STRESS LEVELS OF NURSES IN ONCOLOGY OUTPATIENT UNITS

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Stress Levels of Nurses in Oncology Outpatient Units

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ABSTRACT

The purpose of the research was to identify stress levels of outpatient oncology nurses, to investigate stressful factors of nurses at the workplace, to identify differences in stress levels among nurses' demographic characteristics, and to explore coping behaviors for occupational stress of nurses. Study participants (n=40) included registered nurses and licensed practical nurses who completed the Nursing Stress Scale, three open-ended questions, and demographic questionnaire. Three different levels of stress were identified: 45% (n=18) were considered as 'no stress or less stressed,' 52.5% (n=21) were regarded as 'moderately stressed,' 2.5% (n=1) were considered as 'highly stressed.' The highest sources of stress were the factors of work load and patient death and dying. There were significant differences in stress levels among the demographic characteristics of age (p-value=0.0411) and nursing work experience (p-value=0.0412). The three most frequently used coping behaviors were verbalizing, exercising/relaxing, and taking time for self.

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CHAPTER I. INTRODUCTION

Background

Cancer is a chronic illness and the second most common cause of death in the United States (Mick, 2008; American Cancer Society [ACS], 2012). According to Siegel, Ma, Zou, and Jemal (2014), 1,665,540 patients will be newly diagnosed with cancer in the U.S. in 2014, and 585,720 Americans are expected to die of cancer in the same year. However, due to continuous advances in medicine and technology for cancer care (Mick, 2008; Quinn, 2008), there are more than 11 million American cancer survivors, and the five-year relative survival rate for all cancer cases increased from 49% in 1975-1977 to 67% in 2001-2007 (ACS, 2012). In addition to a growing cancer population, the population of elderly patients has higher rates, comparing an 11-fold larger incidence in people over the age of 65 years to those under age 65, approximately 77% of all cancer patients are diagnosed in those age 55 years or older (Zapka, Taplin, Ganz, Grunfeld, & Sterba, 2012; McEvoy et al., 2009; Mick, 2008; Oncology Nursing Society [ONS], 2013).

With increased cancer survivors and the growing cancer incidence rates of the elderly population, oncology nursing practices have evolved significantly and the demand for oncology nurses with specialized training has increased to meet the unique needs of cancer patients and their families across the cancer continuum (Mick, 2008; Quinn, 2008; ONS, 2013; Hildebrandt, 2012). To perform the professional roles appropriately as a healthcare professional, oncology nursing staff provide competent and knowledgeable care to cancer patients by implementing particular nursing practices, such as prevention and early detection for cancer, comfort, palliative and end-of-life care, and survivorship (Mick, 2008; ONS, 2004). There are, moreover,

more than 32,000 oncology certified nurses (Oncology Nursing Certification Corporation [ONCC], 2013), up from 24,000 in 2007 (Brown, Nicholson, & Ponto, 2007).

Despite the increased demand of oncology-specialized nurses, most nurses in oncology do not receive educational preparation neither in their work place nor their undergraduate education, to provide end-of-life (EOL) care (Owens & Lenegan, 2007; Conte, 2011; Robinson, 2004). According to Aycock and Boyle (2009), only 30% of oncology staff nurses had received cyclical in-services as to work-related coping, adaptation, and emotional self-care for grief and bereavement. On the other hand, 40% of oncology nurses had not received education on these issues from their workplaces (Aycock & Boyle, 2009). Furthermore, many oncology nurses feel that they receive little education to serve EOL care for dying patients or those coping with death (Gallagher & Gormley, 2009). Most novice nurses, especially, were not adequately prepared to cope with their patients' complex psychological, social, and spiritual needs while caring for extremely sick and dying cancer patients (Medland, Howard-Ruben, & Whitaker, 2004; Caton & Klemm, 2006). As a result of inadequate preparation for providing EOL care, new nurses can experience emotional trauma that includes anxiety, stress, and burnout (Caton & Klemm, 2006).

Oncology nursing practice as a specialty area can be a source of substantial stress (Escot, Artero, Grandubert, Boulenger, & Ritchie, 2001; Rodrigues & Chaves, 2008). Oncology nursing generally involves caring for critical cases, terminal conditions with no available treatment and the need for prolonged care; dealing with dying and death; and having close relationships with patients' families (Rodrigues & Chaves, 2008; Quattrin et al., 2006). Nurses working in oncology units can be exposed to potentially stressful situations because they experience multiple deaths in palliative care (Bush, 2009) and also experience feelings of powerlessness,

helplessness, and hopelessness while caring for patients in life-threatening situations (Medland et al., 2004). Thus, a number of oncology nurses suffer from role-related stress, called occupational stress, in their workplaces (Hecktman, 2012; Bush, 2009; Quattrin et al., 2006). According to Medland et al. (2004), new oncology nurses find themselves greatly prone to occupational stresses, and they require clinical and psychological mentorship programs to manage their emotions and to enhance their practical skills.

Statement of the Problem

Oncology nurses have been identified as a vulnerable group at risk for high stress (Campos de Carvalho, Muller, Bachion de Carvalho, & de Souza Melo, 2005; Hecktman, 2012). Nevertheless, a study done by Davis, Lind, and Sorensen (2013) reported that few researchers have examined stress levels of nurses in oncology outpatient units. Previous studies have tended to concentrate on inpatient settings more than outpatient settings, although all facets of oncology nursing may be stressful (Davis et al., 2013). Moreover, approximately 90% of cancer patients receive outpatient treatment through ambulatory oncology clinics, and the number of oncology admissions to hospitals has declined considerably (Williamson, 2008). Therefore, further research on stress levels and particular stressors of oncology staff nurses in outpatient units is necessary.

According to Ergun, Oran, and Bender (2005) and Campos de Carvalho et al. (2005), oncology nurses have high exposure to various stressful situations specific to the oncology workplace such as complex cancer treatment and patient deaths. However, since many oncology nursing staff are unaware of the link between their work and their own health (Sabo, 2008), they frequently either ignore or neglect their emotional experiences when caring for cancer patients

(Boyle, 2000; Bush, 2009). Thus, oncology nurses' poor perception regarding their health leads to poor coping behaviors and negative emotions, such as feelings of failure, being continuously under pressure, unhappiness, and depression (Escot et al., 2001; Conte, 2011). Consequently, they have high incidence rates of stress at work (Campos de Carvalho et al., 2005).

Without proper prevention and management of their stresses by using effective coping strategies, prolonged exposures of oncology nursing staff to personal stressors and emotional trauma can create physical and mental exhaustion, compassion fatigue, and burnout (Medland et al., 2004; Aycock & Boyle, 2009). As an outcome of accumulated stress over time, compassion fatigue is a severe malaise as a result of caring for patients in pain, trauma, or suffering (Bush, 2009; Sabo, 2006), and burnout is a long-term effect of chronic physical or emotional stressors in workplaces resulting in exhaustion, cynicism, and ineffectiveness (Maslach, Schaufeli, & Leiter, 2001). According to Bush (2009) and Aycock and Boyle (2009), oncology nurses are at great risk to experience burnout and compassion fatigue due to cumulative loss and grief. Staff nurses in oncology units were found to have high levels of emotional exhaustion and depersonalization (Alacacioglu, Yavuzsen, Dirioz, Oztop, & Yilmaz, 2009; Quattrin et al., 2006; Barrett & Yates, 2002). Also, oncology nurses who feel isolated from their workplaces, overloaded due to excessive workloads, and dissatisfied with unsupportive work environments are more susceptible to compassion fatigue (Medland et al., 2004).

Purpose of the Study

The purpose of this study was (1) to identify stress levels of nurses working in oncology outpatient units, (2) to investigate stressful factors of outpatient oncology nurses at the workplace, (3) to identify differences in stress levels among nurses' demographic characteristics (e.g., age, marital status, educational level, or work experience in nursing and oncology units), and (4) to

explore coping behaviors for work-related stress of oncology staff nurses in outpatient units. The process of assessing stress levels is imperative for oncology nurses and their employers to help perceive the importance of nurses' mental health. Investigating stressful factors for oncology nursing staff in the workplace is also significant for individual nurses and their institution to help understand specific work-related stressors as well as recognize the existence of stressful factors in oncology settings. Such stressful factors should be managed appropriately to reduce nurses' stress levels and to provide nurses with supportive working environments by implementing tailored coping strategies at both personal and organizational levels (Aycock & Boyle, 2009; Grafton & Coyne, 2012). Institutions are interested in preserving the mental health of their employees, providing supportive work environments, and enhancing their job satisfaction (Campos de Carvalho et al., 2005; Caton & Klemm, 2006). In addition, it is important to identify differences in stress levels among nurses' demographic characteristics to find effective methods for reducing or removing their unique stressors and preventing individual nurses from suffering emotional conflicts or stress.

Significance for Nursing

Various stressful situations in oncology work environments can influence job satisfaction and retention of oncology staff nurses negatively, such as observing suffering or inadequate staffing levels (Campos de Carvalho et al., 2005; Medland et al., 2004). Oncology nurses who do not deal with their stresses effectively can leave the oncology workplace and potentially the nursing profession (Conte, 2011; Jackson, Firtko, & Edenborough, 2007). Nurses with an oncology specialty have a higher turnover rate than those in other units. For example, the rate of turnover in oncology units in a hospital in the American Midwest is more than 40% compared to

a national hospital average of 14.2% (Medland et al., 2004). Moreover, the turnover rate of oncology nurses in a Mid-Atlantic university teaching hospital increased from 13.3% in 2001 to 16.7% in 2004 (Wenzel, Shaha, Klimmek, & Krumm, 2011). According to Toh, Ang, and Devi (2012), oncology nursing staff who had experience in working in low staffing units frequently have job dissatisfaction, stress, and burnout. This adverse effect of work-related stressors among oncology nurses therefore should be managed by creating and initiating practical strategies for the stressors.

