphoblastic leukemia
3. Teaching program.

Acute lymphoblastic leukemia in childhood

Acute lymphoblastic leukemia (ALL) is a malignant disorder of the blood in which there is uncontrolled proliferation of immature white blood cells in bone marrow and other tissue. There are several different types of leukemia, each type is based on the morphology of cells and the course of the disease; each type has a different prognosis and different characteristics.

ALL is the most common cancer in children, it accounts for one forth of all childhood cancers and approximate 75% of all cases of childhood leukemia.

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(Pui C-H, 1995 cited by Margolin & Poplack, 1997:409 ; Swartz, 1996:547-548; Panja Kulpong, 1997: 21, 25) The malignant involved cell is the immature lymphocyte, the lymphoblast with the rapid proliferation of lymphocytes, the production of normal white blood cell, red blood cells and platelet falling and invasion to body organ by the rapidly increasing of white blood cell. ALL has a short history of symptoms and, without treatment, a rapidly declining course leading to death in 3 to 6 months. (Muscari, 1996:347)

Etiology and incidence

There are 20,400 people in the United States die of leukemia each year, with an estimated 25,700 new cases being diagnosed every year. (Memorial Sloan-Kettering Cancer Center, 1998:1) Approximately 2,500 to 3,000 children are diagnosed with ALL each year in the United States. (Margolin & Poplack, 1997:409) In Thailand, Leukemia is a cause of death, about 892 cases in 1997 (Statistics of Thai Public Health, 1997) The new cases of ALL in Thai children between 1987-1991 and 1993-1997 (Pediatric Hematological Clinic at Siriraj Hospital) are 256 and 298cases respectively. In 1998 – 1999 , Chulalongkorn Hospital has 201 cases of ALL in childhood.

The cause of leukemia in children is unknown. There are many factors related ALL; for example, genetic factors, environmental factors, viral infectious and immunodeficiency states. (Gohen, 1993:209-210; Yuaney, 1995:391; Panja Kulpong, 1997:22-23; Margolin & Poplack, 1997:410-411; The child leukemia Resource Center, 1999:1-6)

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1. Genetic factors

Genetic factors are presumed to play a significant role in the cause of ALL. Evidence is based on several observations, including the association between various constitutional chromosomal abnormalities and childhood ALL, the occurrence of familial leukemia, and the high incidence of leukemia in identical twins. Children with Down's syndrome have an increased risk of developing leukemia. Instead of having two copies of each chromosome, they have three copies of chromosome21. They are 15 times more likely to develop leukemia than normal children. Klinefelter's syndrome, Neurofibromatosis, and Fanconi's anemia also carry an increased risk of developing leukemia.

2. Environmental factors

Exposure to ionizing radiation and certain toxic chemical can facilitate the development of ALL. In a study by the National Academy of Sciences, U.S.A., a fivefold-increased risk of all childhood cancers was found for children exposed to diagnostic radiation during the first trimester.

3. Viral Infection

Some reports have suggested an increased risk for ALL in children born from mothers recently infected with influenza, varicella or other viruses, but no definitive link between prenatal viral exposure and leukemic risk has been confirmed.

4. Immunodeficiency

Children with various congenital immunodeficiency diseases, including Wiskott-Aldrich syndrome, Congenital hypogamma-globulinemia, and Ataxia-lelangiectasia have an increased risk of developing lymphoid malignancies, as do patients receiving chronic treatment with immunosuppressive drugs.

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Prognosis

The highest incidence for ALL is in children between 3 and 5 years of age. The prognosis in children under 2 years or over 10 years at the time of first occurrence have a relatively poor prognosis compared with children in the intermediate age group. In most studies, girls have a better prognosis than boys.

Signs and Symptoms

The children presenting with ALL reflect the degree of bone marrow infiltration with leukemic cells (lymphoblasts or blasts) and extent of extramedullary disease spread. As the leukemic blast cells accumulate in bone marrow, they being to crowd out the production of the normal red blood cells, platelets, and normal white blood cells

If red blood cells are crowed out by leukemic cells, the blood will look thin, which makes the patient look pale. The children may be tired, shortness of breath, because the thin blood cannot carry enough oxygen to the heart, lungs, and muscles.

If platelets are crowed out in the bone marrow, the children may have bleeding problems and unusual bruising.

If the normal white cells, neutrophils are crowed out by the blasts, there will be no cells to combat with bacteria and lead to fever and increases susceptibility to infections. Although leukemia is a cancer of white blood cells and children with leukemia may have very high white blood cell counts, the leukemic cells do not protect against infection as the way normal white blood cells do.

The most common symptoms and clinical findings are usually manifestations of the underlying of anemia, thrombocytopenia and neutopenia, which reflect the

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failure of normal hematopoiesis. Pallor, fatigue, petechiae, purpura, bleeding, and fever are often present. Lymphadenopathy, hepatomegaly, and splenomegaly are manifestations of extramedullary leukemic spread. Lymphadenopathy, usually painless, may be localized or generalized. Hepatomegaly occurs in approximately two thirds of the patients and is usually asymptomatic.

The duration of symptoms in children presenting with ALL may vary from days to months. Anorexia is common, but significant weight loss is in frequent. Bone pain, particularly affecting the long bones' is common and reflects leukemic involvement of the periosteum and bone. Young children present with a limp or refusal to walk. Bone tenderness of arthralgias, which may result from leukemic infiltration of a joint. (Neal & Hoskin, 1994:230-231; Margolin & Poplack, 1997:425-426; National Institutes of Health, 1999:2; Cure 2000 Leukemia Research Fund, Inc., 1999:2; The Child Leukemia Resource Center, 1999 : 1-2)

Treatment

The primary treatment for leukemia is combination of chemotherapy, radiation, platelet and red cell transfusions, antibiotic therapy, and occasionally surgery (for unusual complications) are also parts of many treatment programs. Chemotherapy, where two or more anticancer medications are used to control or eradicate the disease. In some forms of leukemia, bone marrow transplantation is done. The long - term prognosis in the recent year for children with ALL has improved dramatically with the advance of aggressive chemotherapy. Chemotherapy is administered to induce remission. (Panja Kulpong, 1997: 48-53; Margolin, &

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Poplack, 1997:433-447; Vinai Suwatti, 1998: 1618-1620; National Institutes of Health, 1999:5)

Treatment of ALL is composed of

1. Specific treatment
2. Supportive treatment

Specific treatment

Specific treatment of ALL is divided therapy into four main treatment elements:

1.Induction of remission

2.Intensification or Consolidation therapy

3.CNS prophylaxis

4.Maintenance therapy

1. Induction of remission

The initial aim of induction is to achieve a remission, meaning that leukemic cells can no longer be found in bone marrow samples and the normal marrow is allowed to return and the blood counts become normal. Until normal blood counts return, the child's condition is considered to be critical. Fortunately, more than 95% of children with ALL enter remission after one month of treatment. Fewer than 3 % of children with ALL die of complications during this initial treatment.

The basic two-drug combination of Vincristine and Prednisolone induces in this phase approximately 85% of leukemic children, the addition of L-asparaginase, an Adrimycin, or both improved the remission induction rate to approximately 95%. However, protocols using this four-drug induction combination with intensive

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consolidation and maintenance therapy improved overall remission duration for high-risk patients. Because the fourth drug may increase the incidence of toxic effects during induction therapy.

2. Intensification or Consolidation therapy

To induce a complete remission, chemotherapy must reduce the total number of leukemic cells by 99% leaving fewer than 10^9 blasts. This phase is begun immediately after remission is attained. The goals at this point are to decrease or eliminate the minimal residual disease further. Using the chemotherapy in this phase is Prednisolone and 6-Mercaptopurine, Methotrexate and Cyclophosphamine in high dose about seven days. The others drug is Cytosine arabinoside about 2 weeks in the poor prognosis patient.

3. CNS prophylaxis

Prophylactic therapy to the central nervous system is a necessary part of ALL therapy because leukemic cells easily cross the blood-brain barrier but most chemotherapeutic agents do not. This phase is using cranial radiation and intrathecal injections of Methotrexate. Prevention for infection is using Co-trimoxazole oral form for one year during receiving chemotherapy.

4. Maintenance therapy

Chemotherapy will be given with 6 - Mercaptopurine oral every day and Methrotexate height doses once a week in the good prognosis, but the poor prognosis patient is using pulse treatment. Pulse treatment is using Prednisolone, Vincristine, Adriamycin, L - asparaginase, Cyclophosphamide, Methrotexate, Cytosine arabinoside, 6- Thioguanine, VP-16 and VM26 and other it may be contined for a total control of maintenance.

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Classification of chemotherapeutic agents

Chemotherapeutic agents are classified according to their chemical structure and their cell cycle activity. In classifying agents by chemical structure, they are divided into six major categories: (Gullo, 1988:595-601 cited in Renick-Ettinger, 1993:81-87 & Panja Kulpong, 1997:13-14)

1. Alkylating Agents.

Alkylating agents interfere with DNA synthesis. They are specific cycle and most effective against cells in the G_1 and S phases of growth. Alkylating agents commonly used with children are Cyclophosphamide (Cytoxan), Cisplatin, Infosfamide, Nitrogen mustard and Dacarbazine

2. Antimetabolites.

Antimetabolites are drugs that so closely resemble natural products that a cell incorporates them into its structure. They interfere with normal cell metabolism, interacting directly with the specific enzyme, either to inhibit the enzyme or to produce a nonfunctional end product. Antimetabolites are causing interruption in the synthesis of protien, RNA, and DNA within the cell. This group is Methotrexate, Cytosar, 6-Mercaptopurine and 6-Thioguanine.

3. Plant Alkaloids

Alkaloids used in anticancer therapy are agents derived from plants that interfere with mitosis and other cellular processes. This group includes the Vinca alkaloids. (Vincristine and Vinblastine)

4. Antitumor Antineoplastics

Antineoplastic antibiotics are synthesized naturally by various bacterial and

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fungal species. They interfere with cellular metabolism. The antibiotics are active at many cycles. This group many stages within the cell replication cycle. This group includes Actiomycin D , Mytomycin C , Anthracyclines (Daunorubicin , Doxorubicine) and Bleomycin.

5. Corticosteroids

Steroids appear to enter the cell passively and bind with macromolecules in the cytoplasm of the cell. This complex them enters the cell nucleus, binds with DNA, and modifies the transcription process.

6. Enzyme

This group interferes with cellular metabolism by L- asparaginase.

Self-care behaviors of school-age children with ALL

Definition of self-care

The meaning of self-care is no generally agreed definition, but it applied to health, such as:

Levin, Katz and Holst (1979 cited by Pearson, Vaughan & Fitzgerald, 1996:89) defined as:

Self-care is a process whereby a lay person functions on his/her own behalf in health promotion and prevention, and in disease detection and treatment.

Norris (1979:486) identified self-care as the process that permits people and families to take initiation and responsibility and function effectively in developing their potential for health.

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WHO cited in Kickbusch (1989 cited by Sritanyarat 1996:12)

Self-care refers to unorganized health activities and health related decission-making by individuals, families, neighbors, friends, colleagues at work, etc. : it encompasses self-care-medication, self-treatment, social support in illness, first aid in a "neutral setting" i.e. the normal context of peoples' everyday lives. Self-care is definitely the primary health resource in the health care system.

Self-care behavior by Pender (1982:150) is daily habits and activity patterns in the areas of nutrition, activity, rest and exercise, stress management, psychological and spiritual, health behaviors, sexual behavior, personal hygiene, and safety. It is important for nurses to ask clients whether or not they rely on traditional folk practices.

