

COMPLEMENTARY THERAPY/CARE TO RELIEVE PEDIATRIC CANCER-  
THERAPY RELATED SYMPTOMS IN THAILAND

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### **Abstract**

Patients undergoing treatment for cancer, whether it includes chemotherapy and/or radiation, experience many side effects that are linked to the treatment. The specific purposes of this study were to examine (a) what Thai parents report they do to help alleviate symptoms that the child experiences during cancer therapy; and (b) what categories of dependent care and/or complementary therapies were those methods reported. Orem's self-care/dependent-care concept was used to guide the analysis of the care pediatric patients received. Secondary analysis was done of data collected from a larger study at the National Children's Hospital in Thailand. The sample included children ages 5-17 years ( $N=100$ ). Of the 100 patients, 71 were male and 29 female; while 75 patients were 5-11 years old, and 25 patients 12-17 years old. Cancer diagnoses can be divided into the following: 63% leukemia, 12% nervous system tumors, 10% solid tumors, 6% lymphoma, and 9% Other. The 34-item Therapy-Related Symptom Checklist for Children (TRSC-C) was used to record patients' symptom occurrence/severity (0, no symptom; 4, "A whole lot"); and the Symptom Alleviation: Self-Care Methods (SA:SCM) tool was used to identify methods parents used to alleviate chemotherapy-related symptoms. To address the study purposes, descriptive data and content analyses were done. Symptom occurrence of 16 symptoms were reported by 45% or more of patients; and mean severity "2", or "Quite a bit" of the top five reported symptoms included hair loss, nausea, vomiting, fever, loss of appetite. Of the six categories of self/dependent-care methods/complementary therapies, all were found useful; and, Diet/nutrition/life-style and Mind/Body Control were the most utilized. Assessing patient/parent-reported symptoms and use of self/dependent care and complementary therapies help Thai families cope during pediatric cancer treatments.

### **Introduction**

Being diagnosed with cancer can be extremely devastating to a patient and their loved ones. Not only does cancer affect the patient physically, but it also affects all aspects of their life psychologically, emotionally, and spiritually. The diagnosis of cancer in a pediatric patient can be even more devastating. The incidence of pediatric cancer is more common than expected. Statistics show that one in 330 individuals younger than 20 will be diagnosed with cancer yearly (Berg et al., 2009). Although treatment can be effective, cancer still takes many lives. According to the American Cancer Society [ACS], cancer is the leading cause of disease related death in children (2010). The cancer patient will undergo long, extensive treatments to try and put their case into remission. Treatment advances have allowed 80% of pediatric patients diagnosed with cancer to live five

years or more compared to less than 50% in the 1970s (ACS, 2010). Pediatric cancer treatment may include chemotherapy, surgery, and/or radiation. Even though treatment is beneficial, many pediatric patients experience side effects as a direct result of their treatment according to the ACS (2010). The ACS also claims that treatment-related “late effects” may not appear until months or even years later. The side effects have a lasting impact on the quality of life of these patients, and it may be difficult to manage these symptoms in children (Baggott et al., 2004). But without knowing the specific symptoms children are experiencing, knowledge and resources cannot be directed to help overcome these side effects. An assessment of patient and parent self-reports of symptoms during treatment cycles allows care providers to effectively manage the side effects that may impair their therapy (Williams et al., 2006a,b; 2008; 2010; In press).

### *Conceptual Framework*

This study uses Orem’s Self-Care Theory to guide the data collection and analysis. Orem defines self-care as the “voluntary regulation of human functioning and development that is necessary for individuals to maintain life, health, and well-being” (95). As children cannot always care for themselves as they grow up, the parents/caregivers help care for the children and monitor the children’s self-care needs which Orem refers to as dependent care (Williams et al., 2006a; 2010; In press). As children with cancer experience side effects of cancer treatment, parents/caregivers can implement dependent care strategies for their children. The term complementary therapy is commonly used in this study to identify methods parents/caregivers take to alleviate the symptoms. Complementary care and therapies are “care modalities or self-care used as adjuncts to mainstream medical care such as chemotherapy, as provided in a cancer clinic.” Various methods are used and these have been classified into categories by Williams et al. and co-investigators (2006; 2010, p.38; Piamjariyakul et al., 2010). Complementary care and therapies have also been referred to as “integrative therapies” (Wesa et al., 2008).

