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Relationship between nurses' management of pediatric oncology patients' symptoms and job satisfaction

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Relationship Between Nurses' Management of Pediatric Oncology Patients' Symptoms and Job Satisfaction

by

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ABSTRACT

A primary function of the pediatric oncology nurse is to provide symptom management to children with cancer. Symptom management strategies have been published, but there is scarce literature examining neither the actual use of these nursing interventions, nor the effects of using these interventions on the nurses' perceived work environment. The purpose of this study was to examine the nursing interventions used in treating pediatric oncology patients' symptoms, as well as the emotional sequelae from providing this care.

Phase One of this study examined the content validity of the newly developed Nurses Distress and Interventions for Symptoms Survey (NDISS) utilizing content experts. Phase Two of this study involved both the reliability testing of the NDISS by test-retest and served as a pilot for Phase Three.

In Phase Three, a national sample of pediatric oncology nurses was surveyed about their patients' symptoms, the nurses' distress from the symptoms, the nursing interventions used to treat the symptoms, the perceived efficacy of the nursing interventions, and their job satisfaction. The response rate was 53%, and analysis of study hypotheses were evaluated using Pearson's correlation and multiple regression analyses.

The main study variables were not related in the hypothesized direction; therefore four of the six hypotheses were not supported. However, quantity and perceived effectiveness of nursing interventions were both found to act as mediators in the study model, and as a result, these two hypotheses were retained. The results of the survey demonstrated a high frequency of distressing patient symptoms as perceived by nurses (mean 6, range 0-7); nurses rated their distress from these symptoms as moderate (mean 2.9, range 0-4); nurses used an average of 12.7 nursing interventions per symptom (range 0-38); nurses found the nursing interventions moderately effective (mean 2.5, range 0-4); and nurses had moderately high overall job satisfaction (mean 3.9, range 1-5).

Although many of the hypotheses were not supported, interesting trends in the data were found. In addition, the findings provided elucidation of specific nursing interventions used by pediatric oncology nurses as well as a description of the effects of providing patients' symptom management, including nurses' distress, perceived effectiveness of nursing interventions, and job satisfaction.

Chapter I

Introduction

Nearly 10,000 children between birth and 14 years old are diagnosed with cancer each year, making pediatric cancer the number one disease killer of children (American Cancer Society, 2006; CureSearch, n.d.). Despite the tragedy of pediatric oncology, there is great hope – overall pediatric cancer survival was estimated to be 79% in 2006 (American Cancer Society, 2006). Such great success in the improvement of survival rates (up from 50% in the 1970's) is obtained at the expense of intense treatment protocols, often inducing a breadth of distressing symptoms and long-term negative effects from the cancer treatment. In fact, pediatric oncology patients continue to rate symptoms as the overall most difficult aspect of cancer treatment (Hedström, Haglund, Skolin, & von Essen, 2003; Moody, Meyer, Mancuso, Charlson, & Robbins, 2006; Woodgate, 2005, 2006; Woodgate & Degner, 2004; Woodgate, Degner, & Yanofsky, 2003).

Patients' symptoms further challenge pediatric oncology as the nurses struggle to treat symptoms. Patients' symptom distress has been documented as a primary contributor to the highly stressful nursing environment in pediatric and adult oncology settings (Barnard, Street, & Love, 2006; Bond, 1994; de Carvalho, Muller, de Carvalho, & de Souza Melo, 2005; Emery, 1993; Hinds et al., 2003;

Kushnir, Rabin, & Azulai, 1997; Papadatou, Bellali, Papazoglou, & Petraki, 2002; Petrova, Todorova, & Mateva, 2005). Internationally, oncology nurses have rated symptom management among the most important research priorities, including nurses in Canada (Fitch, Bakker, & Conlon, 1999), the United Kingdom (Soanes, Gibson, Bayliss, & Hannan, 2000; Soanes, Gibson, Hannan, & Bayliss, 2003), and the U.S. (Cohen, Harle, Woll, Despa, & Munsell, 2004). Thus, unrelieved symptoms remain a significant problem for both patients and nurses in pediatric oncology.

Traditional medical-based nursing care emphasizes the use of pharmacologic agents to address patients' symptoms (Panzarella et al., 2002). Pharmacologic symptom management has in fact made great strides. However, after pharmacologic symptom management strategies have been exhausted, and, despite efforts to provide holistic patient care, nursing interventions to manage symptoms become less clearly defined.

There is no discrete recipe for symptom management in pediatric oncology. Recommendations abound for *potentially* useful nursing interventions, describing both pharmacologic and nonpharmacologic options (Baggott, Kelly, Fochtman, & Foley, 2002; Ladas, Post-White, Hawks, & Taromina, 2006; National Comprehensive Cancer Network, 2007d). However, there is little information available describing which nursing interventions are available or actually used by nurses in general or, more specifically, in oncology patient populations. The few published studies found measured nursing interventions

among all nursing populations (Bulecheck, McCloskey, Titler, & Denehey, 1994) or measured the use of only select nursing interventions (e.g., nonpharmacologic or complementary and alternative therapies) (Helmrich et al., 2001; Hessig, Arcand, & Frost, 2004; King, Pettigrew, & Reed, 1999; Rankin-Box, 1997; Tracy et al., 2005). A description of nurses' interventions are needed provide insight into the nurses' experience of distress related to patients' symptoms. In order to design future clinical outcome studies, it is important to document which nursing interventions are currently being used.

Although treating patients' symptoms is a critical issue, research literature supports the fact that nurses tend to remain in a stressful environment only when they feel satisfied with their work. Oncology nurses (both pediatric and adult) particularly enjoy the richness and reward in making relationships with patients and families (Bertero, 1999; Clarke-Steffen, 1998; Cohen, Haberman, Steeves, & Deatrick, 1994; Cohen & Sarter, 1992; Fall-Dickson & Rose, 1999; Grunfeld et al., 2005; Haberman, Germino, Maliski, Stafford-Fox, & Rice, 1994; Olson et al., 1998; Papadatou et al., 2002), as well as feeling the comfort of knowing that they have improved the lives of their patients and families through their nursing care (Clarke-Steffen, 1998; Cohen et al., 1994; Fall-Dickson & Rose, 1999; Haberman et al., 1994; Olson et al., 1998; Papadatou et al., 2002; Papadatou, Martinson, & Chung, 2001). This information suggests that employers and researchers should examine the conditions which support job satisfaction and retain nurses despite the stressful nursing environment of pediatric oncology.

Problem Statement

Pediatric oncology patients continue to suffer from cancer disease- and treatment-related symptoms. This suffering is one of the primary causes of job-related stress for pediatric oncology nurses. Nurses feel particularly frustrated when patients continue to suffer and they, as care providers, have no further interventions to offer. In this day of safety priorities and nursing shortages, it is important to focus on both the care of the patients as well as the working conditions of the nurses. An opportunity exists to study the potential relationship between nurses' symptom management and job satisfaction.

There is a lack of published research in which the symptom management process is examined from the nurses' perspective, particularly in pediatric oncology nursing. Specifically missing from the literature is data on nurses' appraisal of patients' symptoms, nursing interventions used to help treat patients' symptoms, and nurses' subsequent level of job satisfaction. It is posited that nurses who are satisfied with their effectiveness in treating patients' symptoms will experience less distress than those who feel less able to alleviate distressing symptoms. The use of a larger repertoire of nursing interventions may also help to protect the nurse from feeling she/he has exhausted all symptom management possibilities and must therefore watch the patient suffer without hope. Job satisfaction is seen as an outcome of nursing practice and has been noted to reflect the nurses' perception of her care. Therefore, degree of job satisfaction

may be related to the degree of nurses' distress from less than expected patient symptom management.

Purpose

The purpose of this descriptive correlational study was to describe the symptom management experience of pediatric oncology nurses and the relationship between nurses' symptom management and job satisfaction. The variables examined included the presence of patients' distressing symptoms as perceived by the nurse, nurses' distress from these symptoms, the nursing interventions used to treat these symptoms, the perceived effectiveness of these nursing interventions, and nurses' job satisfaction (see Figure 2, page 13).

Research Questions

The following hypotheses guided the study:

1. There is a positive relationship between the presence of distressing symptoms in pediatric oncology patients and the nurses' distress from those symptoms.
2. There is an inverse relationship between the nurses' perceived effectiveness in treating patients' symptoms and the nurses' distress from patients' symptoms.
3. There is an inverse relationship between the number of nursing interventions used to treat these symptoms and the nurses' distress from patients' symptoms.

4. There is an inverse relationship between nurses' distress and nurses' job satisfaction.
5. The nurses' perceived effectiveness of nursing interventions acts as a mediator between patients' symptoms and nurses' distress.
6. The quantity of nursing interventions acts as a mediator between patients' symptoms and nurses' distress.

Definition of Terms

Job Satisfaction

The extent of positive affective orientation to the job (Traynor & Wade, 1993).

Job-related Stressors

"Activators or determinants of the condition, including internal and external environmental events or conditions that change an individual's present state and may produce notable physical or psychosocial reactions" (Hinds, Quargnenti, Hickey, & Mangum, 1994, p. 62).

Nurses' Distress

The amount of distress experienced by pediatric oncology nurses related to witnessing patients who are experiencing distressing symptoms.

Nursing Interventions

Defined by Nursing Interventions Classification (NIC) as "any direct care treatment that a nurse performs on behalf of a client. The treatments include nurse-initiated treatments resulting from nursing diagnoses, physician-initiated

treatment resulting from medical diagnoses, and performance of daily essential functions for the client who cannot do these." (Bulecheck & McCloskey, 1999, p. 23)

Nurses' Perceived Effectiveness of Nursing Interventions

The nurses' perception of the effectiveness of her/his nursing interventions to treat patients' symptoms.

Quantity of Nursing Interventions

The number of nursing interventions used by a nurse to treat patients' symptoms.

Pediatric Oncology

The healthcare management of children with cancer – aged infancy through adolescence (Baggott et al., 2002).

Pediatric Oncology Nursing

The practice of the subspecialty of nursing in the field of pediatric oncology (Foley & Ferguson, 2002); as identified by membership in the national Association of Pediatric Hematology Oncology Nurses (APHON).

Symptom Management

The process of treating disease- and treatment-related complications, including multidisciplinary approaches, such as surgical, pharmacologic, or nursing.

Symptom Distress

"The degree or amount of physical or mental upset, anguish, or suffering experienced with a specific symptom" (Rhodes & Watson, 1987, p. 243).

Significance of the Study

Studies are needed in order to build on prior research calling for further attention to pediatric oncology patients' symptom management as well as address the gaps in knowledge surrounding nurses' symptom management. This study was based on literature describing high levels of nursing stress and distress in managing patients' symptoms. Attention to nursing outcomes may help to focus interventions for recruiting and retaining quality pediatric oncology nurses in a highly-stressful work environment.

Given the paucity of data regarding pediatric oncology nurses' symptom management strategies, the measurement of those currently used nursing interventions will help to establish baseline data. This may lead to clinical interventional studies designed to improve comfort and treatment for the child and family. Future studies may build on this data by investigating causal relationships between specific nursing interventions and the resultant patient and nursing outcomes (e.g., symptom distress or nurses' job satisfaction, respectively).

Chapter II

Review of Literature

This chapter presents the review of literature. First the conceptual framework is delineated. Then empirical studies are synthesized according to the main variables in this study, including pediatric oncology patients' symptoms, nurses' distress from patients' symptoms, nurses' use of nursing interventions to manage patients' symptoms, and nurses' job satisfaction. Finally, a summary of the relationships among these variables is provided.