Orem (1991:117) defined that self-care is the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well being. Self-care is action of mature and maturing individuals who have developed the capabilities to take care of themselves in their environment situations. Orem (1995:201) another term also mentioned is self-care requisites, that are the expression of the types of purposive self-care that individual requires, which consisted of 3 types as follows;

1. Universal self – care requisites, which are common to all human being during all stages of life cycle, adjusted to age, developmental stage, environment and other factors.There are associated with life process, with the maintenance of the integrity of human structure and functioning, and with general well-being.

2. Developmental self – care requisites, which are associated with human

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developmental processes and with conditions and events that can adversely affect development.

3. Health-deviation self-care requisites, which are associated with genetic and constitutional defects and human structural and functional deviations and with their effects and medical diagnosis and treatment measures.

Nursing system, the type of relationship between nurse and patient, is based on the ability of the patient to perform self-care. Orem names three types of nursing systems: the wholly compensatory system (patient totally unable to do self-care; patient physically and socially dependent) , the partly compensatory (both nurse and patient perform self-care activities) , and the supportive-educative system (patient able to perform therapeutic self-care activities but needs the nurse's help or support in learning how to do so).

Whereas nursing system refers to the actual activity of helping patients meet their self-care needs, nursing agency refers to the ability to know and help others to know and meet their therapeutic self-care demands. Thus agency refers to a set of human abilities for meeting self-care requisites, such as acquiring knowledge, decision making, and taking action for change. The self-care agent takes action through providing self-care or infant, child, or dependent care. The nurse assesses the patient's self-care deficits and either provides the care needed by another person or teaches the patient to do self-care. As nurse and patient relationships are complementary, nurses help patients assume responsibilities for self-care.

Self-care in illness covers the spectrum from disease prevention to disease detection and management. Most people find it easy to visualize self-care behaviors that promote health, such as balance nutrition and stress management; it is more

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difficult to envision self-care behaviors in illness. However, the client's illness can be a productive time for him or her to begin learning self-care behaviors and techniques.

Another aspect of self-care in illness management involves lifestyle changes in such areas as nutrition, activity and rest. Making lifestyle changes also includes clients informing from nurses about how they can help in the event of a crisis, as well as carrying any necessary.

School –age children are gradually able to accept more responsibility for personal hygiene. They are able to dress, brush their teeth, comb their hair, and wash their face and hands. So, they are able to caring themselves. (Thomson, 1995:510)

In 1992 Kunchalee Poomarintra's research was studied the relationship between knowledge of health care and self-care behavior in school-age children. The results of the study, there was a significantly positive relationship between knowledge of healthcare and self-care behavior in school-age children at $P < .001$ $(r = .4014)$

In 1996 Nongluk Chintanadilok's research was studied self-care behavior of elementary school children in Bangkok Metropolitan Public school. The results of the study revealed that most elementary school children demonstrated self-care behavior at "fair" level, only 15 percent were found to have "good" self-care behavior while 17.4 percent were found to have "poor" self-care behavior. In this study, school-age children were able to perform 8 self-care activities, i.e., eating, exercise, sleeping and rest, recreation, personal hygiene care, self-care during illness, mental health care, and prevention of diseases and accidents. The self-care behavioral process of elementary school children was occurred and influenced by

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these personal and environmental factors as evidenced by cognitive learning and psychomotor skills relating to self-care activities in daily life.

In this study, self-care behaviors of school-age children with ALL are importance, there are divided into 2 parts:

1. General self-care behaviors.
2. Self-care behaviors during the side effects of chemotherapy

General self-care behaviors are the activities in basic need of life style. The self-care of school-age children with ALL are:

1. General hygiene

Children with ALL should be caring themselves about general hygiene; such as, daily bath twice a day: after wake up and evening, shampooing 2 or 3 times a week, oral hygiene: the children should brush their teeth after wake up and before bed time, mouth care after meal used normal saline or boiled water. Washing their hands with soup and water before and after meal or after toilet because unclean hands spread most infection in health care facilities. Perineal hygiene cares after bath and after toilet. Girl: wipe the Perineal area from front to back area. Boy: everytime of taking a bath they should split the prepuce up and clean the glants and prepuce, then dry it with smooth cloth.

2. **Nutrition**

Good nutrition is important to the nurturing of health, the basic 5 food groups compose of:

Carbohydrate	:	rice, sugar, bread ,and etc.
Fat	:	oil, coconut, and etc.

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Protein : meat, fish, eggs, nuts group, and etc.

Vitamin and mineral salt : fruit and vegetable.

Fresh water : In general, school-age children have sufficient intakes of fluid at least 1,500 ml. per day.

Children with ALL should encourage foods highly in proteins, and calories. Because they are using this food for growing. So, their parent should prepare preference food for them. However, children should discourage to avoid citrus fruits and juices, spicy foods, hot foods but they should eat light soft diet and cool preparation.

3. Medicine

Medicine is drugs used to treat disease and the symptoms of disease. Drugs can be purchased only with a prescription from a physician. Medication is helpful and can save lives when used correctly but can be dangerous when used incorrectly. Many people believe that once they fell better, they can stop taking a course of medication. Unless otherwise indicated, most prescription of medicine must be finished. Do not buy medicine for yourself, when you fell sick.

4. Rest

Sleep is necessary to keep mentally alert, to maintain a good disposition, to stay physically well, and to maintain proper growth. Children need 8-10 hours for sleep will interfere with a child's ability of learning achievement. Children with ALL who received chemotherapy should be sleep at noon. Knowing how to relax after play or stressful events is an important skill and should be related to personal interests.

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Another important practice is relaxation. Many activities can relieve stress and contribute of fitness. These include exercise and sports, hobbies, listening to or playing music, talking to friends, and meditation. Children can also engage in these activities for relaxation purposes.

5. Exercise

Physical fitness is an important component for the maintenance and enhancement of personal health. Physical exercise can become an integral part of everyone's life. Exercise for children should be age-appropriate, building on coordination skill and including a variety of activities that involve all parts of the body: such as, walking, housekeeping, and other. However, swimming in public pool is forbidden because they are avoiding the infection.

6. Elimination

Elimination patterns in school-age children approximate those of the adult. Depending on children's intake, bowel movements.

Stool is soft, formed, and browns. School-age children should be completely toilet trained.

Urinary system is needed to excrete waste products. Urine is stored in the bladder until one feels the urge to urinate.

Children with ALL who received chemotherapy should drink water at least 1,500 ml. per day. They should pass the urine whenever they feel to do so, do not hold up the urination because it may cause cystitis.

7. Follow up

Children with ALL should be visit their doctors who are appointment 2 or 3

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weeks during the early treatment. Then, they are follow up in every month or three months or six months following by the protocol. Their doctors describe them about the process of their treatment are very important for successful their curing. However, the children have their appointment if they were sick before that day, they can visit their doctors before the appointment.

Abnormal symptoms should be visit the doctors; such as , high fever, severe headache, severe vomiting, active bleeding, pale, dyspnea, petichia and echymosis.

Self-care behaviors during side effects of chemotherapy are activities to relieves symptoms that are uncomfortable. Symptoms of side effect of chemotherapy are:

1. Anorexia, nausea ,and vomiting

These symptoms are common side effects of chemotherapy because the cells lining the stomach are fast growing and are irritated by drugs. Parent does not encourage children to eat if they are nauseaed. Children should encourage high calorie, high protein, low residue diet in small, frequent meals. (cooked cereal, cooked vegetables) After their emesis, they should be mouth care with warm water. Distraction plays are reading cartoons, plays games, and watching television are benefitial.

2. Stomatitis

Stomatitis, or ulcers of the gum and mucous membranes of the mouth, often occurs with antimetabolic drugs. Children should encourage liquid, cool or cold, high-calorie, and high protien. They may need soft or light diet for tolerated with pain , such as: sucking on ice chips, milk shakes or frozen liquids. They will observe the ulcers of oral cavity by caring good hygiene using a soft toothbrush.

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They are maintenance a good fluid intake as this helps to keep lips from cracking and keeping his lips well lubricated with Vaseline or a commercial product as this also prevents cracking.

3. Anemia

Children may become anemia from blood loss or as a consequence of drug-induced myelosuppression. Signs and symptom of anemia include paller, headache, dizziness, shortness of breath, fatigue , tachycardia and heart murmur. They should encourage patient to in corporate foods high in ironate diet , such as eggs, lean meat, green leafy vegetables.

4. Bleeding

Children with ALL should be protected from trauma and potential bleeding. Sponge application to prevent trauma to gums: avoid flossing, avoid eating or chewing sharp food items. Provide safe environment member: do not violence playing or contact sports or activities that may cause injury or bleeding; the games that attack each other for example, football, boxing, bicycle riding, tree climbing. They should be avoid active bleeding because this sign showsbone marrow suppression.

If the child experience epitaxis, the parents are instructed to press the child's nostrils together with a gauze pad held between the thumb and index finger for at least 10 minutes. If the bleeding does not stop, or if the patient experiences hematuria, the children should be evaluated at the hospital.

5. Infection

The immune system is depressed by chemotherapy. Children with ALL

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should provide for through body hygiene daily with mild soap and warm water. Avoid contacting ill person: cold, influenza, cough, chicken pox, measle, and etc. They do not allow plants, fresh fruit and vegetable, or the flowers in a child's room because they are spread the micro-organism. They should using mask at the place has air pollution. Do not swimming in the public swimming – pool because it is easily infection. And do not vaccination.

6. Alopecia

Alopecia or hair loss is a side effect that occurs with almost all chemotherapeutic drugs because hairs are fast-growing cells that are easily killed. Children should use soft brush to minimize pulling at hair and encourage cutting long hair short so as to minimize. They should be wearing a wing or scarf and using a hat or umbrella to protect the sunlight whenever they are going out their home.

7. Diarrhea

Diarrhea may occur from effects on the absorption surfaces of the intestine. If children have severe diarrhea. They should be recommend liquid diet and discourage foods that stimulate peristalsis.(fruit juices , raw vegetables, nuts,and etc.) If diarrhea non-stop, the parent should be evaluate at the hospital.

8. Constipation

Children will maintain a normal stool pattern. They pass soft stool at their usual frequency. (Once a day) They should be preventing constipation by eating high fiber diet, drinking water about 1,500 ml per day and adequate exercise.

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Teaching Program

Teaching program is combination of strategies for teaching – learning process. Teaching is a process that facilitates learning. It can be defined as imparting knowledge, assisting the learner in developing motivation to change, or guiding or interpreting the learner's experience. Learning can be defined as the acquisition of knowledge; the initiation of behavioral, attitudinal, or perceptual change; or the integration of knowledge, new behaviors, and attitudes. Learning takes place in three areas: cognitive learning involves intellectual changes; affective learning involves changes in feelings, beliefs, and values; and psychomotor learning involves changes in manipulative and moter skills. Learning is a process that requires the complete involvement of the learner and is usually influenced by his or her interaction with the teacher. Teaching and learning are interaction processes. As client learns, so does the teacher; thus teacher and learner influence each other. (Lipson & Steiger, 1996:102) The teaching – learning process can be analyzed using the components of assessment, planning, implementation, and evaluation. As in the nursing process, these steps or components of the teaching – learning process are not separate, but occur simultaneously and interchangeably. Describing teaching – learning activities in terms of these steps may help the nurse and client determine the effectiveness of teaching. Similarly in teaching program these steps in the first period of intervention of the program that building the relationship.