### *Purposes*

The specific purposes of this study were to examine (a) what Thai parents report they do to help alleviate symptoms that the child experiences during cancer therapy; and (b) what categories of dependent care and/or complementary therapies were those methods reported.

## **Literature Review**

A computer-based search was completed with the databases CINAHL and PubMed to locate research from the past 15 years that has been done on cancer treatment in children, and the side effects experienced as a result of treatment. The research reports were analyzed to determine

symptoms that patients exhibited and what, if any, methods were used to alleviate these symptoms. The focus was directed towards dependent care methods utilized by the parents of cancer patients.

Symptom prevalence and type were measured during a year-long period by Collins et al. (2000) to determine what pediatric patients were experiencing. The study involved 159 children between the ages of 10-18 who had a current or prior diagnosis of cancer. Symptom occurrence was verified by a 30-item instrument used to measure the prevalence, severity, and distress of symptoms. Of the 30 symptoms, patients experienced an average of 12.7 various symptoms. Pain was the most prevalent symptom patients suffered from with an 84.4% occurrence. Overall, the most common symptoms, which were reported by more than 35% of participants, were lack of energy, pain, drowsiness, nausea, cough, lack of appetite, and psychological symptoms including sadness, worry, and irritability. Symptoms that led to the greatest distress in patients included difficulty swallowing, insomnia, mouth sores, hair loss, skin changes, and vomiting. The study concluded that children ages 10-18 are capable of self-reporting their symptoms and that the usage of validated tools can help determine the quality of life in children who are ill.

Symptom monitoring of 11 children ages 2-18 years with cancer who were inpatients at a Midwestern medical center was explored by Williams et al. (2006a). The study utilized the Therapy-Related Symptom Checklist (TRSC) adult version (Williams et al., 1997; 2001) to measure symptom occurrence and severity based on report from the parent and/or caregiver. Data indicated the most common symptoms experienced included fatigue, nausea, eating, fever, pain, and hair loss. Another tool was used to determine what dependent care methods were used to alleviate the symptoms, and if the methods were effective. Some examples of dependent care strategies utilized were distraction, massage, nose sprays, mouth rinses, and vitamins. Dependent care strategies were found to be beneficial to alleviate symptoms. Furthermore, the methods used to alleviate symptoms can be sorted into two categories: diet/nutrition/lifestyle modifications and mind/body control. The study showed a wide range of symptoms manifested in children with cancer, and many methods, either general or symptom-specific ones, that were used to alleviate these symptoms.

Level of activity in patients undergoing chemotherapy, radiation, and/or surgery may be decreased due to treatment. Between 2005 and 2007, Winter et al. (2009) studied the activity level of 80 patients, ages 5-18 years during cancer treatment, as compared to 45 healthy controls. Level of activity was measured using a Step Activity Monitor that patients were instructed to wear for seven days during hours when they were awake. They found that the patients were significantly less active and participated in short bouts of activity rather than sustained or continuous activity over a long period or distance. Physiological factors were found to contribute to the lack of activity

including nausea and general fatigue, and a low self-confidence in one's capability. They concluded that although rest and recovery are important aspects of cancer treatment, it is also important to adapt interventions to each patient's needs and activity levels during and after treatment.

Despite cancer treatment's effects on patients currently undergoing therapy, patients also experience effects from treatment in the future. Berg et al. (2009) studied 25 patients between the ages of 10-17 who had cancer treatment at least two years prior. It was determined that pain and fatigue led to many activity restrictions in children who survived cancer. Performance restrictions were found such as impaired ability to lift heavy objects, climb stairs, walk one block, and perform self-care activities. Of the 25 patients, 92% ( $N=23$ ) reported lower extremity symptoms, cognitive deficits, fatigue, and psychosocial issues. Lower extremity symptoms involved pain and numbness; cognitive deficits involved memory or attention problems; fatigue led to decreased activity tolerance; and psychosocial issues involved depression and fights with peers. The data clarified that the participants experienced symptoms that affected their participation in everyday activities which may impair their ability to experience proper development. Self-management was found to be beneficial and contributed to increased engagement in self-care, participation in chores, and increased mobility. The results confirmed that self-management may enhance the ability of patients to adapt and accommodate the future effects of treatment in order to maintain activity in their day to day lives.