With a growing shortage of nurses in America (Auerbach, Buerhaus, & Staiger, 2007), expected oncology workforce shortages can definitely affect both the quantity and quality of cancer care (Wenzel et al., 2011; ONS, 2013). The retention of oncology nurses is particularly paramount to ensure that high-quality care is provided for patients with cancer and their families (Toh et al., 2012; Metland et al., 2004). Staff nurses working in oncology play a significant role in the quality of cancer care (Aycock & Boyle, 2009; ONS, 2013) by the provision of nursing services, such as psychosocial support, information of appropriate quantity and quality, and end-of-life (EOL) care (Steginga et al., 2005; Koutsopoulou, Papathanassoglou, Katapodi, & Patiraki, 2010; Hildebrandt, 2012). Thus, it behooves institutions to develop innovative avenues to attract oncology nursing staff and to help them better manage their mental health and emotions.

CHAPTER II. LITERATURE REVIEW AND STUDY FRAMEWORK

Review of Related Literature

Stressful Factors in Oncology Nursing

Oncology nursing services are performed in stressful work environments for special needs of patients with cancer and their families (Fitch, Matyas, & Robinette, 2006; Campos de Carvalho et al., 2005; Ergun et al., 2005). The stressful practice environments are also mentioned as stressful situations or factors (Fitch et al., 2006; Ergun et al., 2005). Stressful factors in the oncology specialty can commonly include the relationships between staff members and physicians, the limitations of cancer care, lack of emotional supports in workplaces and time for terminal care (Campos de Carvalho et al., 2005; Escot et al., 2001; Rodrigues & Chaves, 2008). More specifically, Campos de Carvalho et al. (2005) identified exceedingly stressful situations in the oncology nursing practice by using the Stressor Scale for Pediatric Oncology Nursing (SSPON) (made by Hinds et al., [1990]): watching suffering patients with no alternative treatments, feelings of powerlessness or helplessness about working as an oncology nurse, making mistakes, situations with no available equipment and supplies, and circumstances with no support from hospital administrators for improving working conditions. In addition, Rodrigues and Chaves (2008) found major stressful factors of oncology staff nurses to be patient deaths, medical emergencies, conflicts among nursing team members, and work-process situations.

The grief and loss experiences of oncology nurses can cause long-term stress due to unsolved cumulative grief and loss (Conte, 2011; Sherman, Edwards, Simonton, & Mehta, 2006;

Braccia, 2005). Oncology staff nurses have high rates of grief and stress (Medland et al., 2004) because they, especially nurses in palliative care units, often provide end-of-life (EOL) care and accordingly are exposed to the deaths of cancer patients and their grieving families (Hildebrandt, 2012; Peters et al., 2012). However, a study by Brown and Wood (2009) showed oncology nursing staff have a tendency to avoid expressing their emotions because their colleagues and cancer patients' families may regard them as unprofessional. As a result, many nurses suppress their feelings of grief in their workplaces (Boyle, 2000; Medland et al., 2004). They also may repress their grief because they do not have enough time to deal with it while working (Brown & Wood, 2009). Oncology nurses' lack of education on EOL care including grief from their work sites (Hildebrandt, 2012; Conte, 2011; Wenzel et al., 2011) can make nurses feel unprepared to provide EOL care (Brown & Wood, 2009). The effects of unaddressed grief among staff nurses can negatively influence their job performance and retention in oncology settings (Conte, 2011; Fitch et al., 2006; Teel & Krumm, 2008).

Responses to Work-Related Stresses

There are vulnerable populations of oncology staff nurses who are influenced by work-related stress (Hecktman, 2012). The specific characteristics of nurses place them at higher risk for occupational stresses in ineffective stress management (Isikhan, Comez, & Danis, 2004; Quattrin et al., 2006; Potter et al., 2010). According to Isikhan et al. (2004), unique characteristics of oncology nurses and physicians are identified by using basic demographic data; the health care professionals who have larger job stress scores are married, in the ages between 21 and 36, have work experience between one and 10 years in oncology units, work long and tiring hours, and lack appropriate equipment and supplies for providing oncology nursing care.

In addition, there is other demographic information regarding emotional exhaustion, which is one of the three burnout subcomponents. Oncology nursing staff who have high scores of emotional exhaustion are older than 40 years old, registered nurses in outpatient settings, have work experience of more than 15 years in oncology wards, and advanced degrees (Quattrin et al., 2006; Potter et al., 2010; Davis et al., 2013).

The signs and symptoms of work-related stresses for nurses working with cancer patients appear in various forms, affecting their physical, mental, and psychosocial health negatively (Isikhan et al., 2004; Escot et al., 2001; Hildebrandt, 2012; Aycock & Boyle, 2009). Oncology nurses suffer from stress-related health problems such as headaches, excessive nervousness, sleep disturbance, gastrointestinal disorders, fatigue, backache, depressive symptoms, and feelings of being steadily under stress and an incapacity to seek pleasant activities in everyday life (Isikhan et al., 2004; Escot et al., 2001; Aycock & Boyle, 2009). Escot et al. (2001) also reported that nurses under significant stress experience feelings of detachment towards cancer patients and incompetence in the provision of emotional support to patients and their families, and staff nurses may show reluctance to talk as well as exhibiting avoidance behaviors.

Moreover, due to unsolved grief, oncology staff nurses can have ongoing health problems as either acute or chronic symptoms (Hildebrandt, 2012; Aycock & Boyle, 2009; Bush, 2009). Acute symptoms of unsolved grief included feelings of anger, anxiety, apathy, guilt, helplessness, stress, and physical symptoms of headaches and nausea (Hildebrandt, 2012; Aycock & Boyle, 2009); chronic symptoms included burnout, chronic grief, compassion fatigue, and feelings of failure (Hildebrandt, 2012; Bush, 2009). Additionally, according to Aycock and Boyle (2009), symptoms of burnout also influence the behavioral and spiritual function of health care providers

negatively, such as having less time with their patients, increased absenteeism, medication errors, stereotyped communications, feelings of doubt about one's own beliefs, and angry feelings toward God.

Oncology nurses are more prone to burnout and compassion fatigue as compared to all nurses because of a number of stressful factors in their workplaces (Medland et al., 2004; Bush, 2009; Aycock & Boyle, 2009). Caring for seriously ill patients who require special and complex nursing services and working in very stressful environments can easily lead to burnout for oncology nursing staff, such as pediatric bone marrow transplantation unit nurses (Gallagher & Gormley, 2009). Nurses in oncology units often develop burnout and compassion fatigue by repeated exposure to stress, for example patients' distress, patients' deaths, and the involvement of patients' families (Barnard, Street, & Love, 2006; Potter et al., 2010; Bush, 2009). According to Dorz, Novara, Sica, and Sanavio (2003), oncology staff nurses and physicians had higher emotional exhaustion (EE) scores than those caring for patients with HIV or AIDS. In addition, a study by Alacacioglu et al. (2009) showed oncology nurses had higher scores of EE than physicians working with cancer patients; all oncology nurse participants in the study who were less than 29 years of age also had higher scores of EE and depersonalization. These findings about participants' ages are different from a previous study by Quattrin et al. (2006). Thus, more studies are needed to show the correlation between age of oncology nursing staff and EE.

Campos de Carvalho et al. (2005) investigated stress levels of oncology staff nurses caring for adult and pediatric cancer patients by utilizing the Stressor Scale for Pediatric Oncology Nursing (SSPON). As a stress assessment scale, the SSPON has 50 items that describe oncology nurses' work environments and each item receives a score from 0 to 10. The

researchers analyzed the 50 items of the assessment tool according to median scores of each item. Then the median scores were also classified into four different levels of stress: median scores of 5 or less (no stress or less stressful), a median score of 5-6.5 (moderate stressful), a median score of 6.5-7.5 (highly stressful), and a median score of 7.5 to 8.6 (extremely stressful). Most participants in the study reported the environments were either moderate or highly stressful (54%) and extremely stressful (22%); only 24% of the respondents regarded the environments as no stress or less stressful (Campos de Carvalho et al., 2005). In addition, Barnard et al. (2006) identified oncology nurses' stressors with stress levels in their worksites by using the SSPON tool. More than 50% of participants experienced stress as related by results of the 50 items; the situations of 12 items were especially considered as stressful by more than 90% of respondents. Surprisingly, four work situations among the 12 items were the same stressors listed as "extremely stressful" in the study by Campos de Carvalho et al. (2005). By the two studies, it can be concluded that oncology staff nurses have similar experiences about sources of stress at work.

Coping Strategies for Stresses

In comparison with studies about occupational stressors and negative responses to stress (e.g., burnout and compassion fatigue), there are fewer studies associated with coping of oncology nursing staff. Rodrigues and Chaves (2008) identified coping strategies of oncology staff nurses by using eight subcomponents of coping. The most frequently used coping methods by participants were positive re-evaluation, efforts for problem solving, and self-control strategy followed by social support, withdrawal, escape-avoidance behaviors, confrontation, and responsibility agreement. However, there were only three subcomponents of coping which had sufficient reliability for the studied nurse population based on Cronbach alpha coefficient. They

were positive re-evaluation (0.752), efforts for problem solving (0.732), and escape-avoidance behaviors (0.727) (Rodrigues & Chaves, 2008).

A study by Ekedahl and Wengstrom (2006) classified coping strategies of oncology nurses into two groups: functional and dysfunctional strategies. For functional coping strategies, many oncology staff nurses created boundaries at individual, group, and institutional levels. For instance, as a professional health provider, nurses separated working hours and spare time at individual levels, developed new routine tasks in their oncology units at group levels, and sought other places for relaxation such as church at institutional levels. Oncology nurses also used other functional coping behaviors for their work stress that included receiving support from patients or friends, having fun with coworkers for emotional releases, and utilizing humor at work. On the other hand, lack of developing these levels of boundaries among staff nurses contributed to dysfunctional coping strategies and negatively influenced their health, such as increasing blood pressure and sleep disturbance (Ekedahl & Wengstrom, 2006). Dysfunctional coping responses came from lack of colleagues' support as well, especially when there were high turnover rates of coworkers (Ekedahl & Wengstrom, 2006).