Conceptual Model

The Stress Response Sequence Model (SRSM) was designed in 1982 by a study group consisting of Institute of Medicine and the National Academy of Sciences (Elliott & Eisdorfer, 1982; Hinds et al., 1998). The SRMS was based on the review of research and models of the stress process in humans and since has been used extensively to guide the study of the stress process in pediatric oncology nursing (Clarke-Steffen, 1998; Hinds, 2000; Hinds et al., 1990; Hinds et al., 2000; Hinds et al., 1994; Hinds et al., 1998; Hinds et al., 2003; Olson et al., 1998). The SRSM consists of four core concepts: stressors, reactions, consequences, and mediators (see Figure 1). In the SRSM, the stressors are internal or external and are defined as environmental events or conditions that

impact or alter an individual's current state" (Hinds et al., 1990). Reactions are the biological or psychological responses to the stressors. Consequences are a result of reactions, are classified in the categories of biological, psychological, or sociological, and can be evaluated as positive or negative. Mediators in the SRSM are filters and modifiers that affect the stressor-reaction-consequence sequence and may cause individual variations. The SRSM emphasizes the fluid interplay among all of the concepts.

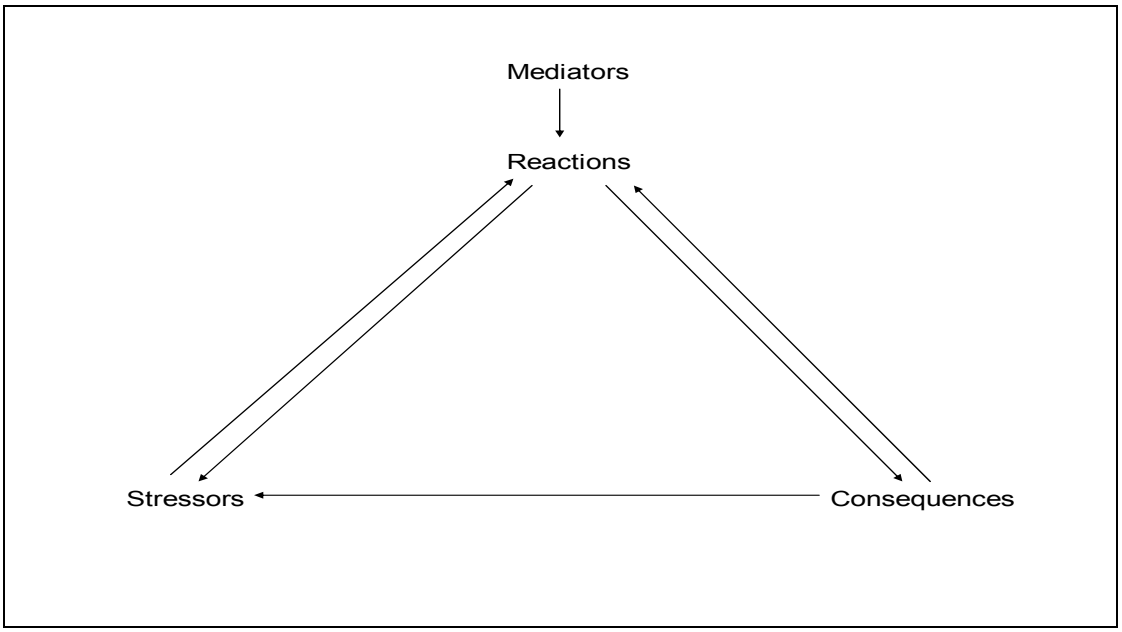

Figure 1. The Stress Response Sequence Model (Hinds et al., 1990)

Figure 2 demonstrates the adaptation of the SRSM for this study. The presence of patients' symptoms is the initial stressor in this model. The nurses' reaction in this model is the amount of distress the nurse feels as a result of patients' distressing symptoms (e.g. her/his appraisal of the patients' distress). Job satisfaction is conceptualized as the consequence in this model.

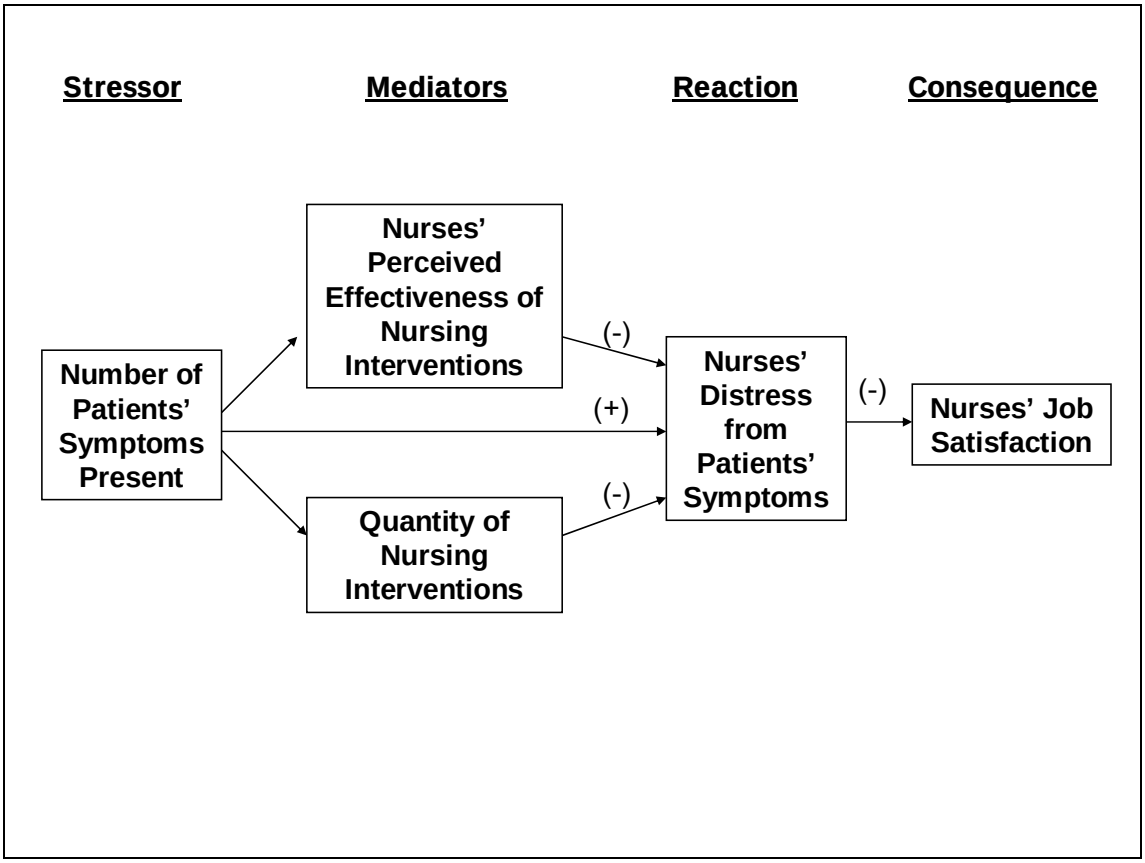

Figure 2. The Stress Response Sequence Model in Pediatric Oncology Nursing Symptom Management. Adapted from Hinds, et al. (1990).

The mediators in the current study are conceptualized as affecting the relationship between the stressor (patients' symptoms) and the reaction (nurses' distress). There are two proposed mediators: the perceived effectiveness of the nursing interventions and the quantity of the nursing interventions. Nursing interventions are hypothesized to affect the way nurses interpret patients' symptoms by offering a mechanism for treating patients' symptoms.

Pediatric Oncology Patients' Symptoms

Pediatric oncology patients rate symptoms as the overall most difficult aspect of cancer treatment (Hedström et al., 2003; Moody et al., 2006; Woodgate, 2005, 2006; Woodgate & Degner, 2004; Woodgate et al., 2003). Symptoms are defined as a patient's subjective description or expression of a disease or a change in condition (Anderson, Anderson, & Glanze, 1994). The distress or bother caused from patients' symptoms has increasingly been the focus of both adult and pediatric research (McMillan & Small, 2002; Rhodes & Watson, 1987; Woodgate, 2005, 2006). Symptom distress is a more subjective personal interpretation of the effect of having the symptoms – as compared to frequency (how often the symptoms occur) or severity (how much of the symptom is present) as symptoms had been traditionally measured (Rhodes & Watson, 1987). According to pediatric oncology patients, the most distressing symptoms are (in descending order) fatigue, pain, poor appetite, nausea/vomiting, hair loss, isolation, worry, fear, mouth sores, trouble with movement, trouble with relationships, and trouble sleeping (Collins et al., 2002;

Drake, Frost, & Collins, 2003; Enskar, Carlsson, Hamrin, & Kreuger, 1996; Hedström et al., 2003; Hicks, Bartholomew, Ward-Smith, & Hutto, 2003; Hinds, Quargnenti, & Wentz, 1992; Jalmsell, Kreicbergs, Onelov, Steineck, & Henter, 2006; McCaffrey, 2006; Moody et al., 2006; Novakovic et al., 1996; Wolfe et al., 2000).

Nurses' Distress

The detrimental effects of patients' symptoms are noted in nurses as well. Patients' symptom distress is a primary contributor to the highly stressful nursing environment of pediatric (and adult) oncology (Barnard et al., 2006; Bond, 1994; de Carvalho et al., 2005; Emery, 1993; Hinds et al., 2003; Kushnir et al., 1997; Papadatou et al., 2002; Petrova et al., 2005). Nurses find pleasure and meaning in helping children and families (Clarke-Steffen, 1998; Cohen et al., 1994; Fall-Dickson & Rose, 1999; Haberman et al., 1994; Olson et al., 1998; Papadatou et al., 2002; Papadatou et al., 2001); however, unrelieved symptoms cause nurses to feel highly stressed and anxious because they feel they have no further interventions to help treat the patients' suffering (Barnard et al., 2006; Bond, 1994; Clarke-Steffen, 1998; Cohen et al., 1994; Cohen & Sarter, 1992; de Carvalho et al., 2005; Ergun, Oran, & Bender, 2005; Fall-Dickson & Rose, 1999; Florio, Donnelly, & Zevon, 1998; Kushnir et al., 1997; Olson et al., 1998; Papadatou et al., 2002; Papadatou et al., 2001; Petrova et al., 2005). An example of a study examining this effect was conducted in the adult oncology nursing environment (McMillan et al., 2006). Researchers adapted the Memorial

Symptom Assessment Scale (MSAS) – a valid and reliable tool used to measure patients' symptom distress (Portenoy et al., 1994) – to reflect the caregiver's distress as a result of the patient's symptoms.

Nursing Interventions

Nursing interventions are treatments based on clinical judgment and knowledge used by nurses to enhance patient outcomes (Bulecheck & McCloskey, 1999). These interventions involve both direct and indirect care; and are initiated by nurses, physicians, and other healthcare providers. A primary function of pediatric oncology nursing is the provision of symptom management using nursing interventions (Association of Pediatric Hematology/Oncology Nurses, 2007).