Rheingans (2008) focused on the most distressing symptoms reported by pediatric patients. The study was conducted using surveys from 509 pediatric hematology/oncology nurses across the United States. The survey was based on the most distressing symptoms that pediatric oncology patients experienced according to the literature. It was used to assess nurses' views on patient symptoms experienced and distress due to these symptoms, and what interventions nurses used to treat patient symptoms. Pain was the most commonly reported symptom, and the least common was trouble sleeping. Nurses reported an average of 12.7 interventions that they used to treat each symptom. Interventions that were found helpful included art therapy, deep breathing, distraction, humor, imagery, massage, music therapy, and acupuncture. The most useful nursing intervention was emotional support for both the patient and family. This study emphasizes taking a holistic approach to effectively manage patient symptoms, including pharmacologic and non-pharmacologic methods. Rheingans concluded the usage of nursing interventions found successful in evidence-based research provided the best patient care for symptom management, in addition to pharmacologic interventions.

In summary, the literature includes many studies that have been done to analyze the multitude of symptoms experienced by children with cancer in response to treatments. It can also be said that many studies have looked at how quality of life is affected by these effects and determined nursing interventions are beneficial in addition to pharmacologic methods to relieve symptoms. The aim of this study will further analyze symptoms experienced during cancer treatment and what self-care and dependent-care methods have been used by parents/caregivers, and deemed successful to alleviate symptoms.

## **Methods**

### *Design*

This study is a secondary analysis of data collected for a larger study done in Thailand by this student's faculty mentors. IRB approval was obtained initially at the University of Kansas Medical Center, and then also at the study setting, the Queen Sirikit National Children's Hospital located in Bangkok, Thailand. To participate in the honors practicum this student also had to obtain KUMC-IRB approval as well as a Conflict of Interest clearance.

Subjects were included in the larger study if they: (a) had a diagnosis of cancer; (b) received two or more rounds of treatment; (c) were under 18 years of age; and (d) parent consent was obtained. The sample included children ages 5-17 years ( $N=100$ ). Of the 100 patients, 71 were male and 29 female; while 75 patients were 5-11 years old, and 25 patients 12-17 years old. Cancer diagnoses can be divided into the following: 63% leukemia, 12% nervous system tumors, 10% solid tumors, 6% lymphoma, and 9% Other.

### *Instruments*

The Therapy-Related Symptom Checklist-Child (TRSC-C), a patient/parent self-report tool, was used to gather information on symptom occurrence and severity experienced during cancer treatment (Williams et al. 2008; 2010; In press). The TRSC-C was used to measure symptom severity on a 5-point scale, "0" (no symptom), "1" (a bit), "2" (quite a bit), "3" (a lot), and "4" (a whole lot). Higher scores on the checklist indicate the symptoms were more severe. The checklist includes "kid-friendly" terms to help the child (and parent) understand the symptoms. The TRSC-C has 34 symptoms that have been identified by clinical experts and the literature. There was space at the bottom of the checklist also for parents and/or patients to add additional symptoms. Since the tool was used in Thailand, the Thai version was developed using Miller's (2001) translation and back-translation methods. A Cronbach's alpha coefficient of .90, and good construct validity have been reported on the TRSC-C (Williams et al., 2008; 2010).

The Symptom Alleviation: Self-Care Methods (SA:SCM) was another tool used in this study. The parent and/or caregiver were able to report what methods were used to control symptoms reported on the TRSC-C. Furthermore, the tool allowed the parents/caregivers to determine if the method was useful or not to alleviate the symptoms. Also it measured how often on a scale of 0 (not done) to 4 (done very often) the methods or strategies were used.

Parents also completed the demographic form. The nurse data collector completed the Health Form that included diagnosis, treatments, and other health data based on the medical record.

### *Data Analysis*

To address Purpose 1, the dependent care and self-care methods on the SA:SCM that were used to alleviate symptoms reported on the TRSC-C were analyzed descriptively. That is, the symptom alleviation methods used for each symptom reported were tallied and percentages were obtained. To address Purpose 2, the six categories of complementary care methods (Williams et al., 2006a,b) were used: Diet/nutrition/life-style changes; mind/body control; biologic treatment; herbal treatment; taking prescribed medications; and other methods (Williams et al., 2006a,b; 2010a). Content analysis was done of the responses (Polit & Beck, 2008) before the classifications into categories were done.