Resilience

With the possibility of high turnover rates and negative impacts on the quality of nursing services due to ineffective management of work-related stress, oncology nurses need to develop feasible strategies for their stress at both individual and organizational levels (Grafton & Coyne, 2012; Hecktman, 2012; Hildebrandt, 2012; Aycock & Boyle, 2009). As a valuable resource, resilience can be used to effectively manage various responses to workplace stress among oncology staff nurses (Grafton, Gillespie, & Henderson, 2010; Grafton & Coyne, 2012; Teel &

Krumm, 2008). According to Grafton et al. (2010), resilience is described as "individual characteristics such as adaptability, coping, faith, hardiness, optimism, patience, self-efficacy, self-esteem, sense of humor, and tolerance (p. 701)." Thus, innate resilience as a stress response resource is the personal ability to deal with physical, psychosocial, and spiritual stress at work; recover and reinforce physical-psychosocial-spiritual well-being of oneself; and learn and grow from stressful experiences by a cyclic and dynamic process (Grafton et al., 2010; Jackson et al., 2007; Grafton & Coyne, 2012). Fortunately, personal resilience can be established and enhanced through self-care practices, education programs, and environmental support from work sites (Grafton & Coyne, 2012; Bush, 2009; Ablett & Jones, 2007; Jackson et al., 2007; Grafton et al., 2010).

Resilience can be a crucial individual characteristic of oncology nursing staff for more appropriate management of their occupational stressors (Grafton et al., 2010; Bush, 2009). Grafton and Coyne (2012) developed a supportive stress strategy for acute stress of oncology nurses that helps them exercise self-care and personal growth for long-term health. The stress strategy consists of four stages: self-awareness, taking deep breaths, having curiosity for one's feelings, and doing leisure activities or seeking help from health professionals or friends. In addition, the innate nature of resilience among nurses also can be developed by several activities related to positive responses to stressful situations at work. Jackson et al. (2007) investigated some activities to nurture resilience that included making positive relationships with colleagues, building professional networks with other health professionals, retaining optimism and laughter, developing positive emotion insight, and having a work-life balance. Ultimately, well-cultivated resilience helped nurses to more effectively manage their stress, restore or prevent exhaustion of

their self-care capacities, and diminish the negative impact of future stress (Grafton et al., 2010; Jackson et al., 2007).

Organizational Support

There needs to be educational programs, psychosocial support, and more satisfactory work environments at organizational levels for effective stress management of oncology staff nurses (Campos de Carvalho et al., 2005; Hecktman, 2012; Medland et al., 2004). Medland et al. (2004) and Fitch et al. (2006) identified a strategy of retreat designed for a one-day workshop that was part of an ongoing multidisciplinary psychosocial support program for oncology nurses. The retreat method helped workshop participants practice activities. Examples of activities were bringing together an interdisciplinary group of health care providers, discussing non-clinical situations and the effectiveness of coworkers' support for stress, developing staff awareness of positive coping strategies during a period of stress, and balancing their work and individual lives. This ongoing retreat strategy as an organizational training effort was also made for developing a healthier workplace, providing new information, enhancing coping skills for nurses' stress, and networking with other cancer nurses (Medland et al., 2004; Fitch et al., 2006).

Several types of practical support can be used as either on-site services or continuing education programs. A study by Aycock and Boyle (2009) investigated available interventions for oncology staff nurses suffering compassion fatigue. The available interventions at workplaces included utilizing on-site resources (e.g., employee assistance programs and pastoral care), participating in educational programs (e.g., cyclical in-services and online education), and attending specialized retreats (e.g., annual voluntary and episodic retreats). Hildebrandt (2012) also explored four general strategies of organizational support for nurses to reduce the incidence

of grief, burnout, or compassion fatigue. Overall, the strategies included making positive and supportive work environments for the possibility of outward expression of grief; debriefing, storytelling, and sharing feelings with nursing colleagues; educating about EOL care and grief training for better preparation to provide optimal EOL care; and altering patient assignments so one nurse does not have multiple patients' deaths at the same time (Hildebrandt, 2012; Aycock & Boyle, 2009; Conte, 2011; Brown & Wood, 2009; Macpherson, 2008).

Oncology nurses also require organizational level support for effective management of their job-related stressors (Wenzel et al., 2011; Barnard et al., 2006). According to Wenzel et al. (2011), there are many suggested ideas by staff nurses for creating self-care environments for grief and loss in oncology settings: developing time and space for creating personalized coping strategies (e.g., physical exercise); counseling from pastors or communicating with nursing colleagues; improving collaborations with interdisciplinary team members for better EOL, hospice, or palliative care; simplifying paperwork to spend more precious time with patients and their families; having opportunities to follow patients (e.g., funeral attendance if desired); and receiving concrete benefits from their cancer center (e.g., massages). In addition, a study by Barnard et al. (2006) showed oncology nurses required supplementary support from their organization to better manage their stress. The largest part of the supplementary support was further nursing education. Participants also wanted to have financial assistance for their future studies and more opportunities to participant in in-services and lectures.

Nursing Stress Scale (NSS)

The Nursing Stress Scale (NSS) has been used to assess stressful situations of nurse populations in their work place. According to Hawkins, Howard, and Oyebode (2007), the NSS

was used to identify the sources of stress and the relationship between attachment styles and stress experience of hospice nursing staff. The three main stressful factors were investigated by utilizing median scores of the NSS subscales: death and dying (2.0), workload (2.0), and inadequate preparation (2.0). In addition, participants were classified into two groups based on mean total scores of the NSS: securely attached (65.64) and insecurely attached (64.30). A key finding was that insecurely attached hospice nurses experienced more work-related stress than securely attached nurses (Hawkins et al., 2007).

A study by Wang, Kong, and Chair (2011) identified three major stressors of nurses in acute surgical units by using subscale mean scores of the NSS. The three stressors included workload (15.61), lack of support (13.32), and inadequate preparation (12.33). In the study, the total stress scores ranged from 45 to 126 with a mean of 76.7, suggesting surgical nurses experienced moderate frequency of work-related stress. Moreover, Wang et al. (2011) investigated the most effective coping methods of nurses to reduce stress levels by using the Jalowiec Coping Scale (JCS) that included evasive, confrontive, and optimistic coping strategies. The total score of the NSS also had a significantly negative correlation with the use of optimistic, confrontive, supportant, and emotive coping strategies (Wang et al., 2011).

In summary of literature reviews, there was a number of studies indicating that oncology nursing has been investigated as a stressful occupation. However, most studies have focused on burnout and compassion fatigue rather than stress levels and stressful factors for oncology nurses regardless of work settings (inpatient or outpatient). Furthermore, literature indicates research on the levels of stress and particular stressors of nurses has primarily concentrated on inpatient oncology nurses, although all areas of oncology nursing are stressful. Despite the shift of care for

patients with cancer from inpatient units to outpatient units, little attention has been paid to outpatient oncology nursing; there was no research on stressful factors and coping behaviors of outpatient oncology nurses. With this transition from inpatient to outpatient care, nurse researchers should pay more attention to the oncology nursing workforce in outpatient settings who have potential to experience similar stressors at the workplace. Therefore, there needs to be further research about work-related stress of outpatient oncology nurses.

Theoretical Framework

The Neuman's Systems Model (NSM) was used to provide a conceptual framework for the study as shown in Figure 1. As a flexible holistic concept, the Neuman model concentrates on the human being's demands for protection from stress or its solutions based on individual responses to stress (McEween & Wills, 2007; Neuman, 1996). The NSM incorporates Selye's stress and Lazarus's Stress and Coping Theories (Neuman, 1995). The NSM delineates three main concepts that include open client systems, boundary lines, and prevention as nursing interventions. In the Neuman's model, humans who are open systems are represented as concentric circles. Human beings intentionally and unintentionally create their own environments both within and around themselves and interact with environmental stressors (Gigliotti, 1999, 2004; Neuman & Fawcett, 2002). Environmental stressors consist of intrapersonal factors such as a neurotic personality, interpersonal factors such as relationship with colleagues, and extrapersonal factors such as long work hours (Gunusen, Ustun, & Gigliotti, 2009). These stressors may have the potential to disturb one's stability (McEween & Wills, 2007).