Nursing care of symptom management has traditionally emphasized medical-based administration of pharmacologic agents (Panzarella et al., 2002). Pharmacologic management has in fact made great strides. For example, the development of 5-HT3 blockers for nausea offer improved management of chemotherapy-induced nausea and vomiting, without many of the side effects seen in previous anti-emetics (e.g. sedation, extrapyramidal effects, etc.) (Antonarakis et al., 2004). Yet despite these medications, patients continue to complain of distress from nausea/vomiting (Collins et al., 2000; Collins et al., 2002; Hedström et al., 2003; Moody et al., 2006; Novakovic et al., 1996). More recent texts have started recommending a more holistic approach to symptom management, including both pharmacologic and nonpharmacologic interventions

(Baggott et al., 2002; Dossey, Keegan, & Guzzetta, 2005; National Comprehensive Cancer Network, 2007a, 2007b, 2007c, 2007d; Wong, Hockenberry, Wilson, Winkelstein, & Kline, 2003). Examples of some of the more commonly recommended nonpharmacologic interventions include acupuncture, acupressure, art therapy, deep breathing, distraction, humor, imagery, massage, music therapy, and pet therapy.

Although there are now recommendations for nursing interventions in symptom management, there is little published research describing which nursing interventions are in fact being used by nurses for symptom management. There is also little data describing the effectiveness of many of the recommended interventions. A description of nurses' interventions, including perceived effectiveness of these interventions, may provide insight into the nurses' experience of managing patients' symptoms. This information may help in examining nursing interventions as they related to nurses' distress.

A search for published research on nursing interventions for symptom management led only to a dated article of the frequency of general nursing interventions (Bulecheck et al., 1994) and a handful of surveys specifically assessing nurses' use of complementary and alternative therapies (Helmrich et al., 2001; Hessig et al., 2004; King et al., 1999; Rankin-Box, 1997; Tracy et al., 2005). While there is no data in pediatric oncology, nurses in adult populations (including oncology, critical care, and general nursing) report the frequent use of diet, exercise, massage, prayer/spirituality, relaxation, and visualization for

patient care (Helmrich et al., 2001; Hessig et al., 2004; King et al., 1999; Rankin-Box, 1997; Tracy et al., 2005). These surveys were intended to measure complementary and alternative therapies specifically and therefore did not measure a comprehensive list of nursing interventions. There was no data to describe which nursing interventions were used specifically for symptom management, including in pediatric oncology.

Job Satisfaction

Job satisfaction has been extensively studied in the research literature in attempts to retain nurses in the stressful healthcare environment (Blegen, 1993). In a recent survey of oncology nursing research priorities, oncology nurses rated job satisfaction as the third most important out of 120 choices (Cohen et al., 2004). Job satisfaction describes a person's positive affective appraisal of one's job (Traynor & Wade, 1993, p. 127; Wade, 1993). This is consistent with the SRSM as job satisfaction has been previously conceptualized as a consequence of pediatric oncology nursing (Hinds et al., 1998; Hinds et al., 2003).

Pediatric and adult oncology nurses particularly enjoy the richness and reward in making relationships with patients and families (Bertero, 1999; Clarke-Steffen, 1998; Cohen et al., 1994; Cohen & Sarter, 1992; Fall-Dickson & Rose, 1999; Grunfeld et al., 2005; Haberman et al., 1994; Olson et al., 1998; Papadatou et al., 2002). Oncology nurses take great comfort knowing that they have improved the lives of their patients and families through their nursing care

(Clarke-Steffen, 1998; Cohen et al., 1994; Fall-Dickson & Rose, 1999; Haberman et al., 1994; Olson et al., 1998; Papadatou et al., 2002; Papadatou et al., 2001).

Job satisfaction in pediatric oncology nursing has been positively correlated with coworker cohesiveness and organizational commitment, and negatively correlated with a nurses intent to leave an organization (Hinds et al., 1998; Steen, Burghen, Hinds, Srivastava, & Tong, 2003) and job stress (Hinds et al., 1998). No literature was found which examined the potential relationship between job satisfaction as a result of nursing interventions.

Chapter Summary

This study is based on the Stress Response Sequence Model and examines the relationship between the following variables: nurses' perceived presence of distressing symptoms in pediatric oncology patients; nurses' distress from these symptoms; a description of the nursing interventions used to manage these symptoms; nurses' perceived effectiveness of these interventions; and the job satisfaction of the pediatric oncology nurses. Nurses feel distress as a result of patients' distress from symptoms. Nurses attempt to manage patient symptoms with nursing interventions. The perceived degree of success in managing these symptoms may affect the nurses' distress. Job satisfaction among pediatric oncology nurses has been documented as directly related to the quality and meaning of care provided to the children. Therefore, nurses' distress may affect nurses' perceived work environment, specifically job satisfaction. The purpose of this study is to examine which nursing interventions are being used by

pediatric oncology nurses to manage patients' most distressing symptoms, and to evaluate these interventions as potential mediators in the stress process of symptom management for pediatric oncology nurses.

Chapter III

Methods

Chapter Three presents study methods. This three-phase study consisted of psychometric data gathering for a new instrument and a randomized cross-sectional descriptive correlational survey using the newly developed instrument. As there was little in the research literature examining the proposed relationships of the variables in this study, a descriptive approach was considered to be the most appropriate as a foundational step in examining new conceptual linkages or hypotheses (Polit & Beck, 2004).

Phase One examined the content validity of the Nurses' Distress and Interventions for Symptoms Survey (NDISS). Phase Two was the reliability testing of the NDISS using test-retest, as well as the piloting of the multiple contacts method and questionnaire packet for Phase Three. Phase Three was a national survey of pediatric oncology nurses examining nurses' management of patients' symptoms and job satisfaction. This chapter will describe the study by phase and conclude with a brief summary.

Sample

Phase One

In Phase One, no subjects were approached. Content experts advised the investigators about which nursing interventions to include in the questionnaire. Twenty pediatric oncology nurses were identified through two APHON Listservs to serve as expert consultants for the first part of Phase One.

For the second part of Phase One, seven expert consultants were selected to examine the content validity of the newly developed NDISS, including five APHON Listserv respondents and two professional pediatric oncology nurse researchers. Five of the participants were certified in pediatric oncology nursing.

Phase Two

A sample of 100 pediatric oncology nurses was sought from the local chapter of the Association of Pediatric Hematology/Oncology Nurses (APHON), APHON Listservs, and the national APHON membership list (see Sample: Phase Three for details). Inclusion criteria for the sample were identification of the nurses as registered nurse (RN) specializing in pediatric oncology as demonstrated by APHON membership, with a minimum of six months of pediatric oncology nursing experience; the ability to read and write in English as demonstrated by the completion of the survey packet; and direct-patient-care practice as indicated on the demographics sheet.

Phase Three

1,000 pediatric oncology nurses were solicited for participation in Phase Three of this study. APHON is a national professional pediatric oncology nursing organization with approximately 2,500 international members. A membership list of 1,200 names and physical addresses was purchased from APHON. The random sample was derived by APHON using systematic random sampling and was limited to direct-patient care nurses residing in the United States. Any participants from Phase Two were removed from the Phase Three mailing list. A conservative estimate of mail-based survey response rates suggested that 10-25% will respond (Dillman, 2007). Based on a two-tailed correlational analysis with a small-medium correlation (r=.20), a sample size of 191 participants was required to achieve 80% power (Faul & Erdfelder, 1992).

Inclusion criteria for the sample were identification of the nurses as registered nurse (RN) specializing in pediatric oncology as demonstrated by APHON membership, with a minimum of six months of pediatric oncology nursing experience; the ability to read and write in English as demonstrated by the completion of the survey packet; direct-patient-care practice as indicated on the demographics sheet; and a practice site in the U.S. as identified in the APHON membership address roster.

Instruments

Nurses' Distress and Interventions for Symptoms Survey (NDISS)

The NDISS is provided in the Appendix and is available for unrestricted use. The NDISS was created for this research project after an extensive review of the literature revealed no relevant surveys previously designed. The purpose of the NDISS was twofold: 1) to assess the nurses' appraisal of patients' symptoms and symptom distress; and 2) to assess the use of nursing interventions in treating patients' symptoms. The symptoms included in the NDISS were based on a literature review of the most distressing symptoms according to children with cancer and include fatigue, pain, poor appetite, nausea/vomiting, hair loss, isolation, worry, mouth sores, and trouble sleeping. Validity testing for content was conducted by using content experts to determine a content validity index (see Procedure: Phase One). Reliability testing for test-retest stability was conducted in Phase Two by the completion of two NDISS surveys, sent out two weeks apart (see Procedure: Phase Two).

For each of the seven symptoms, participants were asked about relevance ["In the past month, have any of your patients experienced (symptom)?"]. Frequency counts were made per symptom across participants, and a mean was assessed of the number of symptoms reported as present by each nurse. If the participant responded affirmatively about the presence of a symptom, then the participant was asked to rate her or his own distress from the patients' symptom using a 5-point summated rating scale (from "0 - not at all" to "4 - very much").

This was based on the Memorial Symptom Assessment Scale (MSAS) (Collins et al., 2000; Collins et al., 2002). McMillan, et al. (2006) used a similar approach by assessing caregiver's distress from patients' symptoms in a modified version of the Memorial Symptom Assessment Scale, and found the Caregiver version to be valid and reliable. The nurses' distress scores on the NDISS were averaged per symptom across participants and mean distress scores were calculated by averaging each nurses' distress score for all applicable symptoms.

Following the distress question, the participant was asked about her/his own use of nursing interventions. They were offered a list of nursing interventions and asked to choose which of the nursing interventions they "normally" use to treat that particular symptom. The list of nursing interventions was the same for all symptoms and included space for the write-in of additional interventions not listed. The nursing interventions were derived from a pediatric nursing reference text (Wong et al., 2003), a pediatric oncology nursing text (Baggott et al., 2002), a holistic nursing text (Dossey et al., 2005), an article on the Nursing Interventions Classifications (NIC) Project (Bulecheck et al., 1994), and the most current evidence-based practice guidelines published by a leading national oncology advocacy organization (National Comprehensive Cancer Network, 2007a, 2007b, 2007c, 2007d). The list of 64 potential interventions was reduced to 35 interventions as a result of a survey of pediatric oncology nurse experts for content validity (see Procedure: Phase One). To score this section, the number of nursing interventions utilized per symptom was summed. The number of

interventions used was averaged across symptoms resulting in a “number of nursing interventions” score. This was also referred to as the quantity of nursing interventions.

The final NDISS question for each symptom asked the nurse to rate her/his perceived effectiveness in treating each symptom using the interventions chosen from the list. Participants responded by using a 5-point summated rating scale (from “0 - not at all” to “4 - very much”). The nurses’ effectiveness scores on the NDISS were averaged resulting in a “nurses’ perceived effectiveness” score.

Measure of Job Satisfaction (MJS)

The MJS has been used extensively in the testing of the Stress Response Sequence Model (Hinds et al., 1998; Hinds et al., 2003). The MJS was designed to measure nurses’ “positive affective orientation to their job” (Traynor & Wade, 1993, p. 128) and contained 43-items in seven subscales with Cronbach’s alpha ranging from 0.85-0.90: Personal Satisfaction, Satisfaction with Workload, Satisfaction with Professional Support, Satisfaction with Training, Satisfaction with Pay, Satisfaction with Prospects, and Satisfaction with Standards of Care (Traynor & Wade, 1993; Wade, 1993). Each question used a summated rating scale from 1 (very dissatisfied) to 5 (very satisfied). Questions for each subscale were averaged, yielding a subscale score (range 1-5), with a higher score indicating greater job satisfaction. An overall satisfaction score was also calculated which represented an average of all 43 items (range 1-5). Job

satisfaction was conceptualized in this study as the overall job satisfaction score, though subscales were also examined to provide insight.