A desirable outcome can be specified in the form of goals and objectives in teaching- learning process. Learning goals must be realistic and attainable, and they will differ depending on whether the learning need is cognitive, affective, or psychomotor. Teaching- learning process is a process for solving problems and that

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goal of self-care teaching is to increase the effectiveness of people's problem-solving and decision- making skills. The goals of this teaching program are improving knowledge and self – care behaviors of the school – age children with acute lymphoblastic leukemia.

More than one hundred years ago, Nightingale wrote of cleanness, fresh air and calm as precondition for recovery from illness. (Pearson, Vaygham & Fitzgerald et al., 1991:52) These items are used in self-care for the patient's health. Nowadays, people learn more in higher education and interesting of their health. On the other hand, the economic crisis attacks everybody recently. The policy of the government needs to save the cost expend of the treatment. However, people should have good health by their self-care behavior. Thus, nurse should advise the health education for people. There are many strategies to solve the problems that client lack of realization in self-care correctly because of the nature of Thai people dare not enough to ask the health team in any detail about their disease and their self-care behavior. The nurse who closely involves with the leukemic children should advise them as to the effective program, which consist of interaction and learning process to enhance their knowledge and self-care behavior.

Effective teaching program is a combination of using of good communication skills and effective education strategies. Before beginning a teaching program, researcher must prepare an appropriate and conducting learning environment. Take the children with ALL to a quiet area, and provide them comfortable.

In nursing, the primary purpose of interactions is to assist an individual to cope with a health problem or concern about health. Nurses and clients respond through interactions to the humanness of each other, to the presence of each other,

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and to the reciprocally contingent relationship. Interactions help nurses and clients clarify the shared environment. (King, 1981:85-86)

The function of nursing is, in King's view, to " teach, guide and counsel individuals and groups to help them maintain health" (1981: 8)

The pattern of teaching is devided into two types:

1. Individual teaching (One-to-one teaching) is usually accomplished through oral communication-the exchange of words, ideas, and feelings- and through non-verbal body messages between one teacher and one learner. This is perhaps the most common form of information exchange and learning. Oral communication serves several functions: it helps to establish rapport; it is a means of giving information and instruction; and it allows for immediate feedback. (Boyd, 1992:172)

2. Group teaching is accomplished through oral communication between teacher and group of learner. Adventages of group teaching include client socialization and mutual support as well as delivery of content to a number of clients at the same time. (Craft, 1987:240)

Consideration of the client's learning style is as important as, if not more important than, selection of most appropriate method for achieving the learning objective.

Individuals learn differently. Some learn best by hearing, others by seeing, and still others by doing. Some learn best alone, whereas others prefer to learn in-groups. The nurse should discuss with the person how he or she prefers to learn and what has been most successful in past. It is usually most effective to use a combinational strategies.

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The teaching program is individual teaching that often called on – to – one teaching. It is often used as initial intervention, through which basic knowledge and skills are achieved and the children with ALL's confidence in self-care is increase. The researcher was selected one-to-one teaching in the teaching program because:

1. The school age of leukemic children is chronic disease. It is important for the researcher to focus on giving information of self-care for them. The primary advantage of one–to- one teaching strategy is its unique opportunity for personalized and individualized teaching. It is ideal for shy or anxious clients who might not ask questions in-groups, or for clients with unique health problems.

2. Situation in Hematological Clinic have a lot of patients, but the leukemic children in criterias (school-age between 7-10 years, first diagnosed about 2 years and no relapse) are one or two cases in each day. The plan of teaching is not appropriate to a group. Researcher should be used a valuable short period of time to teach the child in individual teaching.

3. The intervention of teaching program to make appointment within two weeks to fit with the next doctors, appointment during the early treatment which their time of follow up.

School-age children are responsibility for their own health care. They are able to make decisions based on simple scientific knowledge of cause and effect. Their objectivity and language abilities allow them to make observations about themselves and their health status and able to communicate with others. The nurse must assess this carefully when choosing the teaching- learning setting. Although lessons can be comparably longer (15-30 minutes each) for the school-age child than who are

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younger. It is important to space lessons if a great deal of content will be covered. (Whitman, 1992:205-206)

The beginning of teaching program is important because the children know what they expect. The children with ALL trends to forget much of the oral information presented to them, researcher must carefully plan the teaching program. Advance organizer is especially important; these can help them remember more, about what is going to happen and what will be expected of them by using cartoon in the handbook.

In this handbook is composed of knowledge about leukemic children: sign & symptoms, treatment, side effect of chemotherapy and self-care behavior for themselves. Cartoon in this handbook is Deang who is ALL. She tells about her life in hospital during receiving chemotherapy. She is writing the letter to her closed friend. This story is easy to understand, normal, not afraid for children and easy to practice. In 1997, Parnnarat Chaichan's research was studied psychosocial needs and responses as perceived by hospitalized school-age children. The results of this study showed that the sick children need playing 93.5%, need drawing reading or playing on their bed during absolute bed rest 92.5% and need to responsibility of themselves about general hygiene: daily bath, brush their teeth and dress 97.5 %. So, this program after teaching, researcher gives them a handbook and a box of color pencils for painting. Then, the next two weeks, they bring their homework to researcher. Playing with painting is promoting the positive thinking and perceiving themselves and perhaps developmental perhaps developing psychosocial care. (Suwadee Srilaynawat, 1987: 38)

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School age children enjoy pictures in the handbook and learn from them. Pictures or cartoons can attract and maintain children's interest. They also help children to remember what has been said. Generally, color pictures appeal to learners more than do black and white pictures. (Rankin & Stallings, 1990:208)

During teaching program has answer and question for correct understanding. The questions such as " What is ALL?" What's blood composed of?" help them focus on important concepts and provide a means for ongoing evaluation of teaching-learning process. Because people tend to remember best the information presented in the first on third of the interaction. (Ley, 1972 cited by Boyd, 1992:173) It is good teaching techinque to explain to the client that, whenever a question is posed during a period. Nurse's response to the answers given by clients is very important, as the act of questioning is highly threatening from the client's point of view. During teaching the client's mother is listening with their children. The mothers and their children are reviewed the previously learned knowledge every day and can solve their self-care problems while they stay at home.

In 1992, Pannee Boonpeng's research was studied the effect of teaching about prevention of infection on knowledge and practice in school-age children with leukemia or lymphoma. The results of this study showed that the school-age children with leukemia or lymphoma after teaching have significant higher score on knowledge and practice than before teaching($P< .01$).

In 1992, Pinthong Pinjai's research was studied the effect of teaching on knowledge and practice of school-age children with Thalassemia. The results of this study showed that after teaching, the knowledge and practice score of the patients was significantly higher than before teaching ($P< .01$).

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In 1993, Tassaneeya Wangsachanthanon's research was studied the effect of health education in asthmatic school aged children on knowledge and practice. The result of this study showed that asthmatic school aged children who after received health education have significantly more scores of knowledge than before received health education (P< .001) and after they received knowledge, they have significantly more scores of practice than before received knowledge (P< .001).

In 1998, Panarat Natiles's research was studied the effect of teaching by videotape on knowledge about Thalassemia and self-care behavior of school-age children with Thalassemia. The results of this study showed that after teaching the subjects have significantly more knowledge and better self-care behavior (P< .001).

So, the teaching program is the beneficial intervention for children This teaching program is individual teaching that often called one to one teaching. It is often used as an initial intervention, through which basic knowledge and skills are achieved and the children with ALL's confidence in self-care behavior is increased.

ALL in childhood is chronic disease that the bad effects to the physiology, psychology and economics. The effective treatment is spending time in the continuous curing. They are suffering from the treatment: pulling the blood, bone marrow aspiration, lumbar puncture and receiving chemotherapy. Sometimes it changes the body image: color of skin and allopecia. They will miss from school during aggressive treatment and follow up's day. In economic crisis, chemotherapeutic drugs are very expensive. The great problem in ALL is infection because of waste time to curing them for infected disease and spends more money to supporting the antibiotic drugs. School age children should take responsibility of themselves and their health. The good relationship between leukemic children and

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nurses are important for compliance. Effective teaching program used various strategies for leukemic children applied in this study.

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ChapterIII

Methodology

Research Design

This research is quasi-experimental study, two groups pretest-posttest design which studied the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia.

Population and Sampling

The population of this research is school-age children with ALL . All of the population are based on the following criteria.

1) Children are between 7-10 years old.

2) The children was diagnosed Acute Lymphoblastic Leukemia by Pediatric Oncologist not more than 2 years and no relapse.

3) Their experiences of undergoing chemotherapy are more than one course.

4) There are no complication; such as, severe infection or unconscious, etc.

5) Informed consent is obtained from subjects and their mothers.

The samples were selected by purposive sampling from the population 40 cases. They were divided into 2 groups: the control group who received routine care and the experimental group who received teaching program. Twenty samples were control group from Siriraj Hospital and eight from Siriraj Hospital and twelve from

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Chulalongkorn Hospital in experimental group. Both of hospitals are the same policy:

- The parent was told that their children had been leukemia at first diagnosed by Pediatric Oncologist.
- The children were received treatment both chemotherapy and radiotherapy.
- They were admitted after first diagnosis.
- They were followed up in Hematological clinic.
- They were received routine health education before discharge.

Setting

This study was conducted at Kumal I Unit, Hematological Clinic, Pediatric Department of Siriraj Hospital and Hematological Clinic at Pho Bho Raw 9, Pediatric Department of Chulalongkorn Hospital. The samples were followed up on Monday and Thursday at 8 – 12 am.

The samples were recruit from both Siriraj Hospital and Chulalongkorn Hospital because the samples in Siriraj Hospital were not enough.

Instrumentation

This study was composed of 2 parts.

1.The intervention.

1.1 Plan of teaching program.

1.2 The handbook for leukemic children

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2. Data collection Form

2.1 Demographic data.

2.2 Knowledge about leukemia and self-care behaviors.

2.3 Self-care behaviors.

1. **The intervention**

The intervention of teaching program is individual teaching. In this study, the specific protocol was developed by the researcher based on King's Interaction, Orem's self-care and teaching-learning theory.

1.1 **Plan of teaching program** composed of 3 interacting periods:

The first period: there are 3 steps:

Step one is spending 5 - 10 minutes for bluiding the relationship.

- Researcher introduces herself to the leukemic child and his or her mother.
- Researcher informs about objectives of this study for increased the knowledge and self-care behaviors of leukemic children.
- Small talk : talking about general topics, the child's name and nick name,the knowledge about his or her self-care and experience from treatment.

Then, the child does the pre-test, spending 15-20 minutes.

Step two is the teaching process by using teaching program and spending 30 minutes.

- Researcher is teaching the child about leukemia: treatment, side effect of chemotherapy and how to care himself by cartoon in the handbook for leukemic children.
- During teaching his mother is listening with him.
- During teaching, they are interaction between child and researcher. There

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is answer and question ,it is good teaching techinque to explain to the client that, whenever a question is posed during a lesion.This step is two-way communication.

Step three, researcher give a handbook and a box of color pencils for the child to paint in his/her homework. So, he/she can solve his self-care problems with his/her mother while they stay at home. The mother and child reviewed the previously learned knowledge by the handbook every day. This process was under the assistance of his mother. Then, they make an appointment 2 weeks to sent the child's homework.

The second period is in the end second weeks. This period is spending 30 minutes.