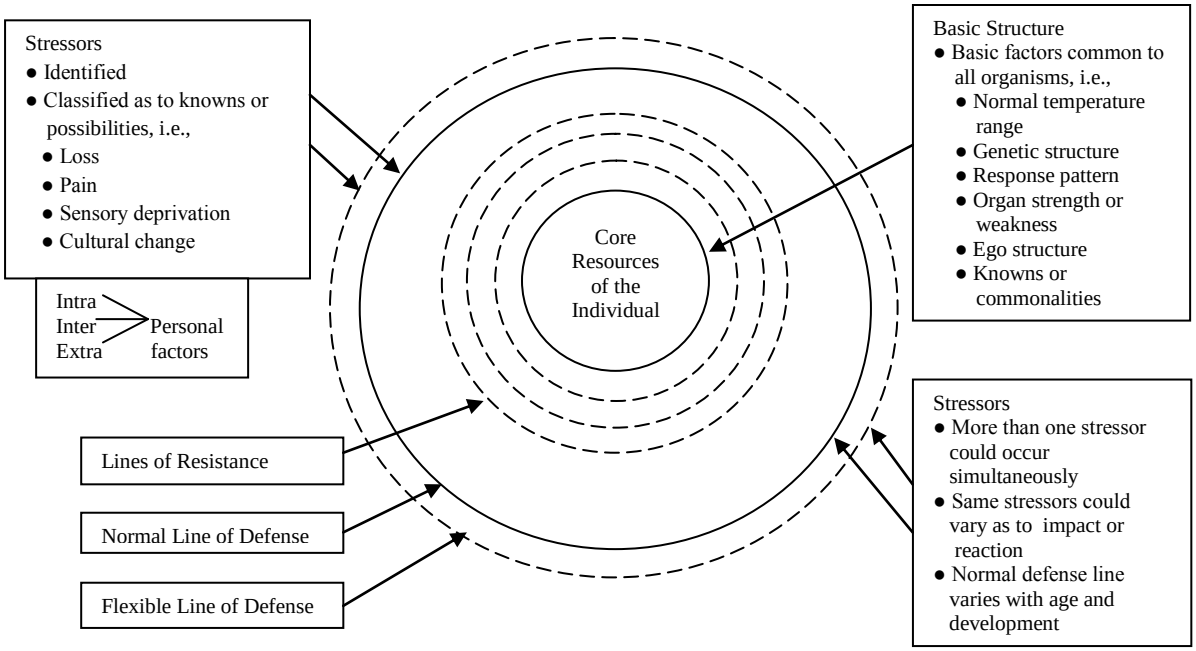

Figure 1. The Neuman System's model. By B. Neuman and J. Fawcett, *The Neuman Systems Model*, 4th ed, © 2002. Reprinted and electronically reproduced by permission of Pearson Education, Inc., Upper Saddle River, NJ (see Appendix A).

According to Neuman's model, the client system is surrounded by four boundary lines: a basic energy resource (core structure), lines of resistance, a normal line of defense, and a flexible line of defense. Each of these lines has interrelationships with five interacting variables: physiological, psychological, sociocultural, developmental, and spiritual. The interacting variables are utilized for maintaining and preserving a client's stability. The outermost line is a flexible line of defense which is the first circle of defense against stressors. The five variables in the flexible line of defense can be cultivated to buffer and protect the second circle, the normal line of defense, from aggression of environmental stressors (Gigliotti, 1999; Neuman, 2005). Because the normal line of defense symbolizes dynamic equilibrium, the second circle of defense should be protected by the first circle of defense within the client system. If environmental stressors invade the normal line of defense due to instinctive weakness of the line itself or

intensity of the stressors, the equilibrium can be disrupted. Therefore, the flexible line of defense is regarded as a protective mediator of environmental stressors (Gigliotti, 1999, 2004, 2012). In consecutive order, the normal line of defense operates when the flexible line of defense is broken. The lines of resistance that protect the core structure operate when the normal line of defense is broken. Accordingly, when the client system cannot respond to the stressors, lines of defense are destroyed (Gunusen & Ustun, 2010).

Based on the NSM, nursing care is provided to retain optimal client system wellness by the use of primary, secondary, and tertiary prevention activities. Primary nursing prevention activities arise before the system reacts to a stressor with a goal of maintaining the condition of wellness. The primary prevention, or health promotion, is practiced by reinforcing the flexible line of defense through implementing stress prevention strategies and decreasing risk factors. Next, secondary prevention activities occur after the system responds to a stressor that means the normal line of defense is damaged from stressors. Thus, the secondary prevention is provided for identifying specific stressors and managing them as there are signs or symptoms of illness. As a result, the lines of resistance are strengthened and the client system restores its stability. Finally, tertiary prevention strategies arise after the client system is treated through the second prevention activities. The tertiary prevention is initiated during reconstitution and performed to protect the client system by supporting existing strengths and conserving energy such as education. Thus, the client can readapt and restart a healthy lifestyle (Ume-Nwagbo, Dewan, & Lowry, 2006; Neuman & Fawcett, 2002). Three level prevention interventions are interactive concepts rather than linear concepts and can be utilized at the same time for better benefits (Neuman, 1995).

The NSM focuses on reaction to stress within the whole environment that an open client system defines. Subjects of the client system can be individuals, families, groups, communities, and organizations (Neuman, 1996). The role of nurses is to assess the perception of the client about stressors and examine the stressor reaction in all five interacting variables. Stressors also can be verified and corrected by tailored nursing interventions (Neuman, 1995). The NSM can be applied to the target population of this study because oncology nurses have high incidence rates of stress due to stressful work environments. In addition, according to Gunusen and Ustun (2010), the NSM describes how nurses can be assisted to prevent a stress response by primary prevention strategies or how nurses can be helped to adjust to the stress reaction by secondary and tertiary prevention strategies. Thus, investigating specific stressors, stress levels, and coping behaviors among outpatient oncology nurses is the first stage of stress management through providing nursing prevention interventions at the three levels. The results of this study could be crucial and provide essential data for outpatient oncology nurses and their employers not only to promote awareness of stress but also to create supportive work environments. Eventually, it is important for both inpatient and outpatient oncology nurses to reduce or prevent stress at work as well as to maintain and support their optimal wellness conditions.

Research Questions

1. What levels of stress are outpatient oncology nurses experiencing as measured by the total scores of the Nursing Stress Scale?
2. What are the most stressful factors for outpatient oncology nurses at the workplace as measured by the mean scores of the seven subscales of the Nursing Stress Scale?

3. Are there significant differences in stress levels among outpatient oncology nurses' demographic characteristics (e.g., age, marital status, educational level, or work experience in nursing and oncology units)?
4. What are the most frequently used coping behaviors for occupational stress of outpatient oncology nurses?

Definition of Terms

Conceptual Definitions

Oncology Nurses. Oncology nurses are professional nurses who combine their scientific knowledge and technical skills to care for patients with cancer and their families in all areas of cancer care from diagnosis and treatment to survivorship and end-of-life care (American Society of Clinical Oncology, 2012).

Stress Levels. Stress is defined as "an internal cue in the physical, social, or psychological environment that threatens the equilibrium of an individual" (Gray-Toft & Anderson, 1981, p. 12). Stress arises from the imbalance between the perceived demands from stressful situations and the individual's coping abilities (Toh et al., 2012). Such coping abilities influence the level of stress experienced by an individual in his/her daily life (Campos de Carvalho et al., 2005). In addition, stress can be classified into two types: acute (short-term) and chronic (long-term) stress. Acute stress is the reaction to a real and immediate threat such as being stuck in traffic or a job interview, whereas chronic stress is the reaction to repeated stressful situations such as ongoing work pressure or persistent financial worries (University of Maryland Medical Center, 2013).

High stress levels over a long period of time can cause serious health problems such as heart disease, anxiety, or illness (University of Maryland Medical Center, 2013).

Stressful Factors (Stressors). Stressors are defined as "tension-producing stimuli or forces occurring within the internal and external environmental boundaries of the client systems" (Neuman & Fawcett, 2002, p. 21). A stressor is any phenomenon that might infiltrate into both the flexible and normal lines of defense that lead to positive or negative outcomes (Neuman, 1995). There are five types of stressors: physiological, psychological, sociocultural, developmental, and spiritual stressors (Neuman & Fawcett, 2002).

Operational Definitions

Oncology Nurses. For the purpose of this study, the definition of oncology nurses was licensed practical nurses and registered nurses who worked in oncology outpatient units of a medical center located in the northern Midwest United States.

Stress Levels. Stress levels of oncology nurses were measured according to the total scores of the Nursing Stress Scale (NSS). Higher scores of the total scores of NSS indicated the greater levels of stress (Wang et al., 2011). The NSS total scores were classified into four different levels of stress: total scores of 70 or less (no stress or less stressed), total scores of 71-90 (moderately stressed), total scores of 91-110 (highly stressed), and total scores equal to or more than 111 to 130 (immensely stressed).

Stressful Factors (Stressors). Stressful factors for oncology nurses in workplaces were measured by the mean scores of the seven subscales of NSS. The seven subscales included

patient death and dying, conflict with physicians, inadequate preparation, lack of support, conflict with other nurses, work load, and uncertainty concerning treatment.

Assumptions

1. Personality characteristics influence how sensitive individuals are to the environmental role stressors.
2. Interpersonal relationships influence interpretation of the environmental role stressors.
3. Conditions such as fatigue, poor nutrition, and daily stress can compromise the flexible line of defense (Ume-Nwagbo et al., 2006).
4. The normal line of defense represents the wellness level of the client system and is influenced by system variables such as coping behaviors, lifestyle patterns, and developmental, spiritual, and cultural factors (Ume-Nwagbo et al., 2006).
5. Individuals respond to stressors by using five personal variables—physiological, psychological, sociocultural, developmental, and spiritual dimensions (Gunusen & Ustun, 2010).
6. Stressors disrupt client systems and contribute to physical illness or emotional and social crises (Ume-Nwagbo et al., 2006).

CHAPTER III. METHODOLOGY

Research Design

This research study used a descriptive, cross-sectional design. The major purpose of the study was (1) to identify stress levels of nurses in oncology outpatient units, (2) to investigate stressful factors of outpatient oncology nurses at the workplace, and (3) to identify differences in stress levels among nurses' demographic characteristics (e.g., age, marital status, educational level, or work experience in nursing and oncology units) by using the Nursing Stress Scale (NSS) and demographic information.