Demographics

A demographics form was included to measure background nursing information, including nurses' demographics (i.e., age, gender, geographic location, religious background, ethnicity, and level of education), and the nurses' practice characteristics (i.e., current practice role, practice setting, type of nursing position, years in nursing, years in pediatric nursing, presence of pediatric oncology nursing certification, and institutional Magnet® status). Geographic location was categorized according to the divisions used by the U.S. Census Bureau: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont); Middle Atlantic (New Jersey, New York, and Pennsylvania); East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin); West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota); South Atlantic (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia); East South Central (Alabama, Kentucky, Mississippi and Tennessee); West South Central (Arkansas, Louisiana, Oklahoma and Texas); Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming); and Pacific (Alaska, California, Hawaii, Oregon, and Washington) (U.S. Census Bureau, 2007). There were no requests for information which would personally identify a participant.

Procedures

Institutional Approvals

IRB approval was obtained by the University of South Florida's Institutional Review Board. Expedited review was granted as there was no linking of personal identification information to the surveys; and an exemption was also granted to allow the return of the survey to suffice as informed consent approval. Permission was obtained through the Association of Pediatric Hematology/Oncology Nurses (APHON) prior to IRB application in order to solicit membership for study participation.

Phase One

Phase One was the content validity testing of the NDISS. The first part of Phase One used pediatric oncology nurse experts to analyze the choices of nursing interventions in the NDISS. Respondents were sent a list of 64 nursing interventions recommended in the literature for treating the seven symptoms on the NDISS. The nurses were asked to select the nursing interventions "normally" used to treat the symptoms. Based on the responses, the most frequently used interventions were retained for further versions of the NDISS.

The second part of Phase One involved the content validity testing of the NDISS using a voluntary panel of expert consultants in pediatric oncology nursing. Participants were sent the NDISS, the resource reference list used to design the NDISS, an evaluation form, a $5 Starbuck's gift card as a token of appreciation, and a pre-stamped return envelope. The evaluation form asked the

participants to determine whether each item matched the survey objectives (response choices were “yes” with a score of 1, “no” with a score of -1, or “uncertain” with a score of 0) (McMillan, 1990; McMillan, Williams, Chatfield, & Camp, 1988). The result of the evaluations was a content validity index (CVI) (see Analysis: Phase One) which was used to assess the validity of the newly developed NDISS.

Phase Two

The purpose of Phase Two was to demonstrate the reliability of the NDISS using a test-retest method, as well as to pilot test for Phase Three. The Dillman Tailored Design Method (Dillman, 2007) advocated for multiple contacts, therefore in the first mailing series of Phase two, participants were sent a pre-notification letter (day -3), followed by a questionnaire packet (day 0), and a follow-up thank you/reminder postcard (day 7). The questionnaire packet contained an IRB-approved introductory letter serving as informed consent, a numbered packet with three surveys (NDISS, the Measure of Job Satisfaction, and the demographics questionnaire), a $1 bill as a token of appreciation, and a pre-stamped return envelope. The introduction letter in the survey packet included notice of a second repeat survey (NDISS) to follow. The follow-up postcard was sent out one week after the survey mailing and thanked participants who had returned the surveys and reminded those who had not yet returned the survey. The first survey deadline was two weeks from survey mailing.

The second mailing series of Phase Two was sent 2.5 weeks after the first series to those participants who responded to the first survey. The second questionnaire packet consisted of another IRB-approved introduction letter serving as informed consent, a numbered NDISS survey, a $2 bill as a token of appreciation, and a pre-stamped return envelope. Participants were again asked to return the survey within two weeks. Another thank you/reminder postcard was sent out one week after the survey was mailed.

The list of participants in Phase Two were numbered and stored on a disk in a locked location. Numbered surveys were used to collect test-retest data only, with no linking of personal identification information. Data were entered into SPSS by the primary investigator.

Phase Three

Final survey packets were sent to 1,000 randomly-selected national APHON members. Mailings for Phase Three were similar to the multiple-contacts process in used in Phase Two, including a pre-notification letter, a survey mailing, and a follow-up/thank you postcard. The pre-notification letter was sent out three days prior to the mailing of the survey. The survey mailing contained an IRB-approved introduction letter serving as informed consent, a survey packet (containing the NDISS, the Measure of Job Satisfaction, and the demographics questionnaire), a pre-stamped return envelope to the primary investigator's U.S. post office box, and a sheet of children's stickers as a token of appreciation. There was no linking of personal identification information to the surveys. The

deadline for survey return was three weeks from the survey mailing. A thank you/reminder postcard was sent out 1.5 weeks after mailing the survey packets. Data was entered into SPSS by the primary investigator. All original survey documents will be stored for three years in a separate locked container.

Data Analysis

Phase One

In the first part of Phase One, 20 APHON Listserv respondents were asked to rate the original list of 64 nursing interventions for those most frequently used in practice. Responses were summarized per symptom for frequencies. In the second part of Phase One, a content validity index (CVI) was calculated by adding the responses (1, 0, or -1) for each question individually and then dividing by the number of raters (McMillan, 1990; McMillan et al., 1988). A total CVI was calculated by averaging the item-CVIs. A CVI of .80 represents adequate content validity (Polit & Beck, 2004).

Phase Two

The reliability of the NDISS was measured using a test-retest method. The test-retest evaluation was composed of two statistics (correlation and percentage-of-agreement) because of the different types of questions used in the NDISS. Correlations were used to analyze the questions about nurses' distress, the number of interventions used to treat the symptoms, and the nurses' perceived efficacy of those nursing interventions. A higher correlation coefficient

demonstrates a more stable instrument - greater than .70 is considered satisfactory (Polit & Beck, 2004).

A percentage-of-agreement statistic (the average of each participant's number of items with the same answers in both surveys) was used for the questions about the presence of patients' symptoms and the type of nursing interventions used to treat each symptom. Items were scored as "1" if answers were the same between surveys per respondent. Items were scored as "0" if answers were different between surveys. Each of these questions was summarized by calculating the average of the agreement scores across participants.

Phase Three

Descriptive statistics were used to describe the study participants and summarize survey results. Pearson's r (with a t-test of significance) was used to measure the correlations in testing for the following hypotheses:

1. There is a positive relationship between the presence of distressing symptoms in pediatric oncology patients and the nurses' distress from those symptoms.
2. There is an inverse relationship between the nurses' perceived effectiveness in treating patients' symptoms and the nurses' distress from patients' symptoms.

3. There is an inverse relationship between the number of nursing interventions used to treat these symptoms and the nurses' distress from patients' symptoms.
4. There is an inverse relationship between nurses' distress and nurses' job satisfaction.

Demographic and nurses' practice characteristics were examined as covariates. Hierarchical regression analyses were used to test the following hypotheses:

5. The nurses' perceived effectiveness of nursing interventions acts as a mediator between patients' symptoms and nurses' distress.
6. The quantity of nursing interventions acts as a mediator between patients' symptoms and nurses' distress.

Hierarchical regression analysis was also used to examine the effectiveness of the study's model in predicting overall job satisfaction.

Chapter IV

Results

The purpose of this study was to examine the relationships between pediatric oncology nurses' symptom management of patients' most distressing symptoms and job satisfaction. Chapter IV presents the results from each phase of the study.

Phase One

The focus of Phase One was to examine the content validity of the newly developed Nurses Distress and Interventions for Symptoms Survey (NDISS). For the first part of Phase One, 20 nurses volunteered and were sent a list of 64 nursing interventions recommended in the literature for use in managing seven of pediatric oncology patient's most distressing symptoms. Twelve nurses responded (60%). Data was entered into Excel by the primary investigator and descriptive statistics were used to summarize the data. From the original list of 64 interventions, the 35 most frequently selected interventions were chosen for inclusion in further NDISS versions. The overall mean number of nursing interventions chosen by the nurses per symptom was 19.63 interventions with a standard deviation of 5.6 – therefore 35 interventions approximately represented the inclusion of three standard deviations of interventions.

For the second part of Phase One, six of the seven CVI experts returned a completed NDISS evaluation form (86%). Data were entered in SPSS by the primary investigator. The CVI scores ranged from .75 to 1.0. The overall CVI of the NDISS (n=6) was .88 (SD .11).

Phase Two

The focus of Phase Two was to examine the reliability of the NDISS, as well as pilot test the multiple mailing technique and surveys to be used in Phase Three. One hundred pediatric oncology nurses were sent the first round of survey mailings. Sixty nurses (60%) responded to the first survey. These 60 nurses were sent the second survey for test-retest, and 46 (77%) of them responded, yielding an overall response rate of 44% (n=44). Two surveys were excluded because they did not meet inclusion criteria, namely not working directly in patient care and too little experience in pediatric oncology (less than 6 months).

The final sample of 44 nurses was predominately female (98%) and white (98%) with a mean age of almost 43 years (Tables 1 and 2). The nurses had been practicing nursing a mean of about 20 years, with an average of 17 years in pediatric oncology. Geographically, nearly 40% of the nurses practiced in the South Atlantic division and another 25% practiced in the Mid-Atlantic division. The nurses predominately functioned as hospital inpatient (52%) staff nurses (55%) using their licensure as a Registered Nurse (66%) to take care of children and adolescents (73%) (Table 3). Over one-third of the nurses (36%) worked in a

Magnet®-credentialed facility. Approximately 59% of nurses reported having a Bachelor's or Master's degree.

Table 1.

Summary of Phase Two Nurses' Age and Years in Practice

Demographic variable	N	Mean	SD
Age	43	42.7	10.2
Years in nursing	44	19.6	11.2
Years in pediatric oncology	44	17.0	10.3

Note. SD = standard deviation.

The test-retest reliability score was calculated by two statistics: correlation and percentage of agreement. Correlations were used to assess the questions which addressed the nurses' distress, the number of nursing interventions used, and the perceived effectiveness of nursing interventions. Nurses' distress was the least reliable category between the first and second surveys (r=.42; p=.01; n=43); number of interventions used per symptom had a correlation of .58 (p=.00; n=43), and perceived effectiveness of nursing interventions was the most stable between surveys (r=.72; p=.00; n=43). The average correlation between first and second NDISS surveys for these questions was .57.

Table 2.

Summary of Phase Two Demographics

Demographic variable	Frequency	Percentage
Gender		
Female	43	98
Race		
Caucasian/White	43	98
Asian/Asian-American	1	2
Primary practice location		
South Atlantic	17	39
Mid-Atlantic	11	25
New England	4	4
East North Central	4	4
West North Central	4	4
Other	4	4
Nurses highest level of education*		
Bachelor's	15	34
Associate's	12	27
Master's	11	25
Diploma	5	11
Other	1	2

Note. N=44

*Totals may not equal 100% due to rounding error.

Table 3.

Summary of Phase Two Nursing Practice Characteristics

Demographic variable	Frequency	Percentage
Primary practice setting		
Hospital inpatient	23	52
Hospital outpatient	19	43
Home care	1	2
Other	1	2
Primary position*		
Staff nurse	24	55
Advanced practice (NP, CNS)	16	36
Nurse manager/Administrator	2	5
Educator	2	5
Nursing degree currently being used*		
Registered Nurse (RN)	29	66
Nurse Practitioner (NP)	14	32
Clinical Nurse Specialist (CNS)	1	2
Certified nurses	29	66
Work in Magnet® facility		
No	22	50
Yes	16	36
Currently applying for Magnet® status	6	13
Age of patient population		
Children and adolescents	32	73
Children, adolescents and adults	12	27

Note. N=44.