- The child is follow up to sent the painted pictures in his handbook.
- Researcher is reviewed contents in the handbook and asked the problems that he does not understand about self-care.
- Researcher asked his mother about child's problem during they stayed at home. This process was under the assistance of his mother to reviewed previous learned knowledge with the child by handbook to painted picture every day.
- The child has a good practice, He received the reward by researcher. (positive reinforce) Praise, especially from a respected individual, is very rewarding.
- They are granted an appointment within 2 weeks.

The last period in the end of fourth weeks. It is spending 20 - 30 minutes.

The child does the post-test. Then, researcher is talking about the end of the intervention of teaching program and the child thanks for his compliance.

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1.2 **The handbook for leukemic children** : knowledge and self-care behaviors makes from review literature about cancer and researches. This handbook provided a definition of ALL, sign and symptoms, treatment, and complication of chemotherapy.

This handbook is presented by cartoon, she is ALL and her name is Deang. She tells about herself by sent the letters to closed friend. Three letters are covered all topics related to knowledge and self-care behaviors in leukemic children.

Letter number I provided a definition of ALL, sign and symptoms, and treatment.

Letter number II provided general self-care in leukemic child.

Letter number III provided complication of chemotherapy and how to care herself during side effect of chemotherapy.

This handbook development used the easy vocabulary for children:

- easy to understanding for children , no terrors of their disease.
- interesting
- keeping the child to follow the story

Validity

Intervention of teaching program and the handbook were subjected to content validity to 7 experts: one of them was pediatric oncologist, two were clinical instructors who are specialized in pediatric oncology, One of them was clinical instructor of psychiatry at Siriraj Hospital , One of them was clinical instructor who using cartoon in her works and another two were oncological pediatric nurses. Suggestions from the experts were utilized to refine the existing protocol.

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Researcher is preparing skill of intervention.

Using the intervention of teaching program and the handbook for leukemic children with for 5 leukemic children at Kumal I Unit , Siriraj Hospital.

2.Data collection Form

Three instruments are used for data collection. They are described in the following section.

2.1 Demographic data of subjects are age, sex, education, duration of treatment, health education .

2.2 The structured interviews about knowledge of leukemia has 20 items, developed from the literature review. It is composed of knowledge about leukemic children and treatment (6 items) and others are knowledge about self-care (14 items). Each item is one choice from " yes" or "no" or "unknown"

The corrected structured interviews have 12 items; 1, 3, 5, 6, 7, 10, 11, 12, 16, 17, 18,19

The uncorrected structured interviews have 8 items; 2, 4, 8, 9, 13, 14, 15, 20

The standard scores

The corrected questions have the answer "yes"

	is equall	1	score
"no" or "unknown"	is equal	0	score

The uncorrected structured interviews have the answer "yes" or "unknown"

	is equal	0	score
"no"	is equal	1	score

The highest score = 20, The lowest score = 0

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Total scores about knowledge of leukemic children = 20

More than 80 (>16 scores) is represented the good level of knowledge.

During 60%-80% (12-15 scores) is represented the fair level of knowledge.

Lower than 60% (0-11 scores) is represented the poor level of knowledge.

2.2 Interviews of self – care behaviors have 2 categories and total questions are 40 items.

2.3.1 General self-care of children with ALL has 19 items.

2.3.2 Self-care during complications of chemotherapy have 21 items

This interview used closed questions and each item is comprise of one choice.

The corrected sentences are positive those have 28 items.

The general self-care of leukemic children is 1.1, 1.2, 1.3, 2.1, 2.3, 3.1, 3.2, 4.1, 4.3, 5.2,6.2, 7.1, and 7.2

The self-care during complications of chemotherapy is 1.1, 1.2, 1.4, 2.2, 2.3, 3.3, 4.1, 4.3, 5.1,5.2, 6.2, 6.3, 7.1, 7.2, and7.3

The uncorrected sentences are negative, those have 12 items.

The general self-care of leukemic children is 2.2, 3.3, 4.2, 5.1, 5.3, 6.1, 6.3, and 7.3

The self-care during complications of chemotherapy is 3.1, 3.2, 4.2, and 6.1

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The standard scores

	Positive	Negative
Never	1	3
Sometime	2	2
Frequency	3	1

This part has scores from 0-120

More than 80% (>96 scores) is presented as good self-care behaviors.

During 60%-80% (72-96 scores) is presented as the fair self-care behaviors.

Less than 60% (< 72 scores) is presented as the poor self-care behaviors.

Validity and Reliability

Validity

Content validity was subjected to 5 experts; one of them was pediatric oncologist, two were clinical instructors who were specialized in pediatric oncology, and other two were oncological pediatric expertise nurses. Suggestions from the experts were contributed to the refinements of the structured interviews for knowledge about ALL and interviews of self-care behaviors.

Reliability

The structured interviews for knowledge about ALL and interviews of self-care behaviors with 15 leukemic children were tested for reliability by using Kuder Richardson Method in the structured interviews for knowledge and using Cronbach's Alpha Coefficient in the interviews of self-care behaviors.

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Kuder-Richardson K-R 20 (Vilai Leesuwan, et al. 1997:124)

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

r_{tt} = reliability

n = number of items on measure

p = portion of the person who chooses the correct answers each item.

q = portion of the person who chooses incorrect answers each item.

S_t^2 = the variance of the distribution of test scores

This structured interviews for knowledge about ALL has $r_{tt} = 0.815$

Cronbach's Alpha Coefficient(Conn,1991cited by Peirce,1995:277)

α = $k/k-1 \{1-\sum S_i^2 / S_t^2\}$

α = internal consistency

k = number of items on measure

$\sum S_i^2$ = the sum of the individual item variances.

S_t^2 = the variance of the distribution of test scores.

This interviews of self-care behaviors has α = 0.7885

Data Collection

1. Collecting data

Collecting the data was using the teaching program by researcher.

1.1 Permit form from the Faculty of Graduate Studies, Mahidol University

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was requested so that the researcher could introduced herself to Director of Siriraj Hospital and Chulalongkorn Hospital to collect data in Hematological Clinic on Monday and Thursday at 8 am. –12 am.

1.2 Researcher introduced herself to Director of Pediatric Department and was permitted to collect data.

2.3 Researcher introduced herself to the supervisor.

2.4 The researcher checked the follow up card from Hematological Clinic on Monday and Thursday. OPD cards were reviewed to determine if the patients met the criteria to be included in this study.

2.5 To protect the right of human subjects, the researcher contacted all the potential subjects to seek their participation in this study.(Leukemic children and their mothers) Explanations were presented to the subjects before they agreed and sign consented to participate in this study.

2.6 All demographic data of subjects was collected from researcher and the subjects were sign consent form to participated in the study by interviewing method. (Both control group and experimental group)

2.7 The sample did the structured interviews of knowledge and self-care in pretest at the first time.

2.8 The control group was given an appointment into next 4 weeks and did the posttest .

2.9 The intervention of teaching program was used for the experimental group step by step in the procedure of teaching program.(Figure 2) After the intervention of teaching program was finished, the researcher reviewed the subjects who did posttest on knowledge and self-care behaviors of leukemic children.

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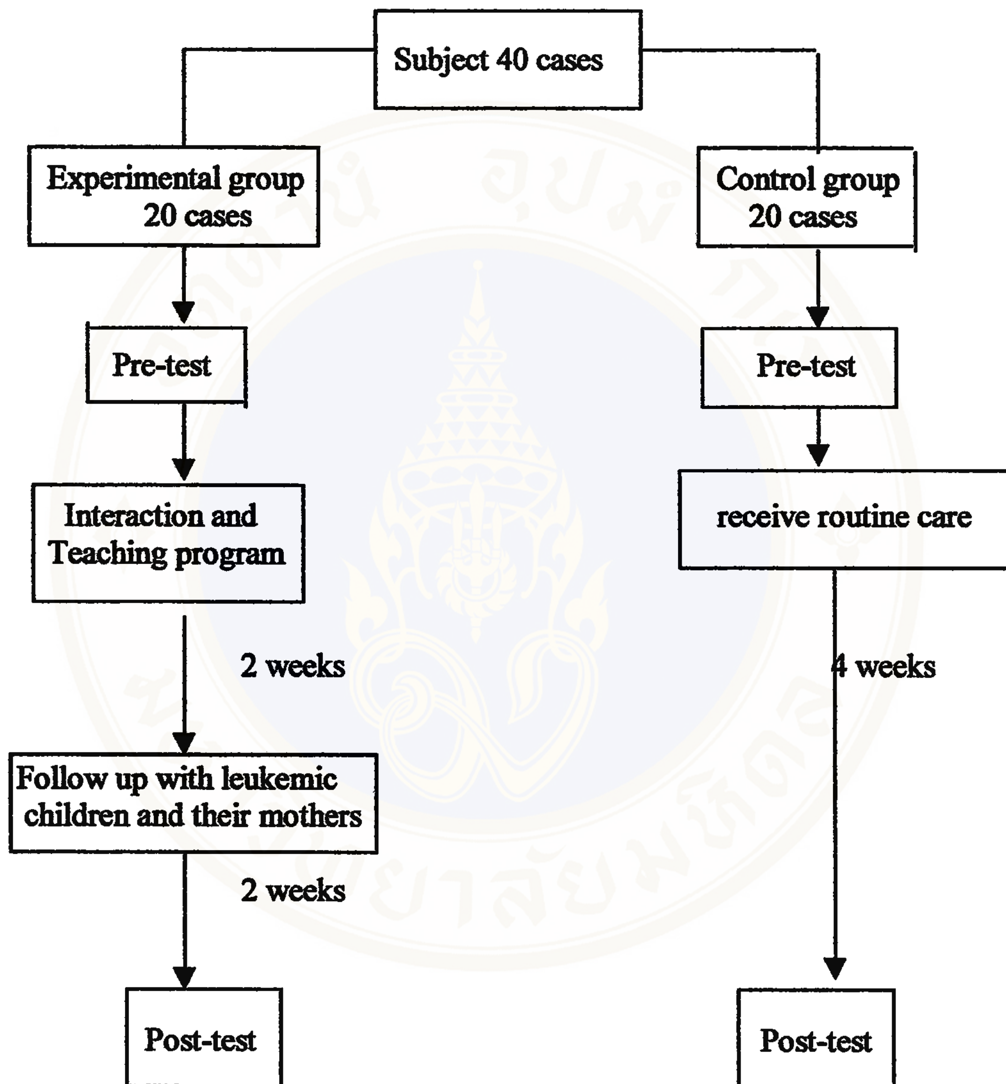

Figure 2 The process of data collection

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Protection of Human Subjects

The researcher was undertaken with permission of committee on human rights related to research involving human subjects, Faculty of Medicine Siriraj Hospital, Mahidol University. (Appendix B)

Researcher introduced herself to the sample. The objectives of the research, and the data collection were informed to the samples and their mothers before they agreed and sign consented to participate in this study.

Data Analysis

After the intervention of teaching program was finished, the researcher reviewed the subjects' records to collect data on knowledge and self-care behaviors of leukemic children. These was pre-test, post-test and these data was analyzed through computer program of SPSS^{+} (Statistical Package for the Social Science)

1.Define the frequency and percentage of the sample characteristics.

2. Analyzed the score of knowledge about leukemic children and self-care behaviors between control group and experimental group, both of pretest and post-test .

Define the level of knowledge and self-care behaviors pre test and posttest of control group and experimental group.