Population and Sample

The study was conducted in oncology outpatient settings of a medical center located in the northern Midwest United States. This cancer center is one of the largest in this region and provides outpatient services specific to adult and pediatric patients with cancer as a hospital-based outpatient setting. The cancer center has four oncology outpatient units: an infusion center for adult patients, an adult medical unit, a pediatric unit which supports pediatric infusion therapy, and a radiation oncology unit. The four outpatient units care for approximately 235 cancer patients each day. The total number of nurses who work in the outpatient settings is 71 registered nurses and 7 licensed practical nurses. Hours of the cancer center are 7:30 am to 5:30 pm Monday through Friday and limited hours on weekends and holidays. Hours worked are variable and dependent upon treatment. For example, some treatment regimens require infusions on the weekend or a holiday. Nurses are scheduled dependent upon their full time equivalent (FTE) and can range from per diem to full time. The cancer center was selected to obtain a

convenience sample due to the size and the location. The target population was nurses in the oncology outpatient units that care for cancer patients and their families. Selection criteria specified that participants were registered nurses (RNs) and licensed practical nurses (LPNs) aged 20 or older who had the ability to read and comprehend English. A consent letter (Appendix B) was distributed to eligible nurses who were invited to participate in the study. Consent letters did not require signatures of participants. A sample of oncology nurses was recruited through the monthly unit meetings of each unit. After the unit meetings, nurses who did not attend the unit meetings were also recruited by receiving an envelope containing the consent letter, survey questionnaire (Appendix C), a brief explanation sheet of this study (Appendix D), and the survey instruction sheet (Appendix E) from unit supervisors. Although the target number of nurses from the study cancer center was 78, the actual sample size was dependent on response rate.

Instruments

The survey instruments for this study were the NSS, three open-ended questions, and demographic questionnaire (Appendix C). The NSS was developed by Gray-Toft and Anderson (1981) to measure the frequency and sources of stress experienced by nurses. The NSS consists of 34 potentially stressful situations that are also categorized into seven subscales regarding different sources of stress. Each situation has a four-point scale (1=never to 4=very frequently), and the total scores of the NSS range from 34 to 136 with higher scores indicating greater levels of stress. Moreover, the seven subcategories include patient death and dying (seven items: 3, 4, 6, 8, 12, 13, and 21), conflict with physicians (five items: 2, 9, 10, 14, and 19), inadequate preparation (three items: 15, 18, and 23), lack of support (three items: 7, 11, and 16), conflict

with other nurses (five items: 5, 20, 22, 24, and 29), work load (six items: 1, 25, 27, 28, 30, and 34), and uncertainty concerning treatment (five items: 17, 26, 31, 32, and 33). The test-retest coefficient for the total scale was 0.81, and the internal consistency coefficients ranged from 0.79 to 0.89, which indicates a satisfactory level of consistency for the subscales. The NSS highly correlated with state and trait anxiety, job satisfaction, and nursing turnover (Gray-Toft & Anderson, 1981). The three open-ended questions developed by the graduate student researcher were based on review of literature and designed to identify available workplace resources for oncology nurses' stress management as well as coping behaviors for occupational stress of oncology nursing staff in outpatient settings. The demographic questionnaire was also designed by the graduate student researcher to investigate differences in stress levels among oncology nurses' demographic variables that included gender, age, marital status, educational level, and number of years of work experience both in nursing and in oncology units.

Data Collection

Prior to the study initiation, approval for this study was received from the university (Appendix F) and the healthcare organization's Institutional Review Board (IRB) (Appendix G). The graduate student researcher completed collaborative institutional training initiative (CITI). Written permission for the use of the NSS was also obtained from the instrument creators (Appendix H). From October 1, 2013 to November 30, 2013, data was collected through the monthly unit meetings or by mail. The researcher participated in the monthly unit meetings of each unit; explained the purpose of the study, its importance, and how to participate in the survey; distributed an envelope containing the survey and consent letter to the participants; and collected the surveys in the meetings. Participants were asked to complete the surveys, put the completed

survey in a sealed envelope, and return the survey to the researcher at the unit meetings. Among participants attending the unit meetings, there were two nurses who wanted to complete the surveys later. Thus, the researcher gave a self-addressed stamped envelope to them. For nurses who did not attend a unit meeting, an envelope containing the consent letter, the survey, a brief explanation sheet of the study, and the survey instruction sheet was provided by the unit supervisors after the unit meetings. After completing the survey, the nurse placed the survey in the envelope addressed to the researchers, sealed the envelope, and dropped in the US Mail. The return envelope was addressed to the researchers with a return address of the Nursing Department. Data was compiled from the completed survey questionnaires. Nurses' participation was completely voluntary and confidential. Only the principle investigator and co-investigator had access to the completed surveys.

Data Analysis

According to research questions, data was analyzed by the researcher using descriptive statistical analysis (mean and standard deviation), one-way analysis of variance (ANOVA), t-test, and content analysis. For the first research question "*What levels of stress are outpatient oncology nurses experiencing as measured by the total scores of the Nursing Stress Scale?,*" a total score for the NSS was calculated for each participant, and the NSS total scores were classified into three different levels of stress with the percentages. For the second research question "*What are the most stressful factors for outpatient oncology nurses at the workplace as measured by the mean scores of the seven subscales of the Nursing Stress Scale?,*" the mean scores of the seven subscales of the NSS were calculated. For the third research question "*Are there significant differences in stress levels among outpatient oncology nurses' demographic*

characteristics?," mean scores for each variable (age, marital status, educational level, and number of years of work experience in nursing and oncology units) were calculated. Then, for the variables of age, number of years of work experience in nursing and oncology units, one-way ANOVA tests using statistical analysis system (SAS) was performed to determine whether stress levels of oncology nurses differed among four variables, such as among four age groups or four different groups of nursing experience. In addition, for the variables of marital status and educational level, t-test using pooled (equal) variances was used to determine whether stress levels of nurses differed among two variables, such as among two groups of marital status: single and married. For the fourth research question "*What are the most frequently used coping behaviors for occupational stress of outpatient oncology nurses?*," content analysis was performed on the qualitative data obtained from the first open-ended question, seeking to identify thematic trends. In the demographic data, the results were analyzed in terms of proportions based on each subcategory.

CHAPTER IV. RESULTS

Of the 78 eligible oncology nurses at the study cancer center, 16 surveys completed in the unit meetings were collected by the researcher, and 20 completed surveys were obtained by mail. After the unit meeting, four nurses completed the surveys, sealed the envelopes, and returned them to the unit supervisor. A short time later the researcher picked up the sealed survey envelopes. Unit supervisors did not have access to the data. The four completed surveys were included after report of unanticipated problem to the university IRB office and healthcare institution's Nursing Research Council was accepted. Therefore, the total number of collected surveys was 40, for a response rate of 51.3%. Surveys that either were not completed or were returned after the deadline were discarded.

Sample Demographics

Of the surveys (n=40), all participants were female (100%). The largest percentage of participants fell into the age group of the 20-30 years old (n=16, 40%), followed by 31-40 years old (n=10, 25%), 41-50 years old (n=7, 17.5%), and over the age of 51 years (n=7, 17.5%) as illustrated in Table 1. The vast majority of the participants (n=32, 80%) were married, followed by single (n=7, 17.5%). Only one participant (2.5%) was divorced as shown in Table 2. The biggest percentage of the participants were registered nurses (RNs) having a bachelor's degree (BSN) (n=28, 70%), followed by RNs with an associate degree (ADN) (n=10, 25%). The last group was licensed practical nurses (LPNs) with an ADN (n=2, 5%) as seen in Table 3. The majority of the participants had more than 21 years of work experience in nursing (n=12, 30%), followed by six to ten years (n=11, 27.5%), between zero and five years (n=8, 20%), and between 11 and 15 years (n=7, 17.5%). Two participants (5%) had between 16 to 20 years of

experience in nursing as illustrated in Table 4. The majority of the participants had either zero to five years of work experience in oncology units (n=13, 32.5%) or six to ten years of experience in oncology (n=13, 32.5%), followed by 11 to 15 years (n=8, 20%), more than 21 years (n=4, 10%), and 16 to 20 years (n=2, 5%) as shown in Table 5.

Table 1

Demographics: Age (N=40)

Age	Frequency	Percent	Cumulative Percent
20-30	16	40	40
31-40	10	25	65
41-50	7	17.5	82.5
51<	7	17.5	100

Table 2

Demographics: Marital Status (N=40)

Marital Status	Frequency	Percent	Cumulative Percent
Single	7	17.5	17.5
Married	32	80	97.5
Divorced	1	2.5	100

Table 3

Demographics: Educational Level (N=40)

Educational Level	Frequency	Percent	Cumulative Percent
LPN with an ADN	2	5	5
RN with an ADN	10	25	30
RN with a BSN	28	70	100

Table 4

Demographics: Number of Years of Work Experience in Nursing (N=40)

Number of Years of Work Experience in Nursing	Frequency	Percent	Cumulative Percent
0-5	8	20	20
6-10	11	27.5	47.5
11-15	7	17.5	65
16-20	2	5	70
21<	12	30	100

Table 5

Demographics: Number of Years of Work Experience in Oncology Nursing (N=40)

Number of Years of Work Experience in Oncology Nursing	Frequency	Percent	Cumulative Percent
0-5	13	32.5	32.5
6-10	13	32.5	65
11-15	8	20	85
16-20	2	5	90
21<	4	10	100

Data Results

Research Question 1. ***What levels of stress are outpatient oncology nurses experiencing as measured by the total scores of the Nursing Stress Scale?***

The purpose of the first research question was to identify stress levels of nurses working in oncology outpatient units. Participants (n=40) were asked to complete the Nursing Stress Scale (NSS) that was a 34-item self-reported survey by using a four-point Likert scale (1=never, 2=occasionally, 3=frequently, and 4=very frequently). To answer this research question, the total scores of the NSS adding all 34 item responses were calculated for each respondent. In the sample studied, the total score of the NSS ranged from 51 to 92 with a mean score (M) of 71.35 (standard deviation [SD]= 9.43). The NSS total scores were classified into three different levels

of stress: 45% (n=18) were considered as ‘no stress or less stressed’ with the NSS total scores of 70 or less, 52.5% (n=21) were regarded as ‘moderately stressed’ with the NSS total scores of 71-90, and only 2.5% (n=1) were considered as ‘highly stressed’ with the NSS total scores of 91-110 as seen in Figure 2.