*Totals may not equal 100% due to rounding error.

The remaining NDISS questions were examined for the percentage-of-agreement between surveys. The percentage-of-agreement between surveys for presence of symptom in patients was .92 (SD 0.17; n=44); and agreement for type of nursing intervention used to treat the symptom was .74 (SD 0.15; n=44). The overall average percentage of agreement for these questions was .83 (SD 0.12; n=44).

Phase Three

The focus of Phase Three was to examine symptom management and the sequelae of offering this management among a national sample of pediatric oncology nurses. Data are presented by a summary of general findings, followed by testing of the study's hypotheses and model based on study findings.

Sample Descriptors

Survey packets consisting of the NDISS, the MJS, and demographic information were sent to 1,000 pediatric oncology nurses nationally. Five hundred twenty-six (53%) pediatric oncology nurses returned the research surveys; 509 of these surveys were eligible for inclusion in this study. Of the seventeen surveys not eligible for study inclusion, thirteen respondents stated they did not have direct care with patients at the time of survey completion, and four surveys did not complete the question about having direct patient care.

Phase Three eligible respondents were largely female (98%), white (88%), and had a mean age of 40 years and had worked in pediatric oncology for a mean of 11.6 years (Tables 4 and 5). Twenty-two percent of nurses were from

the Pacific division, followed by South Atlantic (16%), Mid Atlantic and East North Central (13% each). Eighty-two percent of the nurses had a Bachelor's or Master's degree in nursing.

Table 4.

Summary of Phase Three Nurses' Age and Years in Practice

Demographic variable	N	Mean	SD
Age	500	40.0	10.5
Years in nursing	506	15.6	10.5
Years in pediatric oncology	509	11.6	8.3

The nurses were predominately hospital inpatient (59%) staff nurses (70%) using a Registered Nurse (RN) license (78%) to provide care to children and adolescents (62%) (Table 6). The nurses were typically certified (76%) and just under a third worked in a Magnet®-credentialed facility (32%).

NDISS results of the presence of symptoms are summarized by frequency of symptom (Table 7). The average number of symptoms reported as present was 6.0 (SD 1.3). Pain was the most commonly reported symptom; trouble sleeping was the least common. NDISS results for nurses' distress, number of nursing interventions used, and perceived effectiveness of nursing interventions are presented as averages across symptoms (Table 8). Nurses' distress was greatest with trouble sleeping and lowest with hair loss. The overall average number of nursing interventions used to treat each symptom was 12.7; the greatest number was used to manage pain; the least number was used to

manage hair loss. Nurses reported pain as the most effectively treated symptom; fatigue was perceived as the least effectively managed.

Table 5.

Summary of Phase Three Demographics

Demographic variable	N	Frequency	Percentage
Gender	508		
Female		497	98
Race	508		
Caucasian/White		446	88
Asian/Asian-American		24	5
Black/African-American		13	3
Native American/Pacific Islander		6	1
Other		19	4
Primary practice location*	509		
Pacific		113	22
South Atlantic		81	16
Mid-Atlantic		68	13
East North Central		67	13
West South Central		44	9
New England		43	8
West North Central		43	8
East South Central		29	6
Mountain		21	4
Nurses highest level of education*	509		
Bachelor's		268	53
Master's		147	29
Associate's		66	13
Diploma		23	5
Other		5	1

*Totals may not equal 100% due to rounding error.

Table 6.

Summary of Phase Three Nursing Practice Characteristics

Demographic variable	N	Frequency	Percentage
Primary practice setting	509		
Hospital inpatient		299	59
Hospital outpatient		180	35
Physician office/Private practice		18	4
Other		12	2
Primary position	509		
Staff nurse		356	70
Advanced practice		103	20
Nurse manager/Administrator		22	4
Educator		10	2
Other		18	4
Nursing degree currently being used	509		
Registered Nurse (RN)		396	78
Nurse Practitioner (NP)		88	17
Clinical Nurse Specialist (CNS)		20	4
Other		5	1
Certified nurses	505	382	76
Work in Magnet® facility	508		
No		185	36
Yes		183	32
Currently applying for Magnet® status		160	32
Age of patient population*	509		
Children and adolescents		313	62
Children, adolescents and adults		192	38
Other		4	1

Note. Sample size may vary according to respondents' missing data.

*Totals may not equal 100% due to rounding error.

Table 7.

NDISS Phase Three Summary Results of Symptoms Present

Patient symptom present	Frequency	Percentage
Pain	479	98
Nausea/Vomiting	474	97
Hair loss	455	93
Worry	435	89
Fatigue	421	86
Mouth sores	401	82
Trouble sleeping	328	67

Note. N=489.

Table 8.

NDISS Phase Three Summary Results

	Nurses' distress (N=489)		Number of nursing interventions used (N=435)		Perceived effectiveness of interventions (N=414)	
Patient symptom	Mean	SD	Mean	SD	Mean	SD
Trouble sleeping	3.4	2.0	11.6	7.3	2.4	0.8
Mouth sores	3.3	1.5	10.6	7.1	2.6	0.8
Worry	3.1	1.4	14.7	7.1	2.4	0.8
Pain	3.0	0.9	18.6	7.8	3.0	0.7
Nausea/Vomiting	2.9	1.0	13.0	7.4	2.9	0.7
Fatigue	2.7	1.6	11.3	7.4	2.1	0.8
Hair loss	1.8	1.6	9.1	5.2	2.4	1.1
Overall mean	2.9	0.8	12.7	6.1	2.5	0.5

A complete ranking of interventions overall and per symptom can be found in Appendix B. The top five most frequently used interventions across all symptoms were (in order): emotional support, encourage family involvement, active listening, family support, and education. The five most commonly used interventions per symptom were (in order of symptom with the largest number of interventions used): pain – pain-reducing medication, distraction, emotional support, active listening, and encourage family involvement; worry – active listening, emotional support, encourage family involvement, family support, and psychosocial support for patient; nausea/vomiting – nausea-reducing medications, anxiety-reducing medications, distraction, emotional support, and encourage family involvement; trouble sleeping – adjust nighttime sleep regimen, sleep-inducing medications, reduced sleep interruptions, anxiety-reducing medications, and relaxation; mouth sores – mouth care/hygiene, pain-reducing medications, nutrition, encourage family involvement, and education; fatigue – encourage family involvement , emotional support, assist with physical needs, reduced sleep interruptions, and adjust nighttime sleep regimen; and hair loss – emotional support, active listening, family support, education, and anticipatory guidance.

A summary of the Measure of Job Satisfaction (MJS) results are available in Table 9. The overall score of nurses' job satisfaction was 3.9 (SD 0.5; range 1-5). The highest scoring subscales were Personal Satisfaction and Satisfaction

with Standards of Care. The lowest scoring subscale was Satisfaction with Workload.

Table 9.

Measure Of Job Satisfaction (MJS) Results for Phase Three

MJS Subscale	Mean	SD
Personal Satisfaction	4.2	0.5
Satisfaction with Standards of Care	4.2	0.6
Satisfaction with Prospects	4.0	0.6
Satisfaction with Professional Support	3.9	0.7
Satisfaction with Training	3.6	0.8
Satisfaction with Pay	3.6	0.9
Satisfaction with Workload	3.5	0.7
Overall Satisfaction Score	3.9	0.5

Note. N=508. Scores on the MJS ranged from 1 (very dissatisfied) to 5 (very satisfied).

Bivariate Correlations

Tabled correlations were used to evaluate four of the six study hypotheses (Table 10). Two of the study's hypotheses were rejected as relationships among the variables behaved conversely to the relationship expected. The first hypothesis proposed that as the presence of distressing symptoms in pediatric oncology patients increased, so did nurses' distress from those symptoms. This hypothesis was rejected as there was in fact a significant inverse relationship found between these variables (r= -.67, p=.00). Rather, as the number of symptoms increased, nurses' distress decreased.

The second hypothesis proposed that as nurses' perceived effectiveness in treating patients' symptoms decreased, then nurses' distress from patient symptoms would increase. This hypothesis was rejected as there was a positive correlation of .12 (p=.01) between nurses' perceived effectiveness of interventions and nurses' distress from symptoms. As the perceived effectiveness of nursing interventions increased, so did nurses' distress.

Two of the study hypotheses were not supported as there were no significant correlations among variables. The third hypothesis proposed an inverse relationship between the number of nursing interventions used to manage symptoms and the nurses' distress from patients' symptoms. This hypothesis was not supported as there was no significant correlation between these variables (r = -.02). The fourth hypothesis proposed an inverse relationship between nurses' distress and nurses' job satisfaction. This hypothesis was not supported as the correlation was .04 and non-significant.

Regression Analyses

Regression analyses were used in addressing the final two hypotheses. Correlations between variables were measured to analyze for potential covariates. Table 11 presents a correlation matrix of the dependent variables (job satisfaction and nurses' distress), demographic covariates (race, geographic location) and nursing practice covariates (primary practice position and years in pediatric oncology) which were found to have significant relationships.

Table 10.

Correlations Among Main Study Variables

Variable	Job satisfaction	Nurses' distress	Patients' symptoms	Perceived effectiveness	Number of nursing interventions
Job satisfaction	--				
Nurses' distress	.04	--			
Patients' symptoms	- .01	- .67***	--		
Perceived effectiveness	.16***	.12**	.06	--	
Number of nursing interventions	- .02	- .00	.18***	.25***	--

Note. N=508.

**p<.01. ***p<.001.

Demographic variables with significant correlations to the dependent variables were analyzed by subgroups for more meaningful interpretation. For example, race was found to be significantly correlated to the dependent variables for respondents answering "White/Caucasian". This subgroup was then coded and included in the correlation matrix (Table 11). The same scenario was true for location. Location proved significant only for the subgroup "Pacific" therefore this subgroup was retained as a potential covariate.

Nurses' age, years in nursing, and years in pediatric oncology were all significant with main study variables, but highly correlated with each other (nurses' age with years in nursing: r= .88; nurses' age with years in pediatric oncology: r= .73; and years in nursing with years in pediatric oncology: r= .81; all significant at p=.00). The greatest effects on the regression equations were noted with years in pediatric oncology, therefore this variable was retained among the three.

Table 11.

Correlation Table of Dependent Variables and Covariates

Variable	Job satisfaction	Nurses' distress	Race: White	Pacific	Staff nurse	Years in pediatric oncology
Job satisfaction	--					
Nurses' distress	.03	--				
Race: White	.10*	-.11*	--			
Location: Pacific	.10*	.08	-.25***	--		
Primary position: Staff nurse	-.20***	.02	-.09*	.14**	--	
Years in pediatric oncology	.01	.10*	.09	-.01	-.28***	--

Note. N=498.

*p<.05. **p<.01. ***p<.001.

The two variables regarding nurses' practice status (nursing degree being used: RN vs. NP; and primary practice position: staff vs. advanced practice) were both significant with the main study's variables but again strongly correlated (r= .77, p=.00). When analyzed by subcategory, the subgroup of staff nurses within primary practice position offered the greatest contribution to the analysis and was therefore retained.