3. Compare the score of knowledge about leukemic children and self-care behaviors in experimental group between pre and post test . Using program were analyzed by t-test.

4. Compare the score of knowledge about leukemic children and self-care behaviors between control group and experimental group used statistical ANCOVA. Using the scores pre test was Covariate Variable.

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Chapter IV

Results

The result of the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia.

Forty samples were recruited in this study, 28 samples at Siriraj Hospital and 12 samples at Chulalongkorn Hospital. Thus, the total samples for this study are patients undergoing chemotherapy due to school-age children with acute lymphoblastic leukemia who were 7-10 years old. There were 20 samples for experimental group, 8 samples at Siriraj Hospital and 12 samples at Chulalongkorn Hospital. In control group, there were 20 patients at Siriraj Hospital .The other characteristics were defined in the tables.

The result of this study is divided into 4 parts:

Part I The demographic characteristics of samples

Part II Analyzed the level of knowledge about leukemic children and self-care behaviors of school - age children with ALL between control group and experimental group both pre and post test.

Part III Compared the mean score of knowledge about leukemic children and self -care behaviors in experimental group between pre and posttest and they were analyzed by t-test.

Part IV Compared the scores of knowledge about leukemic children and self-care behaviors between control group and experimental group both pre and posttest used statistical ANCOVA. Using the scores pretest was Covariate Variable.

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Part I The demographic characteristics of samples were presented by frequency and percentage in tables 1-2

Table1 Frequency and percentage of sex, level of education, duration of treatment of the control group and the experimental group.(N= 40)

Characteristic		Control Group (20 cases)		Experimental Group (20 cases)		Total (40 cases)
		n	(%)	n	(%)	N (%)
Sex	Boy	12	(60)	12	(60)	24 (60)
	Girl	8	(40)	8	(40)	16 (40)
Education						
	Kindergarten 3	2	(10)	2	(10)	4 (10)
	Pratom 1-2	15	(75)	11	(55)	26 (65)
	Pratom 3-4	3	(15)	5	(25)	8 (20)
	Pratom 5-6	-	-	2	(10)	2 (5)
Duration of treatment (month)						
	1-6	6	(30)	8	(40)	14 (35)
	7-12	5	(25)	4	(20)	9 (22.5)
	13-18	4	(20)	3	(15)	7 (17.5)
	19-24	5	(25)	5	(25)	10 (25)

Table 1 showed that control group and experimental group consisted of 24 boys and 16 girls. The gender distribution was exactly the same for two groups, which was 12 boys (60%) and 8 girls (40%) in each group.

The level of education was pratom 1-2, percentage of control group was 75 and percentage of experimental group was 55, duration of treatment 1-6 months, percentage of control group was 30 and percentage of experimental group was 40.

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Table 2 Frequency and percentage of experienced of receiving chemotherapy in the hospital ,obtained information ,and experienced of side effects of chemotherapy of the control group and the experimental group.(N=40)

Characteristic	Control Group (20 cases)		Experimental Group (20 cases)		Total (40 cases)
	n	(%)	n	(%)	N (%)
experienced of receiving chemotherapy in the hospital					
1- 5 times	17	(85)	14	(70)	31 (78)
6-10 times	3	(15)	6	(30)	9 (22)
Obtained information					
Yes	15	(75)	12	(60)	27 (67.5)
No	5	(25)	8	(40)	13 (31.5)
experienced of side effects of chemotherapy					
Alopecia	19	(95)	20	(100)	
Fever	18	(90)	19	(95)	
Stomatitis	16	(80)	14	(70)	
Nausea and Vomit	17	(85)	15	(75)	
Anorexia	16	(80)	14	(70)	
Diarrhea	10	(50)	9	(45)	
Constipation	9	(45)	10	(50)	
Headache	9	(45)	10	(50)	
Bleeding	4	(20)	9	(45)	
Common cold	3	(15)	9	(45)	

Table 2 showed that the majority of the samples were experienced of receiving chemotherapy in the hospital 1-5 times both groups, percentage of control group was 85 and percentage of experimental group was 70 had obtained information, percentage of control group was 75 and percentage of experimental group was 60 respectively. Both group had experienced of side effects of chemotherapy: alopecia , fever , stomatitis , nausea and vomit , anorexia respectively.

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Part II Analysis of the level of knowledge about leukemic children and self-care behaviors of school-age children with ALL between control group and experimental group both pre test and post test in table 3-4

Table 3 Comparison of the level of knowledge about leukemic children in pretest and posttest of the control group and experimental group.

Variable	Control Group		Experimental Group	
	Pre-test	Post-test	Pre-test	Post-test
Level of knowledge about leukemic children				
Good	3 (15%)	4 (20%)	1 (5%)	18 (90%)
Fair	15 (75%)	15 (75%)	15 (75%)	2 (10%)
Poor	2 (10%)	1 (5%)	4 (20%)	-

Table 3 showed that most of the level of knowledge about leukemic children in pre test ,both group the percentage of scores were fair 75. The scores in posttest, percentage of control group was not difference. In posttest, percentage of the experimental group was good increased from 5 to 90.

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Table 4 Comparison of pretest and posttest of self-care behaviors level between pretest and posttest of the control group and experimental group.

Variable	Control Group		Experimental Group	
	Pre-test	Post-test	Pre-test	Post-test
Level of general self-care				
Good	6 (30%)	10 (50%)	9 (45%)	20 (100%)
Fair	13 (65%)	10 (50%)	10 (50%)	-
Poor	1 (5%)	-	1 (5%)	-
Level of self-care behaviors During side effect of chemotherapy				
Good	7 (35%)	8 (40%)	4 (20%)	19 (95%)
Fair	13 (65%)	12 (60%)	16 (80%)	1 (5%)
Poor	-	-	-	-
Level of self-care behaviors				
Good	7 (35%)	7 (35%)	6 (30%)	20 (100%)
Fair	13 (65%)	13 (65%)	14 (70%)	-
Poor	-	-	-	-

Table 4 In regard to level of general self-care , self-care during side effect of chemotherapy and self-care behaviors were fair in pre-test and percentage of control group were 65, 65, 65 respectively) and percentage of experimental group were 50, 80 , 70 respectively).

After received teaching program, the percentage of scores in experimental group had increased the good level of general self-care from 45 to 100 and self-care during side effect of chemotherapy had increased the good level from 20% to 95% and self-care behaviors had increased the good level from 30% to 100%

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Part III **Comparison of the mean score of knowledge about leukemic children and self-care behaviors in experimental group between pre and post test and they were analyzed by t-Test in table 5-6.**

Table 5 Comparison of the mean score of knowledge about leukemic children between pre and post test in experimental group by t-Test.

	$\overline{X}$	SD	t
Knowledge about leukemic children			
Pre test	12.95	1.7911	9.568***
Post test	17.30	1.3416	

*** P < .001

Table 5 showed that before and after received teaching program, the mean score of knowledge about leukemic children was 12.95 and 17.30 and the standard deviation was 1.7911 and 1.3416. The mean score of knowledge about leukemic children in the experimental group after received teaching program was higher than before received teaching program with a statistically significant difference (P <.001).

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Table 6 Comparison of the mean score of self care behaviors between pre and post test in experimental group by t-test.

	$\overline{X}$	SD	t
General self care			
Pre test	49.20	4.9820	6.210***
Post test	56.65	2.4979	
Self-care behaviors during side effect of chemotherapy			
Pre test	43.90	3.0070	9.533***
Post test	51.95	2.5644	
Self –care behaviors			
Pre test	93.10	7.1150	8.668***
Post test	108.60	4.7284	

*** P < .001

Table 6 showed that before and after received teaching program, the mean score of general self-care was 49.20 and 56.65 , and the standard deviation was 4.9820 and 2.4979 respectively. The mean score of self-care behaviors during side effect of chemotherapy was 43.90 and 51.95 , and the standard deviation was 3.0070 and 2.5644 respectively. The mean score of self-care behaviors was 93.10 and 108.60 and the standard deviation was 7.1150 and 4.7284 respectively. The mean score of all in the experimental group after received teaching program was higher than before received teaching program with a statistically significant difference (P <. 001).

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Part IV Comparison of the score of knowledge about leukemic children and self-care behaviors between control group and experimental group in table 7-10

Table 7 Comparison of the differentiate of score of knowledge about leukemic children between control group and experimental group used statistical ANCOVA. Using the scores pre test was Covariate Variable.

Source of Variation	df	SS	MS	F
Covariate Variable	1	1.116	1.116	1.822
Between group	1	.397	.397	64.804***
Error	37	.227	6.127	
Total	39	.711		

*** P < .001

Table 7 showed that the mean score of knowledge about leukemic children in the experimental group after received teaching program was higher than control group with a statistically significant difference (P <. 001).

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Table 8 Comparison of the differentiate of mean score about general self-care in school-age children with ALL between control group and experimental group used statistical ANCOVA. Using the scores pre test was Covariate Variable.

Source of Variation	df	SS	MS	F
General Self-care				
Covariate Variable	1	.133	.133	3.956
Between group	1	1.093	1.093	32.549 ***
Error	37	1.242	3.357	
Total	39	2.617		

*** P < .001

Table 8 showed that the mean score about general self-care in school-age children with ALL of experimental group after received teaching program was higher than control group with a statistically significant difference (P <. 001).

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Table 9 Comparison of the differentiate of mean scores about self-care during side effect of chemotherapy in school-age children with ALL between control group and experimental group used statistical ANCOVA. Using the scores pre test was Covariate Variable.

Source of Variation	df	SS	MS	F
Self-care during side effect of chemotherapy				
Covariate Variable	1	3.616	3.616	1.184
Between group	1	1.016	1.016	33.250 ***
Error	37	1.130	3.054	
Total	39	2.147		

*** P < .001

Table 9 showed that the mean score about self-care during side effect of chemotherapy in school-age children with ALL of experimental group after received teaching program was higher than control group with a statistically significant difference (P < 001).

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Table 10 Comparison of the differentiate of mean score about self-care behaviors in school-age children with ALL between control group and experimental group used statistical ANCOVA. Using the scores pre test was Covariate Variable.

Source of Variation	df	SS	MS	F
Self-care behaviors				
Covariate Variable	1	.119	.119	4.735
Between group	1	1.087	1.087	43.140 ***
Error	37	.932	2.520	
Total	39	2.165		

*** P < .001

Table 10 showed that the mean score about self-care behaviors in school-age children with ALL of experimental group after received teaching program was higher than control group with a statistically significant difference (P <. 001).

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CHAPTER V

DISCUSSION

The result of the study showed that the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia, then it would be followed by the results of hypotheses testing.

Hypothesis I

The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of knowledge about leukemic children than before received teaching program.

The results of this study, in hypothesis I, had been supported. It was found that the mean score of knowledge for school-age children with ALL, after received teaching program was higher than before received teaching program with a statistically significant difference ($P < .001, t = 9.568$) . As stated in Table 5.

From this study, it explained that guiding knowledge and advising to patients and their families were one of the important duties of a nurse. Giving knowledge enabled an individual to developed their cognition, had knowledge and understanding and to be more reasonable. (Pender, 1982:161-162) Whereas children were already able to learned with reason. Once receiving the teaching program school-age children and their families would understand the different periods of the disease, the steps of treatment, and also the side- effects from chemotherapy. School-

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age children with ALL would be faced with the same experiences over and over, throughout the treatment period. The patients would then had a better knowledge and understanding. This conformed with the study of Panee Boonpeang (1992:54) which found that school-age children with leukemia or lymphoma had a better knowledge of preventing the disease than before being taught. From the study of Pinthong Pinjai (1992:62), it was found that school-age children with thalassemia had a better knowledge before being taught, with a statistical significant. From the study of Varin Binhosen (1993:77), patients with seizures who had received a handbook to taught themselves about seizures made the patients gain better knowledge of the disease. And from the study of Tassaneeya Wangsajantanon (1994:62), it found that school-age children with asthma had a better score of knowledge after being taught than before.