## **Results**

### *Sample Characteristics*

Parents of 100 children with cancer who were 17 years old or younger were included in the sample. Of the 100 children, 71 were males and 29 were females. Seventy-five children were below 11 years old while 25 were between 12-17 years old. Table 1 shows the breakdown of diagnoses. Sixty-three children and adolescents had diagnoses of leukemia; 12 had diagnoses of nervous system tumors; 10 had diagnoses of solid tumors, such as Wilm's tumor or rhabdomyosarcoma; 6 had diagnoses of lymphoma such as Hodgkin's; and 9 had other diagnoses including cancer of the liver, ovary, kidney, and retinoblastoma. Ninety-five percent of the respondents identify themselves with the Buddhist religion.

### *Symptoms and Dependent Care Strategies Reported*

In a separate report (Piamjariyakul et al. 2010), the occurrence and severity of symptoms reported on the TRSC-C are shown (Table 2). The table shows the 34 items into the seven TRSC-C subscales or clusters developed by Williams et al. (2010; In press). Overall, in terms of symptom occurrence, 45% or more of the sample reported 16 symptoms [hair loss (95%), nausea (79%),

vomiting (75%), fever (71%), loss of appetite (65%), weight loss (64%), irritable (63%), cough (61%), sore mouth (59%), pain (53%), sweating (52%), feeling sluggish (49%), depression (49%), afraid (49%), constipation (47%), and headache(46%)]]. In terms of symptom severity, it is noted that the calculations included “0”, which means that mean severity was actually one point higher, if only those reporting the symptom were calculated. Nine symptoms with mean severity above “1” were loss of appetite, nausea, vomiting, weight loss, hair loss, irritable, fever, and sweating.

Table 3 presents the six categories of dependent-care methods and complementary therapies that the parents/caregivers reported they used to help alleviate each of the 34 symptoms listed on the TRSC-C. The six categories include: Diet/nutrition/life-style changes; mind/body control; biologic treatment; herbal treatment; taking prescribed medications; and other methods. Also the option of “Do Nothing” was reported for some symptoms as the parent/caregiver did nothing in response to the symptom. Of the six categories of dependent-care methods and complementary therapies, all were found useful. The two most common categories were diet/nutrition/life-style changes and mind/body control.

Diet/nutrition/life-style changes included adding flavoring to food items, changing the variety of foods, providing small frequent meals, and offering soft or liquid diets. Mind/body control involved massage, sponge baths, providing words of encouragement, allowing more periods of rest, and varying activities. Biologic treatment included use of vitamins while herbal treatment relied on such things as ginger ointment, “violet flower”, and coconut oil. Other methods reported by some parents/caregivers include following up with the doctor and providing mouth care. Prescribed medications were also used to alleviate symptoms including anti-emetics for nausea, Xylocaine for sore mouth, inhaler for shortness of breath, Paracetamol for fever and pain, and laxatives for constipation.

## **Discussion**

This study suggests that children with cancer experience many symptoms as a result of cancer treatment. The TRSC-C was effectively used for parents/caregivers to report symptoms their child experienced. The parents and caregivers were also able to use the SA: SCM to identify dependent-care methods and complementary therapies used to alleviate symptoms. The five most reported symptoms were hair loss, nausea, vomiting, fever, and loss of appetite. Nausea was the most reported symptom in all children (79%) after hair loss (95%). An adult study confirmed the most frequent symptoms reported included hair loss, fever, nausea, vomiting, numbness of fingers and toes, fatigue, and difficulty sleeping (William et al., 2000). In comparison, the most frequent five symptoms were confirmed in children.



A survey of nurses done by Rheingans (2008) indicated nurses' interventions were effective to manage symptoms. The nurses reported pain most frequently followed by difficulty sleeping. The nurses found interventions useful including emotional support, play therapy, relaxation, and education for parents regarding therapies. In comparison, other methods besides pharmacological interventions were found effective to overcome symptoms as in this study.