Hierarchical regression analyses were used to analyze the remaining hypotheses. Based on the correlations in Table 11, covariates were entered into the regression analyses by blocks (demographics variables and nurse practice variables) in order to remove the effects of those variables from the equation. Prior to the addition of nursing interventions as mediators, the number of symptoms had a multiple correlation (R) of .63 and was able to predict 39% of nurses' distress. The variable 'years in pediatric oncology' acted as a suppressor variable in that it did not significantly improve the regression models itself, but helped to improved the model in explaining nurses' distress overall.

The fifth hypothesis examined the use of perceived effectiveness of nursing interventions as a mediator between patients' symptoms and nurses' distress and was not rejected. Adding perceived effectiveness significantly contributed to the regression equation above the effects of the covariates and the total number of patients' symptoms present (Table 12). The use of perceived effectiveness as a mediator allowed the prediction of 41% of nurses distress (R=.64). The variable 'years in pediatric oncology' acted as a suppressor variable

in that it did not significantly improve the regression models itself, but helped to improved the model in explaining nurses' distress overall.

The final hypothesis examined the number of nursing interventions as a mediator between patients' symptoms and nurses' distress. This hypothesis was not rejected as it also contributed significantly in explaining nurses' distress, above the effects of the covariates and patients' number of symptoms (Table 13). Including the number of nursing interventions as a mediator increased the R to .64, explaining 40% of nurses' distress.

Table 12.

Regression Findings Evaluating Perceived Effectiveness

Variable	β	R^2 change	F change	p
Step 1				
Race: White	- .09*			
Years in pediatric oncology	.05	.03	6.36	.00
Step 2				
Total number of symptoms present	- .62***	.43	303.46	.00
Step 3				
Perceived effectiveness of nursing interventions	.15***	.02	18.25	.00

Note. Dependent variable: Mean Amount of Nurses' Distress.

*p<.05. **p<.01. ***p<.001.

Table 13.

Regression Findings Evaluating Quantity of Nursing Interventions

Variable	β	R^2 change	F change	p
Step 1				
Race: White	- .10**			
Years in pediatric oncology	.04	.03	6.35	.00
Step 2				
Total number of symptoms present	- .64***	.37	303.46	.00
Step 3				
Number of nursing interventions (quantity)	.11**	.01	9.78	.00

Note. Dependent variable: Mean Amount of Nurses' Distress.

*p<.05. **p<.01. ***p<.001.

Finally, hierarchical regression was used to analyze the effectiveness of the study's model in explaining overall job satisfaction. Analysis was performed using SPSS REGRESSION and SPSS FREQUENCIES for evaluation of assumptions. Table 14 presents the analysis findings, including the standardized regression coefficients (β), and with the addition of each block of variables (demographics, nursing practice, and study variables) the change in R^2 , the change in F, and the significance of the change in F. Race (white/Caucasian) and location (Pacific division) were included in block 1 for demographic covariates; and block 2 contained primary practice position (staff nurse) and number of years in pediatric oncology as the nursing practice covariates. Each block contributed significantly in explaining the study's model. Years in pediatric

oncology again behaved as a suppressor variable. Of the four main study variables, only "perceived effectiveness of nursing interventions" offered a significant contribution to the final block of the regression. However, without the other three variables, the ability of the model to predict job satisfaction was reduced. The fully mediated model was significantly different than the null hypothesis with R=.33, adjusted R^2=.09, and F (8,494) = 7.45, p=.00.

Table 14.

Regression Findings Evaluating Study Model on Job Satisfaction

Variable	β	R^2 change	F change	p
Step 1				
Race: White	.14**			
Location: Pacific division	.16***	.03	6.73	.00
Step 2				
Staff nurse	- .23***			
Years in pediatric oncology	.07	.05	12.50	.00
Step 3				
Total no. symptoms present	.04			
Nurses' distress	.02			
Perceived effectiveness	.19***			
No. nursing interventions	- .07	.04	4.84	.00

Note. Dependent variable: Overall job satisfaction. RN = registered nurse.

***Contributed significantly to the model when all three blocks included at the level of p<.001.

Chapter V

Discussion

This chapter discusses the results presented in Chapter Four. Discussion is presented by phase, and concludes with a study summary including implications for practice. Phase Three discussion includes the evaluation of survey findings, the hypotheses, and the study model.

Phase One

The purpose of Phase One was to test the content validity of the newly developed Nurses' Distress and Interventions for Symptoms Survey (NDISS). In the first part of Phase One, the Association for Pediatric Hematology/Oncology Nurses (APHON) nurses who responded from the Listserv gave useful feedback to assist in determining which nursing interventions were most commonly used. This list was used to reduce the number of nursing interventions listed on the NDISS. However, some of the interventions removed during this stage were repeatedly written in on the Phase Two and Three surveys by nurses, including acupuncture, the use of cold and heat, massage, and use of wigs/hats. While acknowledging the burden of a long list of interventions, the longer list may have provided a richer description of interventions being used in subsequent samples (e.g. Phases Two and Three). With an obviously limited sample of 12 nurses, it is

also possible that the nurses who responded from the Listserv were different than APHON nurses who did not respond or are not members of the Listserv at all.

Ideally, validity would have been examined by comparing the patients' statement of presence of symptoms and comparing them with the nurses' perception of presence of symptoms. However, given time and financial constraints, content validity was seen as the most appropriate option. In part two of Phase One, the content validity index (CVI) results for the NDISS (.88) demonstrated excellent content validity for the newly developed instrument. Suggestions by experts during the CVI-portion of Phase One generally concerned the choice of patient symptoms included in the NDISS. As these symptoms were based on a literature review of those most distressing to patients, the original seven symptoms were retained. The questions for each symptom were designed to be consistent between symptoms in order to make the survey easier for respondents. There were, however, comments in both Phase Two and Phase Three that emphasized the difficulty in assessing the ability to "treat" the symptom of hair loss. Future versions of the NDISS may consider modifying the questions to reflect the management of patients' distress from the symptoms, more than the symptom itself.

Phase Two

The purpose of Phase Two was to both examine the reliability of the NDISS and to pilot test the survey packet and the multiple contact design. Test-

retest reliability was chosen as the most suitable option to test NDISS reliability due to the nature of the questions and the given time and financial constraints. The NDISS questions each regarded different constructs (for example, nurses' distress or perceived effectiveness of interventions), therefore a measure of internal consistency was not appropriate. Criteria for the appropriate use of test-retest stability include the presence of the same test forms, the same subjects, and the same situations. The first two criteria were accomplished in Phase Two. Yet it became apparent based on nurses' comments in Phases Two and Three that varying patient and work situations may have contributed to error variance in the reliability of the NDISS. Nurses wrote in the comments about particularly difficult patients or work assignments and the effect of those conditions on the nurses' responses. Researchers interested in using the NDISS should consider modifying the questions by asking respondents to identify a specific patient for consideration in answering the questions, although that approach may limit the generalizability of findings and encourage polarity of responses.

Phase Two participation was acceptable; however, the reliability statistics were not ideal. The percentage-of-agreement statistics were adequate; of the correlations, only the questions about perceived effectiveness of nursing interventions approached the acceptable minimum standards for reliability (r=.72). Nurses' distress was the least stable question (r=.42). Some of the written-in comments indicated that nurses had a difficult time assessing their own distress in relation to patients' symptoms. In addition, the choice of wording for

these questions may have contributed to the error variance of this question type. For example, nurses may have had confusion in answering the question according to managing the symptom versus managing the distress from the symptom. Ultimately, these low reliability findings may have compromised Phase Three findings as error variance is inversely proportionate to reliability. With low reliability, there is far greater influence of error in the results.

The demographics of Phase Two were skewed by geographic location as obvious when comparing the percentage of participants from the east and west coasts between Phases Two and Three. In distribution of the first mailing of Phase Two the proposed-randomized database of national pediatric oncology nurses had very few nurse addresses from the western U.S. This issue was addressed with the Association of Pediatric Hematology/Oncology Nurses and remedied between Phases Two and Three by the generation a new randomized list of 1,000 national members. Therefore, Phase Three reflected a true randomized national sample. This compromise in geographic representation should not have affected the reliability statistics.

APHON allows membership to nurses with at least an RN license; therefore practical nurses were not expected to respond to the survey. As noted also in Phase Three, a large percentage of nurses had a Bachelor's or Master's degree. The lower number of Associate's degree and Diploma nurses in this study's samples may indicate a difference between nurses belonging to a professional organization and non-member nurses. The amount that this

difference may influence survey findings is unknown. Samples in future studies should attempt to include non-members as well.

Regarding the multiple contacts design recommended by Dillman (2007), there was a very positive response from participants – in both Phase Two and Three. The nurses wrote comments that they appreciated the pre-survey letter informing them of the arrival of the survey in the mail in the next few days. The follow-up contact also appeared to be effective as there was a surge of surveys following each follow-up postcard mailing.

Phase Three

Sample Descriptors

The purpose of Phase Three was to examine the relationships between pediatric oncology nurses' symptom management and job satisfaction. This section discusses the demographics of Phase Three respondents, as well as results from the NDISS and Measure of Job Satisfaction.

A response rate of over 50% greatly exceeded expectations, and is likely related to the use of the multiple contacts design. Similar to Phase Two, respondents were mostly Caucasian females. The percentage of Caucasians did decrease from 98% in Phase two to 88% in Phase Three, likely to due the increased representation from the Western U.S. Phase Three nurses were on average a few years younger (Phase Two mean 42.7 years, Phase Three 40 years) and had been working in pediatric oncology an average of over 5 years less (Phase Two mean 17 years, Phase Three mean 11.6). These findings also

may be related to the expanded geographic inclusion with Phase Three. Again, as in Phase Two, most nurses held a Bachelor's or Master's degree (82%). The rate of certified nurses in Phase Three (76%) is likely not representative of typical pediatric oncology nurses who may not be members of APHON, and this may have affected the generalization of survey findings.

The NDISS was based on pediatric oncology patients' most distressing symptoms from the literature, which were (in order) fatigue, pain, decreased appetite, nausea/vomiting, hair loss, isolation, worry, fear, mouth sores, trouble with mobility, trouble with relationships, and trouble sleeping (Collins et al., 2002; Drake et al., 2003; Enskar et al., 1996; Hedström et al., 2003; Hicks et al., 2003; Hinds et al., 1992; Jalmsell et al., 2006; McCaffrey, 2006; Moody et al., 2006; Novakovic et al., 1996; Wolfe et al., 2000). Decreased appetite, isolation, fear, and trouble with mobility and relationships were excluded from the NDISS as it was felt these symptoms would be less tangible and therefore more difficult to assess. In retrospect, hair loss and trouble sleeping were at least difficult and may have been replaced by the more distressing symptoms such as isolation and fear.

Frequency of symptoms is notably different than symptom distress. A child may have the presence of a symptom but not feel bothered by that symptom. According to the literature, some of the most frequently occurring symptoms in pediatric oncology patients are fatigue, nausea, difficulty eating, fever, mucositis, pain, and hair loss (Drake et al., 2003; Williams, Schmideskamp, Ridder, &

Williams, 2006). This study focused on the symptoms considered most bothersome or distressing to children with cancer. Surprisingly, fatigue and mouth sores were among the most frequent and most distressing symptoms, yet were rated by nurses as occurring less often than the other symptoms (86% and 82%, respectively).