The evaluations of the results stated that most of the level of knowledge about leukemic children in pretest, both group the percentage of scores were fair 75. The scores in posttest, percentage of control group was not difference. In posttest, percentage of the experimental group was good increased from 5 to 90. (From table 3)

However, from the results of this studied, it found that most school-age children had a lack of knowledge and understanding before receiving the teaching program their knowledge had increased. For example (Appendix D)

- **If there is a fever, you should cover yourself with a thick blanket in order to sweat.** This will lesson the fever. In the pretest, three patients which is 15 %, answered this correctly. After the teaching program, the amount of patients able to answer it increased to eight people, which is 40 %.

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- You are able to play sports as usual like your friends, such as swimming, football or play Ping-Pong. Five people were able to answer it on the pretest, which is 25 %. After the teaching program, it increased to twenty people, which is 100 %.

- Once your hair starts to fall out, you should comb it often, wash your hair and massage it everytime. This will make the blood circulation better and cause less hair to fall out. Six people answered this correctly on the pretest, which is 30%. After the teaching program it increased to nine people, which is 45%

- The correct treatment for ALL should not use radiation because it will cause the disease to spread. Seven people answered their correctly on the pretest, which is 35%. After the teaching, it increased to twelve people, which is 60%.

- ALL is a disease that can be contracted by other people. Thirteen people answered that correctly to the pretest, which is 65%. After the teaching, it increased to seventeen people, which is 85%.

- You will feel sick, have cold or fever, which is normal once, the weather changes. Taking some medicine will be enough. Thirteen people answered that correctly to the pretest, which is 65%. After the teaching, it increased to eighteen people, which is 90%.

- If you feel sick before your appointment, you will wait until the appointment to see the doctor. Seven people answered their correctly on the pretest, which is 35%. After the teaching, it increased to nineteen people, which is 95%.

It can be concluded that in giving knowledge to the children with ALL. They and their mothers should be taught to understand the disease, its conditioned, the

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steps in treatment, and the side effects from the chemotherapy. Teaching program should cover as much information as possible and in a short period of time. It should also consisted of different ways that could help the patients and the mother's know and understand more.

Hypothesis II

The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of self-care behaviors than before received teaching program.

Results of this study, from hypothesis II, found that showed that it had been supported. The mean score of general self-care was 49.20 and 56.65, and the standard deviation was 4.9820 and 2.4979 respectively. The mean score of self-care behaviors during side effect of chemotherapy was 43.90 and 51.95, and the standard deviation was 3.0070 and 2.5644 respectively. The mean score of self-care behaviors was 93.10 and 108.60 and the standard deviation was 7.1150 and 4.7284 respectively. The mean score of all in the experimental group after received teaching program was higher than before received teaching program with a statistically significant difference ($P < .001$).

Individuals behaviors result from the 3 factors which were knowledge, attitudes, and psychomotor. If either one of the factors happen to change, it would result in a change in an individuals behaviors. (Prapapen Suwan, 1983:35) Because the school-age children had received the teaching program, they would learn more about their disease and about how to act. The factor of knowledge had changed, since school-age children knew more. As seen in hypothesis, after the patients had been

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taught, they knew more. As for the believed that once patients received correct knowledge, they would have the correct attitude and it would result in how they acted. From this study, it was explained that once children had received the teaching program, they would started to understood some of the reasons for their disease. But it was still concerted. Children would have a hope to recover from their disease. This result in trying to took care of oneself and listening to the doctors and nurses more children need answers about their disease, in order to get an understanding and control of their pain. Therefore, adults should answer the children in the right way. They should give correct information to help the children learn their responsibilities and take their self-care behaviors. (Perrin & Gerrity, 1984:26-28; Weitzman, 1984:59-69 cited by Jirapa Wekawanich, 1990: 16). This study conformed with the study of Panee Boonpeang (1992:54) which found that school-age children with leukemia or lymphoma had behavior better ways after being taught than before being taught, which had a statistical significant. From the study of Pinthong Pinjai (1992:62), it was found that children with Thalassemia behaved better after being taught than before being taught, which had a statistical significant. From the study of Varin Binhozen (1993:77), patients with seizures who had received a handbook to taught themselves about seizures took better self-care behaviors. From the study of Tassaneeya Wangsajantanon (1994:62), it was found that school-age children with asthma behaved better after being taught than before, which had a statistical significant.

From table 4, it found that the children 's behavior level before received the teaching program were most at fair level. But once they received knowledge, they would had a good behavior level. Children with ALL, during the first period of

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Consideration, were still adjusting due to the treatment, which caused discomfort. From the conditions of the disease or the treatment, whether its drawing blood very often, drawing spinal fluid from the spinal cord and bone marrow aspiration from the bone marrow, in order to used the results deciding in the next steps of treatment, it only made the patient feel pain, fear, and anxiety. Once chemotherapy and radiotherapy had been received, most patients had experienced side effects according to the strength of each individual. Patients who experience this would anxious and would try to search for ways they think would help them recover from their disease and torture. Researchers thought that the most important thing to do once there were side effects was try to prevent as mush pain as possible. This would be taught in the teaching program from cartoons in the handbook. This got the patient ready to face the different conditions to right way. It was found that from interviews the sample group of children with ALL misunderstands mostly about hygiene care and eating.

From speaking with the patients, no one had ever taught about keeping the bodies clean washing and cleaning of the genital organs. Because of the Thai tradition, which avoided teaching about this, hygiene was thought to be unimportant. It was found that a little girl did not know that the correct way to clean herself was to wash her genital organ starting from the front to the back. You then had to wipe it dry. As for the boys, they did not know that the correct way to clean himself was to pull down the skin cover and washed it clean. You would also have to wipe it dry. It was found, from speaking to the parents of the children, that most of them did not know that had to be done. Some were too embarrassed to teach. This time nineteen people, which is 95%, of the sample group did the wrong way. Out of the 95%, seven people were girls and twelve were boys. But after receiving the teaching program,

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only two people were still doing it wrong and they were both boys. This was due to the reason that they felt pain when pulling down the skin cover. Researcher then suggested to carefully does it and washes with soap. Once the teaching program had came to an end, all the patients were able to perform. This subject, therefore, became very interesting.

Most children did not eat vegetables and some children could only ate some kinds such as morning glory and bean sprouts in the noodles. They would separate out the vegetables once their parents tried to make them ate it. Some had reasons such as people in the family did not like vegetables. It found that ten people from sample group, which is 50%, did not act right. After they received the teaching program, some were able to eat more cucumbers, morning glory, and collard, but there were some that would not change their behavior because it did not taste good. This is an interesting subject, while should find ways to solve and change the eating behaviors.

Children with ALL usually forgot to wash their hands before eating or sometimes they would forget after going to the toilet. Most school-age children would perform correctly due to the encouragement from teachers and friends that performed together. But once they had reached home, with hunger, they forgot to do so. Six people from the sample group performed incorrectly, which was 30% from asking the mothers, most children performed more.

Children with ALL did not knew about contracting diseases. For example, they think they are able to swim. There was one child who had a house next to the Klong that plays in it all the time and some played in the rain. Some said that noone had ever told them not to get a vaccine shot and the reason for coming in for

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treatment this time was because after getting the vaccine, they had a fever. Thirteen people from the sample group perform incorrectly, which was 65% After the teaching program, most of the mother's would be concerned careful and would warn their child not to go swimming or played with water again. But the child who lived near the Klong still played in it because the mother had no time to take care of him. She had to sell things in the market.

Children with ALL liked to eat instant noodles. It was found to be tasty and cheap. two people, which was 10% ,of the sample group perform incorrectly. After the teaching program, once the patient wanted to eat instant noodles, they would add eggs, pork and vegetables.

Once a child with ALL started to feel sick or uncomfortable, their parents would buy medicine for them. 8 people, which was 40% of the sample group perform incorrectly. From questioning the parents, their were some children with fevers or slight colds. Once they taking medicine would usually occur at night. Buying medicine maintained the conditions first. If it did not get better, then the parents should bring their child to the doctors the following morning. But after the teaching program, both the children and their mothers understood the danger of buying and taking medicine on their own.

Whatever the children misunderstood, once they had received the knowledge, it was found that they perform more correctly. However, this depended on the mother's cooperation that received knowledge together with her children in the program. At home, the mother must help warn her child and be a supporter in facilitating some necessary materials.

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Hypothesis III

The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of knowledge about leukemic children than the group who received routine care.

From the results of this study, in hypothesis III , it had been supported by mean score of knowledge about leukemic children in the experimental group after received teaching program was higher than before received teaching program with a statistically significant difference (P <.001). The majority of the samples were experienced of receiving chemotherapy in the hospital 1-5 times, Both groups had obtained information, had experienced of side effects of chemotherapy such as hair loss, fever, stomatitis, nausea and vomit, anorexia respectively. (From table 1 and 2) The studied of Chukwan Pinsakol (1990:98) was studied of mother and child's health beliefs and self-care behavior in school- age leukemic children during chemotherapy. The sample were school-age children between 6-12 years and studying at the same educational level,which was elementary.Their knowledge ability ,and daily performance dealing with personal hygiene were at the same level. Other than this, the condition of the disease and side effects from chemotherapy may came back as long as the child was being treated. Therefore, school-age children with ALL had a chance to do them self –care behavior in order to relieve their symptom in a similar way. This study conformed with Weeraya Jungsomjetpaisan's research (1994:88) was studied the relationship between health perception and self-care behavior in school-age children with rheumatic heart disease.It showed that duration of treatment in the same disease of her samples could be received information about knowledge and practice. After the experimental group had been taught, their

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knowledge scores had increased greatly. This could be seen by evaluating the results of the school-age children with ALL, before they received teaching program. 75% of the children had knowledge at fair level, but after they received teaching program, 90% of the children had a much higher level of good knowledge. As for the control group that had received routine care, 75% would had fair level of knowledge, pretest and posttest. (Table 3)

The result of this study explained the ways of teaching in the teaching program. It consisted of many difference important steps. There were 3 interacting periods in all, which were set apart from each other by 2 weeks. Each 3 interacting period was divided into 3 steps, which were:

The first period

Step one: Building a good relationship allowed the child and mother to feel acquainted and trusted worthy. A good relationship between the nurse and mother help increased the quality of learning and teaching. Having trust in the nurse and being friendly was a great advantage for learning. Having trust would help increase the quality of communication. (Somchit Hanucharurnkul, 1996:47)

Step two: Researcher used the handbook as a tool for teaching. A cartoon named Deang, who was suffering from ALL, explained the information in the handbook. She wrote letters to her friends about her disease, the conditions, the treatment, the side effects of chemotherapy, and self-care behavior. While the story was being told, there would be constant questioning and answering between the researcher and the child. This was an important way of teaching that allowed the child to speak and ask questions. An effort should be made to motivate the children to be involved all the time. Once the teaching was over, there would be a conclusion

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which helped the patients better remember what was taught. During the teaching, the mother's of the patients were also listening closed by so that they would also learned the same things as the patients.