Parents and caregivers used a variety of methods to alleviate the symptoms children exhibited. Dependent-care strategies and complementary therapies were extremely helpful to manage symptoms. Diet/nutrition/life-style changes and mind/body control were the two most effective categories. A study done on Thai adult cancer patients indicated useful self-care methods including food flavoring to enhance taste, massage, mouth rinses for sore mouth, and medicines that were prescribed to control pain, nausea, and difficulty sleeping (Piamjariyakul et al., 2010). These methods were also used by the parents/caregivers to relieve symptoms in their children.

Parents and caregivers have found many additional dependent-care strategies and complementary therapies to combat the secondary effects of treatment. In this study the parents resorted to methods such as adding flavor to foods, massage, and play. A study on pediatric cancer patients determined methods used to alleviate symptoms, and indicated many care strategies were effectively used such as distraction, massage, mouth rinses, and rest periods (Williams et al., 2006). In summary, there are many similarities in reliable dependent-care strategies and complementary therapies that can be used to overcome secondary effects of cancer treatment.

### *Implications for Nursing*

Children experience a variety of symptoms during cancer treatment. These symptoms may greatly influence the child's quality of life, which is also dependent upon preventive or reactive methods patients and/or their parents take in response to the symptoms (Baggott et al., 2004). Even though pharmacologic methods have commonly been used to manage symptoms, nurses have found interventions to be useful in alleviating these symptoms as well (Rheingans et al., 2008). Rheingans found pediatric cancer patients were able to manage their symptoms better when nurses encouraged family involvement and provided education to manage symptoms. Other advanced practice nurses using the Stetler model of evidence-based practice (Polit & Beck, 2008) have used a symptom checklist as basis for patient education and symptom management of oncology patients as well (Williams et al., 2011). Pediatric oncology nurses need to be knowledgeable and well-educated in order to assist family members to cope with the diagnosis of cancer and the side effects of therapy (Williams et al., 2006; 2010b; In press).

In conclusion, it cannot be ignored that assessing patient and parent-reported symptoms is extremely important to identify what symptoms children experience secondary to cancer treatment. The TRSC-C can be used to help monitor symptoms. In addition, the SA:SCM will allow parents/caregivers to report what dependent-care methods and complementary therapies have been useful. The combination of pharmacologic and non-pharmacologic methods provides the best, well-rounded care for the cancer patient. The usage of dependent-care and complementary therapies may help Thai families cope during pediatric cancer treatment.

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**THERAPY-RELATED SYMPTOM CHECKLIST-CHILDREN (TRSC-C)**

Name: \_\_\_\_\_ ID # \_\_\_\_\_ Date: \_\_\_\_\_  
 Age: \_\_\_\_\_ Gender: Male \_\_\_\_\_ Female \_\_\_\_\_

PLEASE **IDENTIFY** below THE PROBLEMS YOU HAVE HAD **IMMEDIATELY**  
**AFTER AND SINCE YOUR LAST TREATMENT. PLEASE CIRCLE HOW SEVERE**  
**THE PROBLEM WAS ACCORDING TO THE FOLLOWING SCALE:**