Nurses reported an average of six of the seven symptoms as present in their patients within the past month. Pain was reported as present by 98% of the nurses, which is consistent with the literature in terms of frequency. This finding may also have to do with the design of the survey listing pain first among the symptoms. Consistent with the literature about patients' distress, nurses were also most distressed by pain; however, nurses in this study reported the greatest perceived effectiveness of nursing interventions with pain. This is somewhat contrary to the literature review where nurses, particularly hospice nurses, felt that pain was nearly impossible to control (Papadatou et al., 2002; Papadatou et al., 2001). Future studies might examine patient and nurse perception of pain concurrently to determine the accuracy of nurses' assessment of patient's perception of pain.

Nurses reported the highest levels of distress with patient worry. Nursing care of worry is time-consuming and somewhat elusive. The most common nursing interventions for treating worry were active listening, emotional support, and encouraging family involvement. Given today's fast-paced hospital routine

with a large number of nursing responsibilities, it is no wonder that nurses feel difficulty in caring for patients with worry.

Surprisingly, nurses generally relied heavily on medication-based therapy, despite the emphasis on *nursing* interventions. Based on write-in comments on the surveys, it appears that nurses feel that medical management is quite similar to nursing management. For example, the most commonly occurring written-in intervention for fatigue was transfusion with packed red blood cells – clearly a medical intervention; mucositis frequently had electrolyte supplementation and specific medication-based mouthwashes written-in as interventions. There was certainly a large number of advance practice nurses who would be capable of medically managing patients, yet the comments were not limited to only those advance practice nurses.

These findings are useful in helping to guide future study – emphasis might be placed on distress and perceived effectiveness of interventions when comparing nursing interventions versus medical management by nurses. Perceived effectiveness might also prove more useful if studied per intervention rather than collectively across symptoms. Many nurses' comments addressed the difficulty in "making" the physician write appropriate dosages for medications in order to better manage symptoms. Future NDISS revisions might include an intervention that addresses the nurse's advocacy for patients with physicians. Nurses may feel more comfortable using more nursing-based interventions than in trying to control medical management indirectly. Emphasis might be placed on

encouraging the development and effectiveness of nursing interventions despite a highly “medical-ized” environment.

Fatigue, although rated highly in frequency and distress by patients in the literature, was rated as present by only 86% of the nurses, and caused relatively little distress in the nurses (mean distress from fatigue: 2.7; range: 1 “not at all” to 5 “very much”). Fatigue was reported as having the least effectiveness in being treated by nursing interventions. Nurses primarily used nursing-based interventions for treatment, although the general recommendations for fatigue in the literature were not the most frequently used interventions. For example, the National Comprehensive Care Network publishes guidelines for supportive care. The recommended management of fatigue includes education, energy conservation and activity clustering, distraction, exercise, relaxation, nutritional adjustments, sleep hygiene and family involvement (National Comprehensive Cancer Network, 2007b). Of these recommendations, only the last two were present in the top five interventions for treating fatigue in this survey.

Trouble sleeping was reported as the least common symptom (67%). Interestingly, trouble sleeping was rated as the most distressing symptom to the nurses who felt it was present in their patients. The effect of trouble sleeping may be specific to nurses working during the evening or night shift. Future versions of the NDISS might include a question to determine which shift the nurse primarily works. Trouble sleeping fell mid-range for the number of interventions used to treat this symptom, and nurses were generally indifferent as to the effectiveness

of these interventions (mean 2.4; range from 1 “not at all” effective to 5 “very much” effective). Two of the top five nursing interventions involved for trouble sleeping included the use of medications (for sleep and anxiety). While there are scant recommendations for insomnia or difficulty sleeping in children with cancer, adult management recommends highly nursing-related activities, including promotion of exercise, nutritional modifications, establishing routines, relaxation, and positioning (Valdres, Escalante, & Manzullo, 2001).

Hair loss was generally present in patients (93%), but nurses were relatively unbothered by its presence (mean distress from hair loss: 1.8; range: 1 “not at all” to 5 “very much”). Nurses responded that they felt that interventions were effective in treating the symptom of hair loss. Hair loss is an obvious example of the confusion question wording about managing the symptom – nurses may have been unclear about answering the question according to treating the hair loss itself or the child’s distress from the hair loss. The most commonly written-in interventions were for wigs, hats, and referrals to programs assisting with these devices. These interventions were not included in the NDISS because while these interventions ranked highly for management of hair loss (16^{th}), overall, these interventions were ranked low due to the lack of application across other symptoms.

The Measure of Job Satisfaction (MJS) results yielded a relatively high overall job satisfaction (mean 3.9; range 1 “very dissatisfied” to 5 “very satisfied”). These findings are consistent with previously published studies of job satisfaction

in pediatric oncology nurses using the MJS (Hinds et al., 1998; Hinds et al., 2003). There is potential bias in these results if the nurses who completed and returned the survey were more motivated and happier with work than their counterparts. As there was no way to track the profiles of the nurses who did not return the survey, this potential cannot be investigated further.

Overall job satisfaction was significantly negatively correlated with both primary practice position as a staff nurse and among nurses practicing with an RN; and positively correlated with a primary practice position as an advanced practice nurse (CNS/NP) and among nurses using a Nurse Practitioner's degree. That is, staff nurses or RN's had lower job satisfaction scores than advanced practice nurses or NP's. Upon closer examination, staff nurses were significantly negatively correlated in every job satisfaction subscale. This finding may be related to the issue of control regarding patient care and the ability to directly order medical interventions. According to comments, nurses were at times frustrated with not being able to change the medical management of some symptoms. Additionally, write-in comments from staff nurses often addressed the over-worked and under-paid conditions in the hospital/outpatient environment. These findings may be not be specific to pediatric oncology nursing, but rather consistent across nursing specialties given the current healthcare management structure and focus on cost-reduction.

Years in pediatric oncology nursing was significantly positively correlated with the "Satisfaction with Pay" subscale. Ideally nurses are collecting pay

commensurate with their experience as this finding might illustrate. This may also be related to the increased expectations among the younger generations of nurses (the Generation X and Millenials) in having pay and work conditions competitive with other tech-savvy industry positions (Sherman, 2006).

Nurses in Phase Three of this study demonstrated the highest scores in the subscales of personal satisfaction (mean 4.2; range 1-5) and in satisfaction with standards of care (mean 4.2). Numerous comments on the surveys attest to the fact that nurses care exceedingly about, and take great pride in, offering excellent patient care. This is consistent with the literature that nurses find great meaning in the relationships with patients and families (Bertero, 1999; Clarke-Steffen, 1998; Cohen et al., 1994; Cohen & Sarter, 1992; Fall-Dickson & Rose, 1999; Grunfeld et al., 2005; Haberman, Germino, Maliski, Stafford-Fox, & Rice, 1994; Olson et al., 1998; Papadatou et al., 2002). But this care comes at an expense – the lowest rating subscale was satisfaction with workload (mean 3.5). Again, frequent comments were written in the survey about the stress of "squeezing everything in" and feeling overworked.

Upon closer examination, no single job satisfaction subscale was more predictive of any of the main study variables than overall job satisfaction. Therefore, the decision was made to retain overall job satisfaction as representative of this concept when testing hypotheses.

Bivariate Correlations

The main study variables all proved to have significant correlations, though not in the anticipated directions. The first hypothesis interestingly found an inverse relationship between presence of distressing symptoms and nurses' distress as compared to the positive relationship proposed. The greater the number of symptoms present, the less the distress felt by the nurse. This finding is unexpected and quite substantial in effect (r=-.67, p=.00). Upon closer inspection of this phenomenon, the trend was linear, with no special effects noted according to number of symptoms. Simply, the fewer the symptoms, the greater the distress; and the greater the number of symptoms, the less the distress.

This effect be related to the overwhelming and emotionally-challenging task of managing multiple patient symptoms. If a patient presents with a greater number of symptoms, then the severity of those symptoms may also be greater. Therefore, in order to function effectively as a nurse and to emotionally protect oneself, nurses may need to dissociate somewhat from the patient's symptoms. As nurses become more task-oriented in managing patients' symptoms, perhaps their distress decreases. This is supported by a recent qualitative study finding that for managing symptoms in oncology patients, often nurses chose those symptoms that were easier to treat and easier to measure improvement (Blomberg & Sahlberg-Blom, 2007). Additionally, the qualitative study emphasized the difficulty in treating the less physical or tangible symptoms, for example worry or anxiety.

Another proposition may be related to the idea that nurses take comfort and feel useful in performing tasks to help manage symptoms. As the number of symptoms increases, there is more task-work to attempt to manage the multiple symptoms. The sense of staying busy performing tasks to benefit patients may allow the nurse to feel that she/he is helping the patient and therefore feel less distressed. If the nurse knows of only a handful of nursing interventions to treat each symptom, when there are not many symptoms, the nurse depletes her/his perceived options in offering nursing care, and therefore feels more distressed.

The second hypothesis was also surprising and contrary to the hypothesized relationship as it revealed that the perceived effectiveness of nursing interventions for treating symptoms was associated with greater feelings of nurses' distress instead of a decrease in distress. Nurses with greater distress are more likely to feel that nursing interventions help manage the symptoms. The correlation is fairly weak ($r=.12$), however significant ($p=.01$). This also may be related to empathy. Nurses may feel that they are able to help manage patients' symptoms with interventions, but still feel bothered by the inability to completely resolve the symptoms and therefore feel more distressed. The previous hypothesis demonstrated the inverse relationship between nurses' distress and number of symptoms. There was however no significant relationship between the number of symptoms and perceived effectiveness.

In light of the fairly weak correlation between nurses' distress and perceived effectiveness, it is possible that the results may be skewed due to the

error variance in the NDISS instrument itself, or by virtue of a non-normal distribution of the variables. The mean amount of nurses' distress was 2.9 (SD 0.8; range 0-4). Most nurses were unable to rate their distress as "not at all". This may be related to social desirability, or it may be related to the inherent sense of empathy common to pediatric oncology nurses. The mean perceived effectiveness was 2.5 (SD 0.5; range 0-4), another distribution skewed to the left. As error variance increases, the results may become compromised, and this may be such an example.

Two additional hypotheses regarding nurses' distress were found to have no significant relationship, and therefore the hypotheses were not supported. There was no significant relationship between the number of nursing interventions used and nurses' distress, nor between nurses' distress and nurses' job satisfaction. Nurses' distress does not appear to fit as hypothesized within the study model. Besides references to pediatric oncology nurses' distress in caring for dying patients, there is little published research on which symptoms nurses find most distressing. A qualitative approach, such as grounded theory or phenomenology, may be useful in exploring these concepts from the nurses' perspective before revising the model and NDISS instrument. Future studies might examine nurses' perceptions of the most distressing symptoms and compare these to patients' most distressing symptoms. Perhaps the patients' most distressing symptoms chosen for inclusion in the NDISS were not the most

appropriate and therefore NDISS revisions might replace symptoms on the currently on the NDISS with other distressing symptoms.

Perceived effectiveness of nursing interventions however appeared more helpful to this model than previously hypothesized with two significant relationships. As the number of symptoms increased, so did the number of nursing interventions used (r=.18, p=.00); and as the number of nursing interventions increased, nurses' perceived effectiveness increased (r=.25, p=.00). Therefore, perhaps there is a cumulative effect of nursing interventions. Any one particular intervention may not work well, but a synergistic effect may be perceived when multiple nursing interventions are used together.