Step 3: Researcher assigned the handbook, with colored pencils, to the patients to took with them as homework. This would help them reviewed the information and painted in at the same time to hand in at the second periods. This technique would get the children involved being interested, and remember the different details more easily. Mothers at home would also be involved by being the ones who encouraged the patients to review and paint in the handbook. Because the mother took care of the child and were close to them, loved them, and wanted them to recover from their disease and be safe from any dangers that many occur to their child, researchers then pulled in the mothers to have a role in the teaching program as well.

The second period

This is the strategy to let the child reviewed his/her knowledge and repeat their understanding by being asked some questions about what happened while being at home. The child that hand in their homework shown that they were determined and paid attention to the reviewed, by the help of the mother's who gave them encouragement. The researcher would opened the handbook and spoke freely. Short answered questions would be asked and if the child's able to answer it correctly, they would be praised, which was a good reinforce. (Whitman, 1992:207)

The third period:

This was evaluating the resulted after being taught. There was the same interview for the child as before receiving teaching program. It was found that 75%

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of the patients who had fair level of knowledge. But after receiving teaching program, 90% of the patients had a much higher level of knowledge (Table 3).

Usually, the children with ALL who receiving teaching program in the hospital, would received general advised from the nurses before going home. When children came for check ups, the mothers and the children would talk about things while waiting to be called on. This was one way of getting information. When doing an interview after the experiment, it was found that the group of children who received routine care increased there scores by attitude, from 15% to 20% (Table 3). This showed that school-age children who received the teaching program had more knowledge that those who received routine care. This means that the teaching program encouraged the children with ALL to see the importance of taking care of themselves more. Mother's help reviewed with the child while at home, which was something that should be involved in the different activities. This helped the children with ALL had a better quality of life than they did so in the present.

Hypothesis IV

The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of self-care behaviors than the group who received routine care.

The results of this study found that in Hypothesis IV, it had received support. The mean score about general self-care, self-care behaviors during side effect of chemotherapy and self-care behaviors in school-age children with ALL of experimental group after received teaching program was higher than control group with a statistically significant difference ($P < .001$). From Table 8 , 9 ,10.

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Both the groups in this studied, which were the control group and experimental group, had the same behavior score. After received teaching program, the percentage of scores in experimental group had increased the good level of general self-care from 45 to 100 and self-care during side effect of chemotherapy had increased the good level from 20% to 95% and self-care behaviors had increased the good level from 30% to 100% in order. But most of school-age children with ALL who received routine care still had a fair level of self-care behaviors, from table 4. From what was stated in hypothesis II , an individuals behavior resulted from the following factors, knowledge, attitude, and self-care behavior. If either one of the factors were changed, there was usually a change in behavior. This showed that the teaching program results in the correct knowledge, a better attitude, and a more correct way of behaving. This conformed with the study of Kesanee Boonyawatanangkool (1998:76) which found that school-age children with cancer that had correct high perception, would behave in ways that could relieve the side effects. This study conformed with Chukwan Pinsakol (1990:88) which found that the belief towards health in school- age leukemic children during chemotherapy had a positive relation with the self-care behavior. Acknowledgement and the belief would change according to the knowledge that had been received. Once the school-age children with ALL had received teaching program, they would have the correct knowledge and belief, which would effect the behavior in self-care of themselves. Because the teaching program had difference steps, as stated in hypothesis III, it could be concluded that the group of school-age children with ALL who received teaching program had better knowledge about disease, the side effect of chemotherapy, and self-care behavior.

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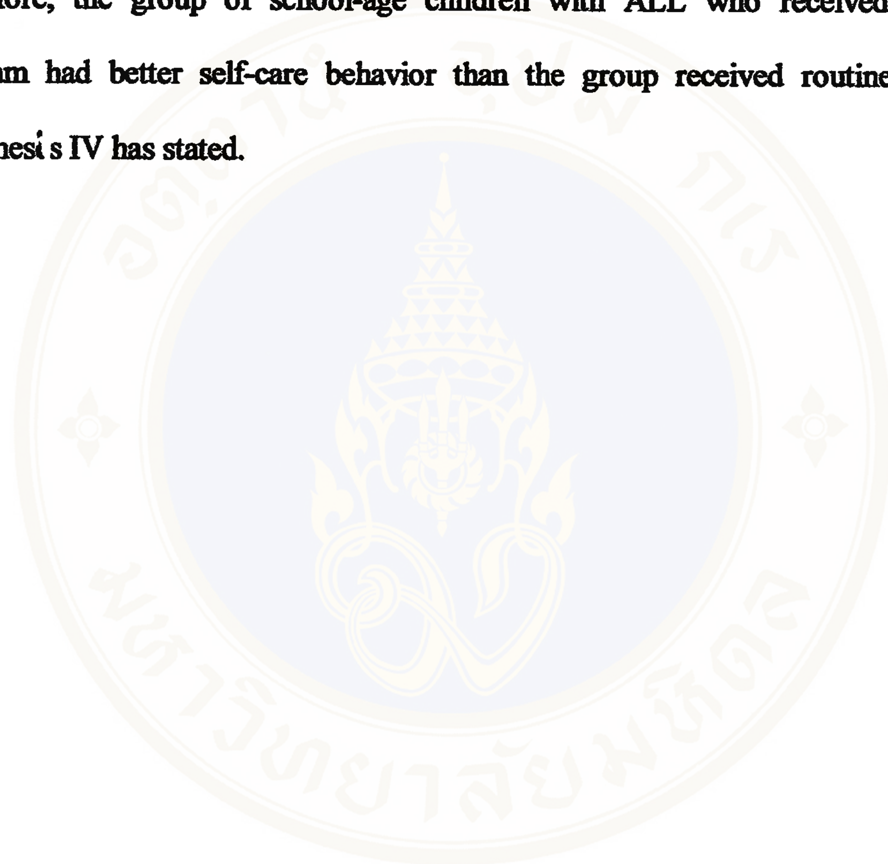
Teaching according to the story live in the handbook had pictures which help the children remember more easily and were able to perform following the handbook. The mothers would motivate and supported their children to review the handbook and gave them praised. This was included in every step of the program. Therefore, the group of school-age children with ALL who received teaching program had better self-care behavior than the group received routine care, as hypothesis IV has stated.



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CHAPTER VI

Conclusion and suggestions

Summary of the study

The study was quasi-experimental research and two groups pretest - posttest design to study the effect of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia. The samples of the study approached forty eligible samples, 28 samples at Siriraj Hospital and 12 samples at Chulalongkorn Hospital. They were selected by purposive sampling and divided into 2 groups: the control group who received routine care at Siriraj Hospital and the experimental group who received the teaching program at Siriraj Hospital and Chulalongkorn Hospital. Collecting data during May – December 1999.

The instruments used in this study were the intervention of teaching program: plan of teaching program and the handbook for leukemic children, which presents by cartoon. The data collection consisted of a demographic data from, the structural interviews about leukemic children and their self-care behaviors. The data was analyzed by using percentage, mean, t-test and ANCOVA. Result from this study showed that:

1. The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of knowledge about leukemic children than before received teaching program with a statistically significant difference ($P < .001$) in table 5.

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2. The group of school-age children with ALL, who received teaching program, after received teaching program had increased scores of self-care behaviors: general self care ,and self care behaviors during side effect of chemotherapy than before received teaching program with a statistically significant difference ($P < .001$) in table 6.

3. The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of knowledge about leukemic children than the group who received routine care with a statistically significant difference ($P < .001$) in table 7.

4. The group of school-age children with ALL who received teaching program, after received teaching program had increased scores of self-care behaviors than the group who received routine care with a statistically significant difference ($P < .001$) in table 8 ,9 ,10

Implication and Recommendation

Implication and application of research finding

This teaching program is effective intervention for leukemic children and it can use with other settings, which have the same policy both Out Patient Department, and In Patient Department

Implication for Further studies

1. The model of this teaching program could be applied to the children with other chronic illness.

2. Using this teaching program in-group form.

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Appendix A

List of Experts

There are five experts who have validated the intervention of teaching program and content validity of the structured interviews for knowledge about leukemic children and self-care behaviors. There are:

1. Gavivann Veerakul, M.D.

   Assistanted Professor

   Faculty of Medicine, Siriraj Hospital

   Mahidol University.

2. Boonpean Chanwatana, R.N., M.Sc. (Nursing.)

   Assistance Professor

   Faculty of Nursing,

   Mahidol University.

3. Arunsri Tachushong, R.N., M.S in Pharmacy. (Microbiology)

   Instructor of Nursing Department,

   Faculty of Medicine, Ramathibodi Hospital

   Mahidol University.

4. Chukwan Pinsakol, R.N. M.Sc. (MCN)

   Nurse Expertise and Supervisor of Pediatric Nursing Department,

   Faculty of Medicine, Siriraj Hospital

   Mahidol University.

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List of Experts (Continue)

5. Praditha Sinswang, R.N. M.Sc. (MCN)

   Nurse Expertise of Pediatric Nursing Department,

   Faculty of Medicine, Siriraj Hospital

   Mahidol University.

There are two experts who have validated intervention of teaching program and the handbook for leukemic children

1. Wajjanin Rohitsuk, B.S. MS. Ph.D. (Applied Behavioral)

   Instructor, Department of Psychiatry,

   Faculty of Medicine, Siriraj Hospital

   Mahidol University.

2. Kanjana Siricharoenwong, RN. ,M.Sc. (MCN)

   Educator, Kaukarun College of Nursing,

   Bangkok Metropolitan Administration.

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Appendix B

Inform consent sheet

My name is Kanjana Krongthammachart, Master student of Maternal and child nursing, Faculty of Nursing, Mahidol University. I am studying the effects of teaching program on knowledge and self-care behaviors in school-age children with acute lymphoblastic leukemia. In this study, I would like to request parent and leukemic children to participate in this teaching program by answering the structured interviews of personal data, knowledge about leukemic children and self-care behaviors of the leukemic children.

Your participation in this study is voluntary. You have the right to withdraw at any time and the case of your relationship with the health care team will not be affected.

The program of this study is answering the question at the first and then make an appointment to meet again in the 2 nd week and 4th week the last period is stopping this program and answering the structured interviews again.

The data will be coded, so they will not be linked to your name. Your identity will not be revealed while the study is being conducted, or when the study is reported and published.

Thank you for your kinds to spend time.

For the participant

The study information has explained and I voluntarily agree to give my consent to participate in this study.

....
(Signature of the participant's)

....
(Signature of the participant's parent)

Date..

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DOCUMENTARY PROOF OF ETHICAL CLEARANCE COMMITTEE
ON HUMAN RIGHTS RELATED TO RESEARCH INVOLVING HUMAN SUBJECTS
FACULTY OF MEDICINE SIRIRAJ HOSPITAL MAHIDOL UNIVERSITY, BANGKOK, THAILAND

TITLE OF PROJECT : THE EFFECTS OF TEACHING PROGRAM ON KNOWLEDGE AND SELF-CARE BEHAVIORS IN SCHOOL-AGE CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA

PRINCIPAL INVESTIGATOR : MISS. KANJANA KRONGTHAMMACHART

NAME OF DEPARTMENT : FACULTY OF NURSING

APPROVED BY COMMITTEE ON HUMAN RIGHTS RELATED TO RESEARCH INVOLVING HUMAN SUBJECTS ON ....7.......... JULY 1999

SIGNATURE OF CHAIRMAN :

PROF. KHUN NANTA MARANETRA
M.D.,Grad Dip Clin Sc Med, Msc Med (BKK), Thai Board Resp Med, Thai Board Crit care Med
MD (Melb.), FRCPT, FCCP, FRACP,FRCP (Lond.) , FRCP (Glasg.) , FRCP (Edin.)