0=NO SYMPTOM 1 = A LITTLE BIT 2 = QUITE A BIT 3 = A LOT 4 = A WHOLE LOT

EXAMPLE	CIRCLE HOW SEVERE				
	0	1	2	3	4
Pain	0	1	2	3	4
Loss of Appetite [Not feeling hungry; Eat less; Not feel like eating]	0	1	2	3	4
Nausea [Feel like throwing up; Upset stomach; Stomach hurts]	0	1	2	3	4
Vomiting [Throwing up]	0	1	2	3	4
Weight Loss [Losing weight; Feel skinnier]	0	1	2	3	4
Sore Mouth [Mouth hurts; Hurts to eat]	0	1	2	3	4
Difficulty Swallowing [Hard to swallow; Hurts to swallow]	0	1	2	3	4
Sore Throat [Throat hurts]	0	1	2	3	4
Jaw Pain [Jaw hurts; Hurts to chew or yawn]	0	1	2	3	4
Cough [Coughing much]	0	1	2	3	4
Shortness of Breath [Hard to breath; Breathe fast]	0	1	2	3	4
Feeling Sluggish [Feel very tired; Feel lazy]	0	1	2	3	4
Depression [Feel sad a lot; Cry more]	0	1	2	3	4
Difficulty Concentrating [Hard to think; Hard to pay attention]	0	1	2	3	4
Difficulty Sleeping [Hard to go to sleep; Hard to stay asleep]	0	1	2	3	4
Fever [Feel very hot; High temperature]	0	1	2	3	4
Bruising [Dark spots on skin; Bruise easily]	0	1	2	3	4
Bleeding [Bloody nose; Bleeding from cuts, scratches, or when brushing teeth]	0	1	2	3	4
Hair Loss [Hair falling out; Losing hair]	0	1	2	3	4
Skin Changes [Skin feels dry or red; Skin feels different]	0	1	2	3	4
Pain [It hurts]	0	1	2	3	4
Numbness in Fingers and Toes [Tingling fingers/ toes; fingers/ toes "falling asleep"; Fingers/ toes feel cold]	0	1	2	3	4
Constipation [Hard to "poop"]	0	1	2	3	4
Sweating	0	1	2	3	4
Itching [Want to scratch skin]	0	1	2	3	4
Hard to urinate [Hard to "pee"]	0	1	2	3	4
Afraid [Feel nervous; worried]	0	1	2	3	4
Headache [Head hurts]	0	1	2	3	4
Irritable [Feel upset easily; get mad easily]	0	1	2	3	4
Agitation [Feel restless; can not stay still]	0	1	2	3	4
Tripping or Falling	0	1	2	3	4
Other (List)	0	1	2	3	4
Other (List)	0	1	2	3	4
Other (List)	0	1	2	3	4

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**Table 1** Distribution of Diagnosis

<b>Diagnosis</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative</b>
<b>Leukemias</b>			
Acute Leukemia	1	1	1
ALL	58	58	59
Leukemia	2	2	61
ANLL	2	2	63
<b>Lymphomas</b>			
Hodgkin Disease HD	1	1	64
Hodgkin Lymphoma Stage 3	1	1	65
NHL	2	2	67
T-Cell Lymphoma	1	1	68
HLH-EBV	1	1	69
<b>Nervous System Tumors</b>			
Neuroblastoma	10	10	79
Ganglioneuroblastoma	1	1	80
PNET	1	1	81
<b>Solid Tumors</b>			
Wilm's Tumor	1	1	82
Rhabdomyosarcoma	4	4	86
Germ Cell Tumor	3	3	89
Endodermal Sinus Tumor	1	1	90
Mixed Germ Cell Tumor	1	1	91
<b>Others</b>			
Ca Liver	1	1	92
Ca Ovary	2	2	94
Immature Teratoma Rt Ovary	1	1	95
Retinoblastoma	3	3	98
Sarcoma Rt Kidney	1	1	99

**Table 2** Distribution of Symptoms and Severity (N=100). Source: Piamjariyakul et al. (2010)

<b>Distribution of Severity Scores (%)</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Mean(SD)</b>	<b>% Occurrence</b>
<b>1. N/V, Eating, Fatigue-Other</b>							
Loss of Appetite	35	24	25	13	3	1.25 (1.158)	65
Nausea	21	38	31	7	3	1.33 (0.985)	79
Vomiting	25	36	29	7	3	1.27 (1.014)	75
Weight Loss	36	35	21	5	3	1.04 (1.024)	64
Feeling Sluggish	51	24	19	6	0	0.80 (0.953)	49
Hair Loss	5	11	26	38	20	2.57 (1.085)	95
<b>2. Behavior, Cognition-Other</b>							
Depression	51	23	21	3	2	0.82 (0.999)	49
Difficulty Concentrating	78	9	9	3	1	0.40 (0.853)	22
Pain	47	25	19	8	1	0.91 (1.036)	53
Irritable	37	20	25	12	6	1.30 (1.251)	63
Agitation	77	7	9	4	3	0.49 (1.020)	23
Headache	54	19	20	6	1	0.81 (1.022)	46
Afraid	51	20	21	5	3	0.89 (1.091)	49
<b>3. Oropharynx</b>							
Sore Mouth	41	33	21	3	2	0.92 (0.961)	59
Difficulty Swallowing	70	19	7	4	0	0.45 (0.796)	30
Sore Throat	65	24	5	6	0	0.52 (0.847)	35
<b>4. Fever, Neuropathy, Motor</b>							
Fever	29	29	32	8	2	1.25 (1.029)	71
Bruising	65	17	14	4	0	0.57 (0.891)	35
Bleeding	68	20	9	2	1	0.48 (0.822)	32
Numbness of Fingers/Toes	67	22	7	4	0	0.85 (1.095)	33
Tripping/Falling	63	21	10	6	0	0.59 (0.90)	37
<b>5. Skin, Other</b>							
Skin Changes	57	23	13	5	2	0.72 (1.006)	43
Itching	58	20	18	3	1	0.69 (0.94)	42
Sweating	48	15	22	11	4	1.08 (1.228)	52
Cough	39	39	16	5	1	0.90 (0.916)	61
<b>6. GI, GU-Other</b>							
Jaw pain	92	4	4	0	0	0.12 (0.433)	8
Constipation	53	22	14	9	2	0.85 (1.095)	47
Hard to urinate	87	9	3	1	0	0.18 (0.52)	13
<b>7. Shortness of Breath, Other</b>							
Shortness of Breath	64	18	14	4	0	0.58 (0.878)	36
Difficulty Sleeping	64	20	12	3	1	0.57 (0.891)	36