Regression Analyses

The remaining two hypotheses that examined nursing interventions as mediators in the model were retained. Both perceived effectiveness of nursing interventions (quality) and the number of nursing interventions (quantity) contributed to the prediction of nurses' distress. Prior to the nursing interventions as mediators, the number of symptoms alone (after the effects of demographic and practice covariates) was able to predict 39% of nurses' distress. Each nursing intervention variable (number of interventions and perceived effectiveness) was able to significantly improve predictability of nurses' distress. By adding both nursing intervention variables, the model was able to predict 42% of nurses' distress. Nursing interventions, both in quantity and quality, appear useful in predicting the work environment of pediatric oncology nurses.

The hierarchical regression analysis of the study model, including covariates, was only able to predict a small portion of job satisfaction (adjusted R^2 = .09). This is not surprising given the generally weak prediction offered in the original Stress Response Sequence Model (Hinds et al., 1998; Hinds et al., 2003). In addition, there are other issues involved in job satisfaction that are not addressed in the model, for example pay. The work done in the original SRSM showed promising results in the development of role-related meaning to help explain reactions of stress in pediatric oncology nurses. Future studies might consider combining the stronger variables from each study, including symptom management and perceived effectiveness of nursing interventions along with role-related meaning.

The correlations among the main study variables modify the study model with patients' symptoms, number of nursing interventions, and nurses' distress correlating with nurses' perceived effectiveness of nursing interventions – instead of nurses' distress. Nurses' distress was also found to be unrelated to the number of symptoms present in patients. This again may be related to the potential error in measuring distress. Distress may not be a stable variable to assist in measuring satisfaction, as supported by the nurses' comments about difficult patients affecting their responses. Perceived effectiveness of nursing interventions was the only variable with a significant correlation to nurses' job satisfaction, and therefore it is not surprising that this was the only main study variable to contribute significantly to the study model.

The covariates were interesting. When subcategorized, “White/Caucasian” race was significantly negatively correlated with perceived effectiveness of nursing interventions, significantly negatively correlated with nurses’ distress, and significantly positively correlated with job satisfaction (see Table 11). Among other demographic variables, “White/Caucasian” was also significantly correlated negatively with living in the Pacific region and positively with years of experience in pediatric oncology. These findings may be skewed by the extremely large percentage (88%) of respondents in the White category. Drawing conclusions from these findings seems difficult as the relationships are relatively weak, though significant. This may be a simple product of measurement error.

Conclusions

Although the study’s model requires modification, the findings generated from this study will provide baseline data for researchers on the nurses’ perceptions of the presence of patients’ symptoms, the nurses’ distress from these symptoms, the nursing interventions most frequently used in symptom management of the most distressing symptoms, the perceived effectiveness of nurses’ interventions, a summary of job satisfaction and demographics of a national sample of pediatric oncology nurses.

The research study also provided baseline data about the way pediatric oncology nurses manage patients’ symptoms. Nursing interventions, both in quantity and quality, have led to interesting information. The number of nursing interventions and the perceived effectiveness of nursing interventions both

proved significantly related to study variables. Future research might examine the impact of nursing interventions on nurses' stress levels and the subsequent relationship to job satisfaction. Also, studies might examine nurses' choice of interventions and the relationship to the nurses' perceived theoretical practice framework.

Due to the lack of published literature on nurses' distress and nursing interventions in the literature, it is difficult to compare adult and pediatric populations. Nursing empathy and sense of satisfaction in patient, family, and co-worker relationships seem consistent between populations. However, it is unclear if pediatric and adult oncology nurses respond differently to patients' symptoms perhaps as a result of having parents involved, or due to the perceived vulnerability of children in general.

Based on the findings from this study, future research may address opportunities in promoting particular evidence-based nursing interventions for symptom management based on research and/or guidelines. The data from this research demonstrates which nursing interventions are being used. It is recommended that nurses review the research and other forms of evidence from reputable sites in establishing symptom management practice guidelines. For example, the National Comprehensive Care Network offers supportive care practice guidelines, many of which have specific pediatric interventions, online or in paper version, available for free (available at www.nccn.org). Once a consistent symptom management plan is practiced, nurses may then be able to

measure how well the nursing interventions are actually working and find opportunities for improvement symptom management.

Also evident from this study was the lack of distinction between nursing and medical interventions in symptom management. Nurses may consider defining their role in pediatric oncology according to the strengths that they exclusively bring to symptom management from a nursing perspective. Promoting the image and use of nursing interventions may provide more holistic care to patients as they are concurrently being managed by a medical team.

Useful baseline data from this study has now paved the way for future studies to examine specific symptoms and/or nursing interventions for symptom management in pediatric oncology. In addition this study helps to describe the distress of pediatric oncology nurses and the methods that these nurses use to manage their patients' symptoms. Future theoretical work in pediatric oncology should include nursing interventions as an influence in the work environment of nurses.

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Appendices

Appendix A: Nurses' Distress and Interventions for Symptoms Survey (NDISS)

1. In the past month, have any of your patients experienced PAIN?

☐ No → **SKIP to #3**

☐ Yes → **2. How much did it distress or bother <u>you</u> that your patients had PAIN? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

3. Which of the following do you normally use to help treat PAIN? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

4. How effective do you feel you are at managing PAIN using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

5. In the past month, have any of your patients experienced NAUSEA/VOMITING?

☐ No → **SKIP to #7**

☐ Yes → **6. How much did it distress or bother <u>you</u> that your patients had NAUSEA/VOMITING? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

7. Which of the following do you normally use to help treat NAUSEA/VOMITING? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

8. How effective do you feel you are at managing NAUSEA/VOMITING using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

9. In the past month, have any of your patients experienced MOUTH SORES?

☐ No → **SKIP to #11**

☐ Yes → **10. How much did it distress or bother you that your patients had MOUTH SORES? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

11. Which of the following do you normally use to help treat MOUTH SORES? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other: _____

12. How effective do you feel you are at managing MOUTH SORES using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

13. In the past month, have any of your patients experienced TROUBLE SLEEPING?

☐ No → **SKIP to #15**

☐ Yes → **14. How much did it distress or bother <u>you</u> that your patients had TROUBLE SLEEPING? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

15. Which of the following do you normally use to help treat TROUBLE SLEEPING? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

16. How effective do you feel you are at managing TROUBLE SLEEPING using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

17. In the past month, have any of your patients experienced FATIGUE?

☐ No → **SKIP to #19**

☐ Yes → **18. How much did it distress or bother <u>you</u> that your patients had FATIGUE? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

19. Which of the following do you normally use to help treat FATIGUE? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

20. How effective do you feel you are at managing FATIGUE using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

21. In the past month, have any of your patients experienced WORRY?

☐ No → **SKIP to #23**

☐ Yes → **22. How much did it distress or bother <u>you</u> that your patients had WORRY? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

23. Which of the following do you normally use to help treat WORRY? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

24. How effective do you feel you are at managing WORRY using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

25. In the past month, have any of your patients experienced HAIR LOSS?

☐ No → **SKIP to #27**

☐ Yes → **26. How much did it distress or bother <u>you</u> that your patients had HAIR LOSS? (Please select one response)**

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

27. Which of the following do you normally use to help treat HAIR LOSS? *Include what you personally administer and what you arrange for someone else to administer.* (Please check all that apply)

☐ Active listening	☐ Mouth care/hygiene
☐ Adjust nighttime sleep regimen	☐ Music therapy
☐ Anticipatory guidance (explain what is happening)	☐ Mutual goal-setting
☐ Anxiety-reducing medications	☐ Nausea-reducing medications
☐ Art therapy	☐ Nutrition
☐ Assist with physical needs	☐ Pain-reducing medications
☐ Build trust	☐ Pet therapy
☐ Counseling	☐ Play therapy
☐ Decision-making support	☐ Positioning
☐ Deep breathing	☐ Prayer
☐ Distraction	☐ Presence
☐ Education	☐ Psychosocial support for patient
☐ Emotional support	☐ Reduced sleep interruptions
☐ Encourage family involvement	☐ Relaxation
☐ Family support	☐ Sleep-inducing medications
☐ Humor	☐ Spiritual support
☐ Imagery	☐ Stress management
☐ Meditation	☐ Other: _____
(continued in next column)	☐ Other: _____
	☐ Other:

28. How effective do you feel you are at managing HAIR LOSS using these interventions? (Please select one response)

- ☐ Not At All (0)
- ☐ A Little Bit (1)
- ☐ Somewhat (2)
- ☐ Quite a Bit (3)
- ☐ Very Much (4)

Appendix B: Nurses' Ranked Use of Interventions in Phase Three

Nursing intervention	Overall	Pain	N/V	Mouth sores	Trouble sleeping	Fatigue	Worry	Hair loss
Emotional support	1	3	4	7	6	2	2	1
Encourage family involvement	2	5	5	4	7	1	3	7
Active listening	3	4	9	10	8	8	1	2
Family support	4	13	8	8	9	6	4	3
Education	5	12	7	5	12	9	7	4
Anticipatory guidance	6	8	6	6	14	11	8	5
Psychosocial support for patient	7	15	13	12	10	10	5	6
Anxiety-reducing medications	8	9	2	14	4	17	9	22
Build trust	9	10	15	13	15	13	6	9
Distraction	10	2	3	9	20	4	15	19
Relaxation	11	19	11	16	5	7	12	20
Assist with physical needs	12	11	12	11	16	3	20	14
Pain-reducing medications	13	1	24	2	11	18	28	34
Nausea-reducing medications	14	7	1	15	19	26	30	32
Reduced sleep interruptions	15	21	20	19	3	4	25	8
Humor	16	16	18	21	29	22	14	8
Presence	17	20	17	17	18	20	13	12
Decision-making support	18	22	22	20	22	16	10	13
Play therapy	19	18	21	18	31	21	16	11
Mouth care/ hygiene	20	17	16	1	33	36	35	31
Sleep-inducing medications	21	23	19	23	2	14	29	35
Nutrition	22	24	14	3	30	12	34	27
Deep breathing	23	14	10	5	17	28	21	29
Counseling	24	28	26	24	23	19	11	10
Positioning	25	6	23	30	13	23	33	33
Adjust nighttime sleep regimen	26	35	34	35	1	5	32	36
Mutual goal-setting	27	25	25	22	26	15	18	21
Stress management	28	32	28	26	21	25	19	15
Spiritual support	29	29	33	32	28	29	17	17
Music therapy	30	26	29	27	24	30	23	26
Art therapy	31	27	31	29	35	32	22	18
Imagery	32	30	27	34	25	33	27	25
Prayer	33	33	35	36	32	35	24	23
Pet therapy	34	31	32	31	36	34	26	24
Meditation	35	34	30	33	27	31	31	30
Other (not listed)	36	36	36	28	34	27	36	16

Note. Results in rank order. N/V = Nausea/Vomiting.

About the Author

Jennifer I. Rheingans received a Bachelor's Degree in Nursing from the University of Florida in 1998. She began practicing as a Registered Nurse (RN) in 1998 with a specialty in pediatrics and then in pediatric oncology. In 2004 she entered the BS to PhD in Nursing program at the University of South Florida, and received her Master's of Science in Nursing with a focus in nursing education in Summer 2006. She has worked at Sarasota Memorial Hospital throughout her graduate studies and is currently a Clinical Nurse Researcher supporting Evidence-Based Practice for nurses at her hospital.

Mrs. Rheingans has maintained her certification as a pediatric oncology nurse, and has strongly pursued holistic nursing and patient- and family-centered care. She has presented posters and published papers about complementary therapies in pediatric oncology. She is preparing to take the Holistic Nursing certification exam shortly after doctoral graduation.