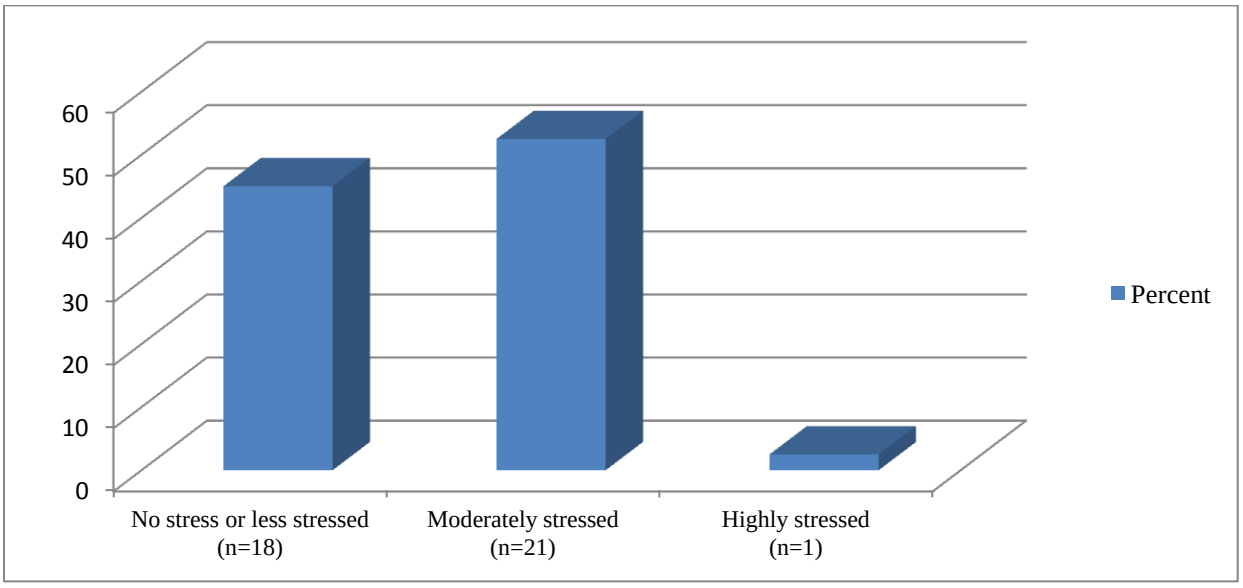

Figure 2. Stress levels of outpatient oncology nurses.

Research Question 2. ***What are the most stressful factors for outpatient oncology nurses at the workplace as measured by the mean scores of the seven subscales of the Nursing Stress Scale?***

The second research question was used to investigate stressful factors of outpatient oncology nurses at the workplace. The seven subscales of the NSS included patient death and dying (seven items: 3, 4, 6, 8, 12, 13, and 21); conflict with physicians (five items: 2, 9, 10, 14, and 19); inadequate preparation (three items: 15, 18, and 23); lack of support (three items: 7, 11, and 16); conflict with other nurses (five items: 5, 20, 22, 24, and 29); work load (six items: 1, 25, 27, 28, 30, and 34); and uncertainty concerning treatment (five items: 17, 26, 31, 32, and 33). A four-point scale (1=never to 4=very frequently) was again utilized. With responses of all

participants (n=40) in the NSS as mentioned above, each item responses were added together for groups of items to obtain total subscale scores of each subscale. Then, the researcher calculated the mean scores of the seven subscales of the NSS to identify specific sources of stress for the participants. Figure 3 illustrates the trend of each subscale. Among the mean scores of the seven subcategories, the work load factor had the biggest mean score with 16.15 (SD=3.17); followed by patient death and dying with 15.33 (SD=2.68); conflict with physicians with 9.9 (SD=1.96); uncertainty concerning treatment with 9.25 (SD=2.42); conflict with other nurses with 8.6 (SD=1.92); inadequate preparation with 6.2 (SD=1.34); and lack of support with 5.93 (SD=1.65).

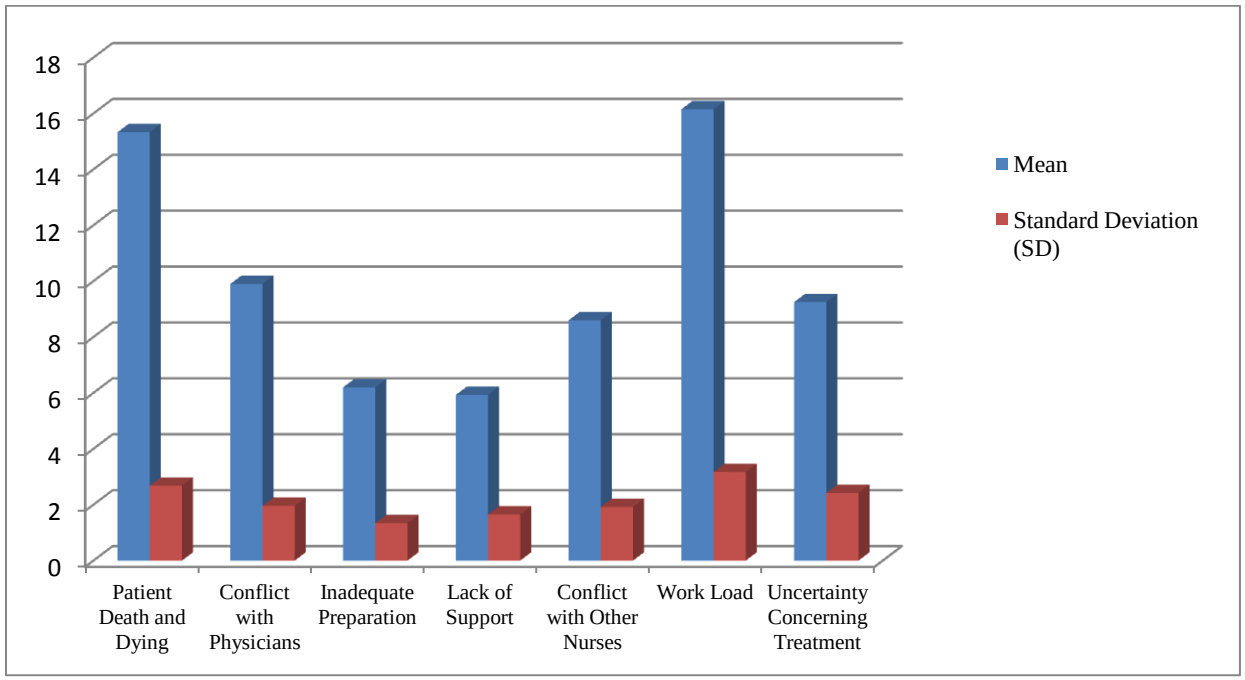

Figure 3. Seven stressful factors of outpatient oncology nurses at the workplace.

Based on the mean scores of the seven subscales of the NSS, there was a possible stressful factor that was classified as 'relationship with professional co-workers' if the two subscales of 'conflict with physicians' and 'conflict with other nurses' were combined. The researcher calculated the mean score of the subscale 'relationship with professional co-workers.'

As seen in Figure 4, the factor of relationship with professional co-workers had the largest mean score with 18.5 (SD=2.71); followed by work load with 16.15 (SD=3.17); patient death and dying with 15.33 (SD=2.68); uncertainty concerning treatment with 9.25 (SD=2.42); inadequate preparation with 6.2 (SD=1.34); and lack of support with 5.93 (SD=1.65).

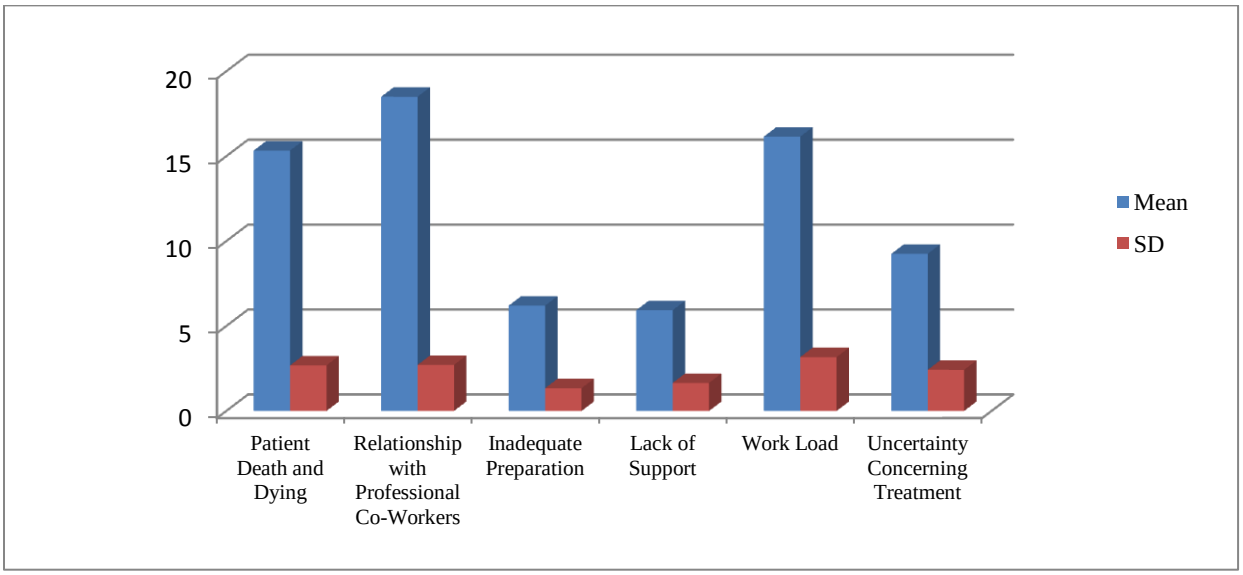

Figure 4. Six stressful factors of outpatient oncology nurses at the workplace.