TRSC scale : severity 0-4 : "0", None; "1", A bit; "2", Quite a bit; "3", A lot; "4", A whole lot;  
 % Occurrence : % report of presence of symptom

**Table 3** Symptoms Reported and Self-Care Methods Used

<b>Symptoms Reported</b>	A	B	C	D	E	F	G
1. Taste Change	20	4	0	0	0	1	8
2. Loss of Appetite	50	4	3	0	1	0	3
3. Nausea	27	6	1	1	2	31	6
4. Vomiting	19	7	0	0	3	39	7
5. Weight Loss	35	0	3	0	2	1	16
6. Sore Mouth	10	0	0	0	13	37	4
7. Difficulty Swallowing	19	0	0	0	5	1	3
8. Sore Throat	16	1	0	0	9	1	6
9. Jaw Pain	4	0	0	0	0	1	6
10. Cough	23	1	0	0	4	40	4
11. Shortness of Breath	0	16	0	0	9	4	5
12. Feeling Sluggish	0	32	0	0	0	2	12
13. Depression	0	42	0	0	0	0	3
14. Difficulty Concentrating	0	14	0	0	0	0	6
15. Difficulty Sleeping	0	24	0	0	0	0	9
16. Fever	0	51	0	0	14	60	0
17. Bruising	0	10	0	0	3	12	7
18. Bleeding	0	20	0	0	5	8	2
19. Hair Loss	0	38	0	1	0	1	40
20. Skin Changes	1	23	0	1	1	4	11
21. Pain	0	19	0	0	3	12	7
22. Numbness in Fingers and Toes	0	23	0	0	0	1	7
23. Constipation	35	0	0	0	0	14	3
24. Dizzy	2	0	0	0	0	12	2
25. Diarrhea	3	0	1	0	5	24	5
26. Sweating	0	36	0	0	0	0	5
27. Itching	0	10	0	0	0	25	5
28. Hard to Urinate	6	1	0	0	1	0	2
29. Afraid	0	40	0	0	0	0	1
30. Dry Mouth	30	1	0	0	29	2	3
31. Headache	0	9	0	0	1	22	3
32. Irritable	0	48	0	0	0	0	3
33. Agitation	0	5	0	0	0	0	5
34. Tripping or Falling	0	14	0	0	1	1	5
35. Other	0	2	0	0	2	0	0

Self-care methods, by complementary care categories : A. Diet/Nutrition/life-style; B. Mind/Body Control; C. Biological Treatment; D. Herbs; E. Other; F. Prescribed Medicine; G. Do Nothing