SIGNATURE OF DEAN :

PROF. DR. CHANIKA TUCHINDA
M.D., MS, FAAP.

..........7.......... JULY 1999

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Appendix C

Instrumentation

The plan for leukemic children on knowledge and self-care behaviors.

Objective:

The end point of this program, the leukemic children can be

1. Defined the definition of ALL, sign and symptom, and side effect of chemotherapy
2. Defined self-care behaviors and self-care during side effect of chemotherapy

Sujects:

School-age children with ALL about 7-10 years old , 20 cases

Duration:

Two periods, 30 minutes per periods

Place:

Pediatric I unit, Hematological Clinic, Pediatric Department of Siriraj Hospital and Hematological Clinic at Pho Bho Raw 9, Pediatric Department of Chulalongkorn Hospital

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Plan for leukemic children on knowledge and self-care behaviors (in brief)

Objective	Content	Activities	Evaluation
The first period To build the relationship among nurse, children and their mothers	the first periods in step one In step two Picture I Picture 20 In step three	The researcher introduce herself for leukemic children and small talk ↓ Answering the question one by one in the process	The sample's pay attention to the and can give the correct answers

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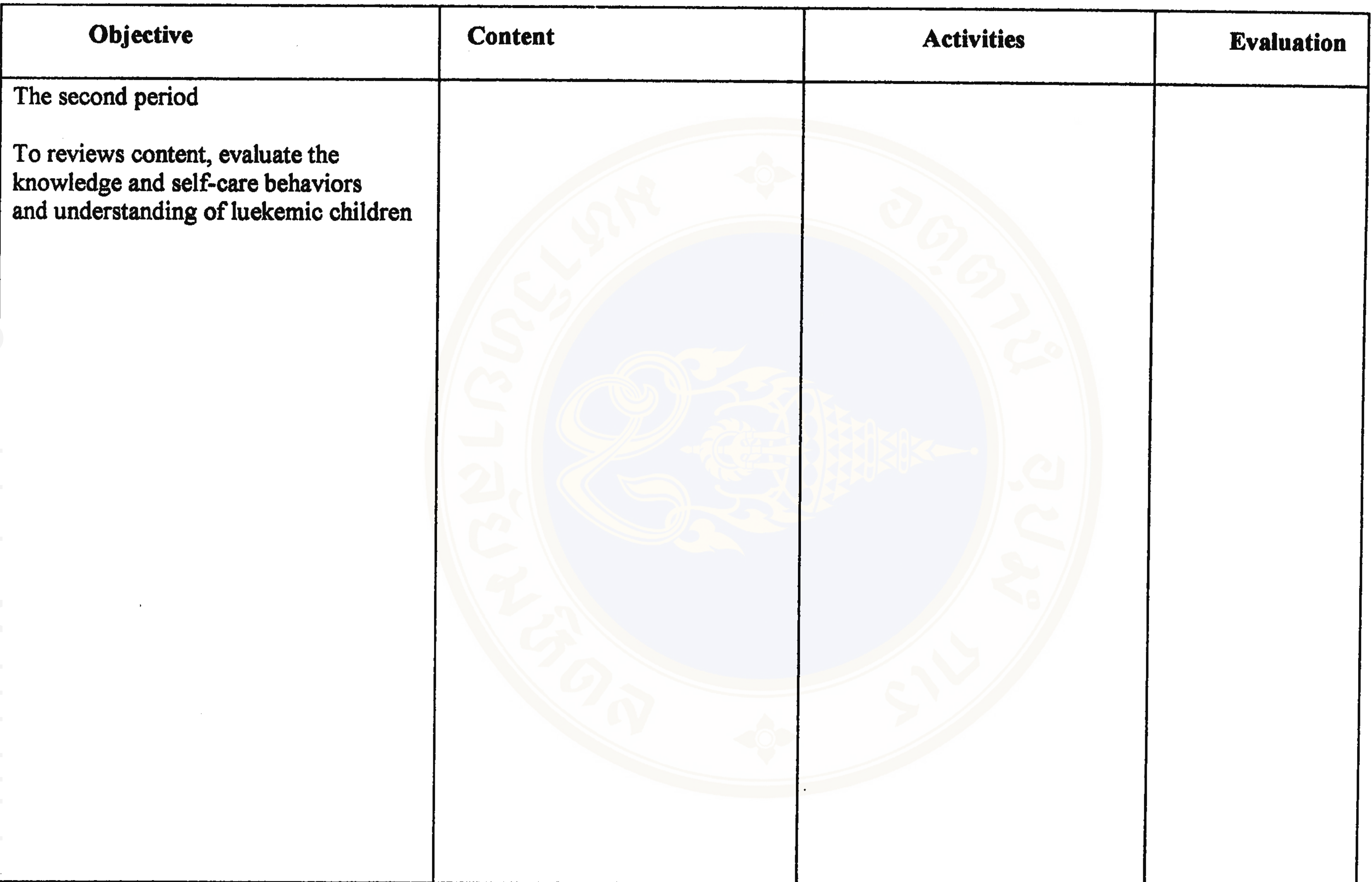
Plan for leukemic children on knowledge and self-care behaviors (in brief)



Objective	Content	Activities	Evaluation
The second period To reviews content, evaluate the knowledge and self-care behaviors and understanding of luekemic children			

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A Handbook
For
Leukemic children

Copyright by Mahidol University

Handbook for leukemic children

Deang is ALL: The letter to her friend

เมื่อหนูแดงเป็น ALL

จดหมายถึงเพื่อน

จัดทำโดย

นางสาว กาญจนา ครองธรรมชาติ

By

Kanjana Krongthammachart

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Data Collection Instrument

Part I : Data collection form about leukemic children

Part II : Structured interviews of knowledge about leukemic children

Part III : Structured interview about self-care behaviors of school-age children with ALL divided into 2 categories

- General self-care behaviors
- Self-care during side effect of chemotherapy

Interviews number.........

Data Collection Instrument

Part I : Data collection form about leukemic children

Notification : This interviews is collecting the demographic data from leukemic children and their OPD Card
The leukemic children's information

Name ....Surname...................., Nickname........................

1. Age................ years old (months)
2. Sex...............
3. Education level...................]
4. ....
5. ....
6. ....
7. Side effect of chemotherapy
   ....
   ....
   ....

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Part II :Structured interviews of knowledge about leukemic children

Notification :

The objectives of these structured interviews are to evaluate the knowledge and understanding of leukemic children. This structured interview is using for leukemic children about 7-10 years old. Reading the statement by investigator for them and they are collecting the choice " yes" or "no" or "unknown" by themselves.

No	Statement	Yes	No	Unknown
1.	ALL can be cured if they were continue treatment			
2.	ALL is the infected disease.			
3.	....			
4.	....			
5.	....			
6.	....			
7.	....			
8.	....			
9.	....			
10.	....			
11.	....			
12.	....			
13.	....			
20.	....			

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Part III : Structured interview about self-care behaviors of school-age children with ALL

Notification :

The objective of this structured interview are to evaluate self-care behaviors of school-age children with ALL.

Please read the statement on the left and mark ✔ of each response is :

Frequency means the leukemic children follows the stated practices almost all of the times when the event occurs.
Sometimes means the leukemic children only sometimes follow the stated practices.
Never means the leukemic children have never occurs.
Others means the other answers in this statement.

Interview about self-care behaviors of school-age children with ALL

No	Statement	Frequency	Sometimes	Never	Other
	General self-care of leukemic children				
1.	General hygiene				
1.1	Bathing your body and				
	perineal care				
1.2	Blushing their teeth twice				
	a day: after weak up and				
	before bed time.				
1.3	Washing your hands				
	before meal.				
2.	Nutrition				
3.	Medication				
4.	Rest				
5.	Exercise				
6.	Elimination				
7.	Follow up				

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Structured interview about self-care behaviors of school-age children with ALL

No	Statement	Frequency	Sometimes	Never	Other
	Self-care during side effect of chemotherapy				
1.	Anorexia , Nausea and				
	Vomiting				
1.1					
1.2					
1.3					
2.	Stomatitis				
3.	Allopecia				
4.	Infection				
5.	Anemia				
6.	Constipation/ Diarrhea				
7.	Bleeding				

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Appendix D

Question	Control group				Experimental group			
	Pre-test		Post-test		Pre-test		Post-test	
	□	X	□	X	□	X	□	X
1.								
2. Leukemia is infected disease that can spread to the other person.	7(35%)	13(65%	8(40%)	12(60%)	13(65%	7(35%	17(85%)	3(15%
3.								
4. Radiation can spread leukemic cell. So, it is not the correct treatment for leukemic children	10(50%)	10(50%)	8(40%)	12(60%)	7(35%)	13(65%)	12(60%)	8(40%)
5.								
6.								
7.								
8. Egg and meat is not useful for sick child.	8(40%)	12(60%)	12(60%	8(40%)	6(30%)	14(70%	10(50%)	10(50%)
9. Using thick clothes when you have a high fever.	2(10%)	18(90%	3(15%)	17(85%)	3(15%)	17(85%	8(40%)	12(60%)
10.								
11.								
12.								
13. Swimming, playing football or table tennis are the normal sports for leukemic children.	7(35%)	13(65%)	13(65%	7(35%)	5(25%)	15(75%	20(100%)	–
14. Frequented combing, shampooing and conditioning your hair is the process for using protected your hair loss.	8(40%)	12(60%)	6(30%)	14(70%)	6(30%)	14(70%)	9(45%)	11(55%)
15. When you feel sick: common cold or fever that you can find medicine for yourself.	7(35%)	13(65%)	9(45%)	11(55%)	13(65%	7(35%)	18(90%)	2(10%)
16.								
17.								
18.								
19.								

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Question	Control group				Experimental group			
	Pre-test		Post-test		Pre-test		Post-test	
	☐	X	☐	X	☐	X	☐	X
20. If you feel sick, you will want to visit your doctor in the follow up's day.	15(75%)	5(25%)	13(65%)	7(35%)	7(35%)	13(65%)	19(95%)	1 (5%)

The number is person

☐ the correct answer

X the uncorrect answer

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BIOGRAPHY

NAME	MISS KANJANA KRONGTHAMMACHART
DATE OF BIRTH	5 NOVEMBER, 1962
PLACE OF BIRTH	BANGKOK, THAILAND
INSTITUTIONS ATTENDED	MAHIDOL UNIVERSITY, 1982-1986 THE DEGREE OF BACHELOR OF SCIENCE (NURSING AND MIDWIFERY)
	MAHIDOL UNIVERSITY, 1995 CERTIFICATE IN CANCER NURSING SPECIALTY
	MAHIDOL UNIVERSITY, 1997-2000 MASTER OF NURSING SCIENCE (MATERNAL AND CHILD NURSING)
RESEARCH GRANT	SUPPORTED IN PART BY THE THESIS GRANT, FACULTY OF GRADUATE STUDIES, MAHIDOL UNIVERSITY
POSITION&OFFICE	1986-PRESENT: PEDIATRIC III UNIT PEDIATRIC NURSING DEPARTMENT SIRIRAJ HOSPITAL POSITION: REGISTERED NURSING

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