Research Question 3. ***Are there significant differences in stress levels among outpatient oncology nurses' demographic characteristics (e.g., age, marital status, educational level, or work experience in nursing and oncology units)?***

The third research question evaluated differences in stress levels among oncology nurses' demographic characteristics of age, marital status, educational level, and work experience in nursing and oncology units. Apart from the NSS, participants were also asked to respond to a demographic questionnaire. Due to all female respondents (n=40), the gender variable was excluded. To answer the research question, the researcher calculated, first, the mean stress scores by each variable among five demographic characteristics. In the age variable, participants were

divided into four groups, namely 20-30 years old, 31-40 years old, 41-50 years old, and 51 years and older. The age group of 41-50 years old had the greatest mean stress score with 79.86 (SD=9.46), more than 51 years old with 72.57 (SD=7.91), the group of 31-40 years old with 69.4 (SD=8.62), and the age group of 20-30 years with 68.31 (SD=8.90) as seen in Figure 5.

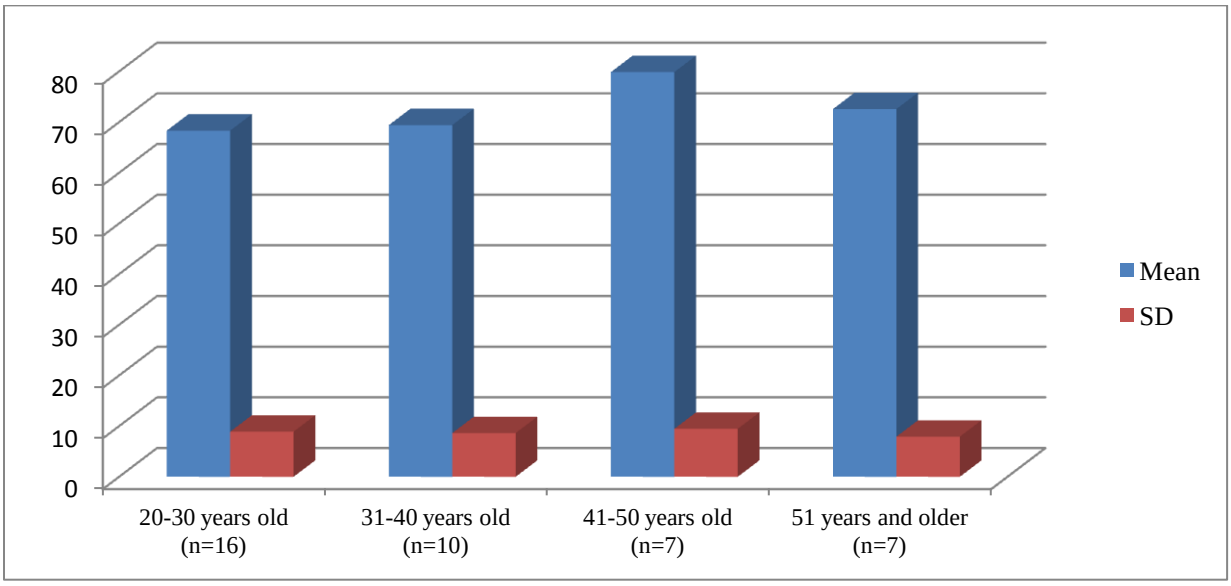

Figure 5. Mean stress scores of four age groups.

Next, one-way ANOVA using SAS was conducted to determine whether stress levels of the four age groups differed. The results showed four age groups differed significantly on stress level ($F_{3,36}$=3.05, p-value[0.0411] <0.05), as shown in Table 6. More specifically, the age group pairing which indicated significant difference at the 0.05 level (95% confidence limit) was denoted by *, as seen in Table 7. Significant differences existed between 41-50 years and 31-40 years old, between 41-50 years and 20-30 years old, between 31-40 years and 41-50 years old, and between 20-30 years and 41-50 years old.

Table 6

One-way ANOVA of Age Group Variable

Source	DF	SS	Mean Square	F-value	P-value
Age	3	702.70	234.23	3.05	0.0411

Note. DF=degree of freedom. SS=sum of squares.

Table 7

Comparisons by Four Age Groups

Age Group Comparison	Difference between Means	95% Confidence Limits	
41-50 years old- 51 years and older	7.286	-2.221	16.792
41-50 years old- 31-40 years old	10.457	1.693	19.222 *
41-50 years old- 20-30 years old	11.545	3.485	19.604 *
51years and older- 41-50 years old	-7.286	-16.792	2.221
51years and older- 31-40 years old	3.171	-5.593	11.936
51years and older- 20-30 years old	4.259	-3.801	12.318
31-40 years old- 41-50 years old	-10.457	-19.222	-1.693 *
31-40 years old- 51 years and older	-3.171	-11.936	5.593
31-40 years old- 20-30 years old	1.088	-6.082	8.257
20-30 years old- 41-50 years old	-11.545	-19.604	-3.485 *
20-30 years old- 51years and older	-4.259	-12.318	3.801
20-30 years old- 31-40 years old	-1.088	-8.257	6.082

In the characteristic of marital status, participants were classified into two groups, single and married. To make the result of data analysis more reliable, just one respondent that fell in the divorced group was excluded. The married group had a bigger mean stress score with 72.38 (SD=8.71) than the single group with 65.43 (SD=9.91) as illustrated in Figure 6.

Analysis of the selected data was also carried out using a t-test to determine whether stress levels of two marital status groups differed. Before t-test procedure, the researcher examined equality of variances that variances among two groups were verified as equal because the p-value (0.6595) was more than 0.05. In sequence, t-test using pooled (equal) variance method was performed. The results indicated no significant difference between single and married groups (p-value=0.0778), as shown in Table 8.

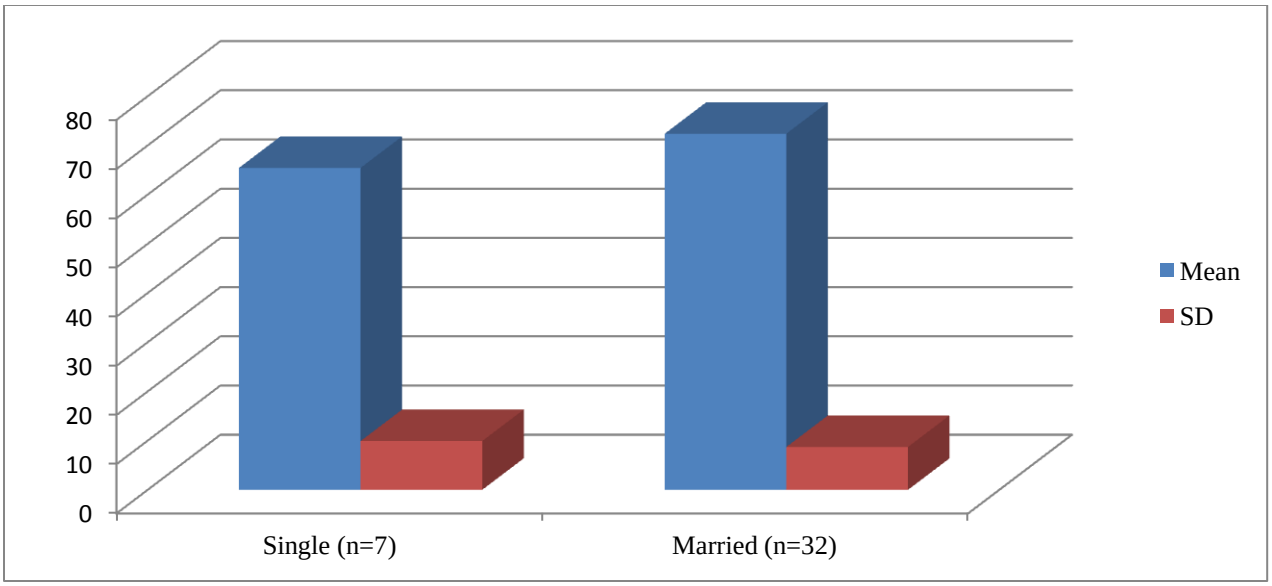

Figure 6. Mean stress scores of two marital status groups.

Table 8

T-test of Two Marital Status Groups

Method	Variances	DF	t-Value	P-value
Pooled	Equal	37	1.81	0.0778

Note. DF=degree of freedom. t-Value=test statistics.

In the variable of educational level, participants were divided into two groups that were one registered nurse (RN) group having an associate's degree (ADN) and the other RN group having a bachelor's degree (BSN). There were only two respondents that fell into the LPN with an ADN degree. To increase the reliability of the analysis result they were not included. The group of RNs with an ADN degree had a slightly higher mean score with 73.1 (SD=11.62) than the group of RNs who had a BSN degree with 71.25 (SD=8.85) as seen in Figure 7.

In the same manner of data analysis performed for the marital status variable, a t-test was conducted to determine whether stress levels of two different educational level groups differed. Since the p-value (0.2642) was more than 0.05, variance between the two groups was identified

as equal. Then a t-test using the pooled method was performed. The results indicated no significant difference between the two groups of educational level (p-value=0.6048), as indicated in Table 9.