## References

- ACS, American Cancer Society: childhood cancer. Available at [http://www.cancer.org/cancer/cancer in children](http://www.cancer.org/cancer/cancer-in-children). Accessed October 25, 2010.
- Baggott, C., Dodd, M., & Kato, P. (2004). A survey of self-care and dependent-care advice given by pediatric oncology nurses. *Journal of Pediatric Oncology Nursing*, 21(4), 214-222.
- Berg, C., Neufeld, P., Harvey, J., Downes, A., Hayashi, R.J. (2009). Late effects of childhood cancer, participation, and quality of life of adolescents. *OTJR: Occupation, Participation, and Health*. 29(3), 116-124.
- Collins, J., Byrnes, M., Dunkel, I., Lapin, J., Nadel, T., Thaler, H., Polyak, T., Rapkin, B. & Portenoy, R. (2000). The measurement of symptoms in children with cancer. *Journal of Pain and Symptom Management*, 19(5), 363-377.
- Miller, A. (2001). Translation issues for international research. In: *Proceedings of the Midwest Nursing Research Society Conference Papers*, Chicago, IL, January.
- Orem, D.E. *Nursing Concepts of Practice*. St. Louis, Mo; Mosby; 1995.
- Piamjariyakul, U., Williams, P., Limnayan, P., Shanberg, R. (2010). Symptom monitoring, dependent care, and cancer treatments of children and adolescents in Thailand (poster). *KU Cancer Center 2010 Research Symposium*, KUMC, Kansas City, KS.
- Polit, D.F. & Beck, C.T. (2008). *Nursing Research: Generating and Assessing Evidence for Nursing Practice* (8<sup>th</sup> ed). Philadelphia: Lippincott Williams & Wilkins.
- Rheingans, J. (2008). Pediatric oncology nurses' management of patients' symptoms. *Journal of Pediatric Oncology Nursing*. 25(6), 303-311.
- Wesa, K., Gubili, J., Cassileth, B. (2008). Integrative oncology: complementary therapies for cancer survivors. *Hematology Oncology Clinics of North America*, 22(2), 343-353.
- Williams, P.D., Ducey, K., Sears, A., Williams, A.R., Tobin-Rummelhart, S.E. & Bunde, P. (2001). Treatment type and symptom severity among oncology patients by self-report. *International Journal Nursing Studies*; 38(3): 359-367.
- Williams, P.D., Piamjariyakul, U., Ducey, K., Badura, J., Boltz, K.D., Olberding, K., Williams, A. R. (2006b). Cancer treatment, symptom monitoring, and self-care in adults. *Cancer Nursing*, 29(5): 347-355.
- Williams, P.D., Schmideskamp, J., Ridder, E.L., Williams, A.R. (2006a). Symptom monitoring and dependent care during cancer treatment in children : pilot study. *Cancer Nursing*. 29(3), 188-197.

Shanberg, R. Complementary therapy to relieve pediatric cancer-therapy related symptoms. 2011

- Williams, P.D., Williams, A.R., Brewer, M., Worthy, (Powell) C., Robinson, J., Rosen, D., Ridder, L. et al. (2008). TRSC-C. Therapy-Related Symptoms Checklist-Children in U.S. outpatient clinics. *Proceedings Sigma Theta Tau International Nursing Research Congress, Singapore, July.*
- Williams, P.D., Williams, A.R., Ducey, K., Sears, A., Tobin-Rummelhart, S.E., Bunde, P. (1997). A therapy-related symptoms checklist (TRSC) for oncology patients: A self-report instrument. *Oncology Nursing Forum, 24(3): 301.*
- Williams, P.D., Williams, A.R., Kelly, K.P., Dobos, C., Giesecking, A., Connor, R., Ridder, L., Potter, N., Del Favero, D. (In Press). A symptom checklist for children with cancer: the TRSC-C. *Cancer Nursing.*
- Williams, P.D., Williams, A.R., Kelly, K.P., Dobos, C., Giesecking, A., Connor, R. et al. (2010). The Therapy-Related Symptom Checklist for Children (TRSC-C): a patient-parent report checklist (paper). *37<sup>th</sup> Annual American Academy of Nursing (AAN) National Conference, Washington, DC, November.*
- Williams, P.D., Williams, K.A., Roling-Lafaver, S., Johnson, R., Williams, A.R. (2011). Management of patient-reported symptoms during oncology treatments: Educational intervention based on the Therapy-Related Symptom Checklist, TRSC. *Clinical Journal of Oncology Nursing.* June.
- Winter, C., Miller, C., Brandes, M., Brinkmann, A., Hoffmann, C., Harges, J., Gosheger, G., Boos, J. & Rosenbaum, D. (2009). Level of activity in children undergoing cancer treatment. *Pediatric Blood Cancer, 53, 438-443.*