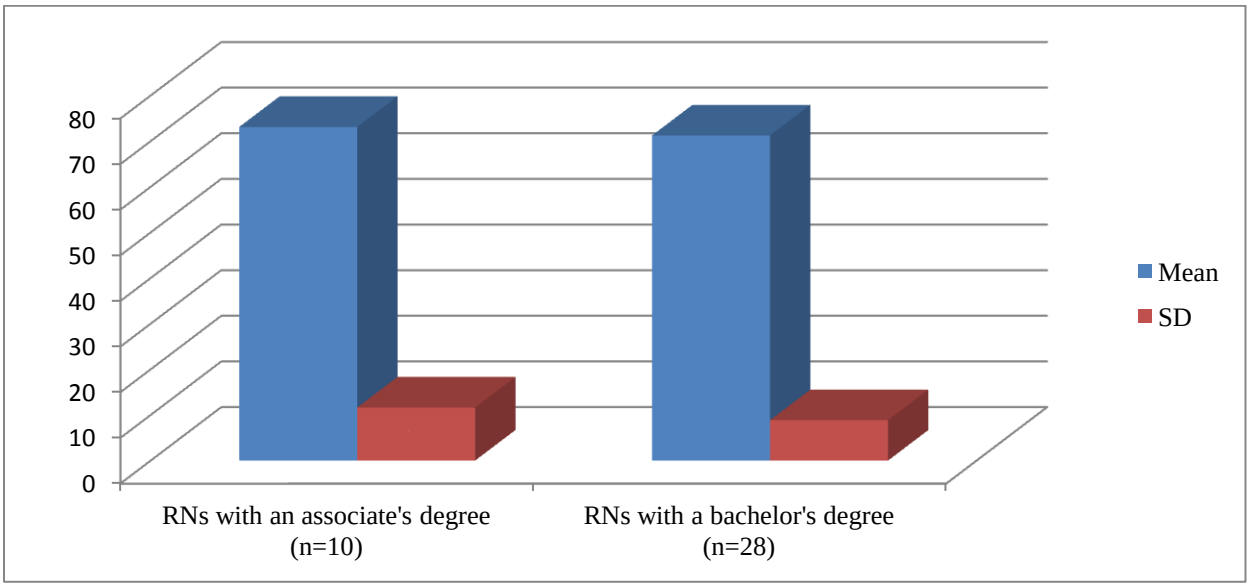

Figure 7. Mean stress scores of two different educational level groups.

Table 9

T-test of Two Different Educational Level Groups

Method	Variances	DF	t-Value	P-value
Pooled	Equal	36	0.52	0.6048

Note. DF=degree of freedom. t-Value=test statistics.

In terms of the variable of work experience in nursing, participants were categorized into four different groups of years of work experience, namely 0-5 years, 6-10 years, 11-15 years, and 16 years and over. Due to a small number of respondents (n=2) who fell in the '16-20 years' category, the researcher combined those respondents with the category 'over 21 years,' and a new category '16 years and over' was created. The work experience group of 11-15 years had the highest mean stress score with 75.86 (SD=7.43) followed by the group of 16 years and over

with 75 (SD=8.71) and the group of 0-5 years with 68 (SD=8.90). The group having 6-10 years work experience had the lowest stress score with 66.27 (SD=9.22), as shown in Figure 8.

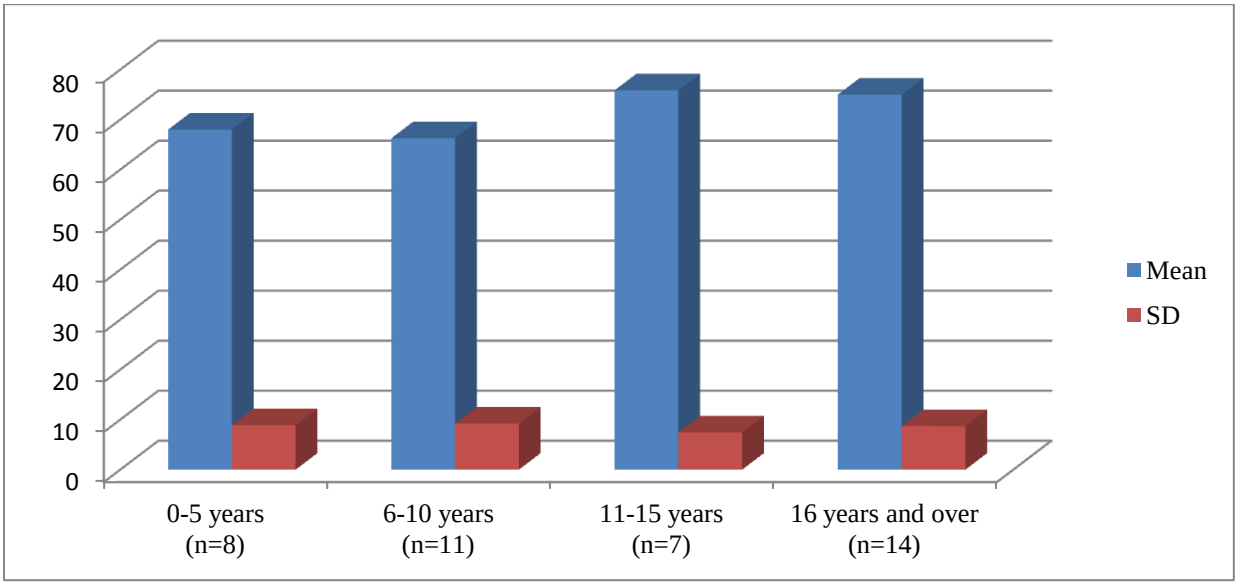

Figure 8. Mean stress scores among four groups of work experience in nursing.

To determine whether stress levels of four work experience groups differed, one-way ANOVA using SAS was performed. The analysis results showed that the four groups differed significantly on stress level ($F_{3,36}$=3.04, p-value [0.0412] <0.05), as indicated in Table 10. According to Table 11, the work experience group pairing which indicated significant difference at the 0.05 level (95% confidence limit) was denoted by *. Significant differences existed in the four group pairs of between 11-15 years and 6-10 years, between 16 years and over and 6-10 years, between 6-10 years and 11-15 years, and between 6-10 years and 16 years and over.

Table 10

One-way ANOVA of Nursing Work Experience Variable

Source	DF	SS	Mean Square	F-value	P-value
Nursing Work Experience	3	702.06	234.02	3.04	0.0412

Note. DF=degree of freedom. SS=sum of squares.

Table 11

Comparisons by Four Nursing Work Experience Groups

Nursing Work Experience Group Comparison	Difference between Means	95% Confidence Limits	
11-15 years- 16 years and over	0.857	-7.377	9.091
11-15 years- 0-5 years	7.857	-1.348	17.063
11-15 years- 6-10 years	9.584	0.985	18.184 *
16 years and over- 11-15 years	-0.857	-9.091	7.377
16 years and over- 0-5 years	7.000	-0.883	14.883
16 years and over- 6-10 years	8.727	1.561	15.894 *
0-5 years- 11-15 years	-7.857	-17.063	1.348
0-5 years- 16 years and over	-7.000	-14.883	0.883
0-5 years- 6-10years	1.727	-6.538	9.992
6-10 years- 11-15 years	-9.584	-18.184	-0.985 *
6-10 years- 16 years and over	-8.727	-15.894	-1.561 *
6-10 years- 0-5 years	-1.727	-9.992	6.538

When it came to the variable of work experience in oncology units, participants were divided into four groups: 0-5years, 6-10 years, 11-15 years, and 16 or more years. Since there were only two respondents, who fell into the '16-20 years' group, the researcher integrated it with the group 'over 21 years,' and developed a new category '16 or more years.' The group of participants who had 11-15 years oncology nursing work experience had the greatest mean stress score with 78.63(SD=8.42) while the group of 0-5 years had the smallest mean score with 68.08 (SD=7.99). The mean stress scores of nurses with16 or more years and 6-10 years groups were 73.33 (SD=7.08) and 69.23 (SD=10.13), respectively, as illustrated in Figure 9.

Furthermore, one-way ANOVA was conducted to identify whether stress levels of the four groups of work experience in oncology units differed. The analysis results showed that there was no significant difference of stress levels for the four groups (p-value =0.0577), as shown in Table 12.

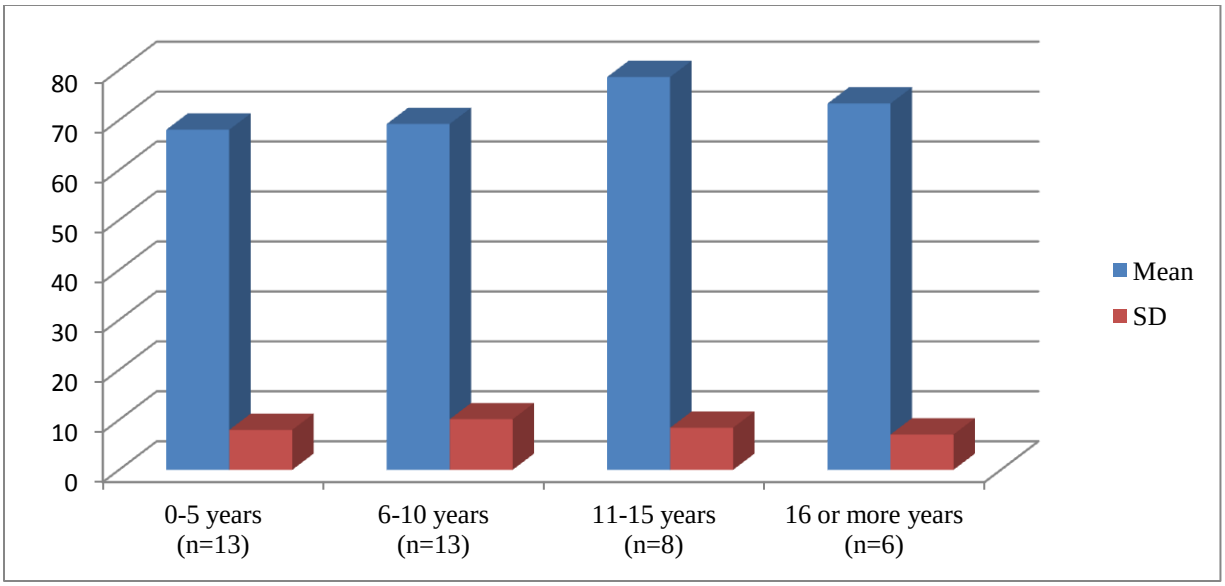

Figure 9. Mean stress scores among four groups of work experience in oncology units.

Table 12

One-way ANOVA of Oncology Nursing Work Experience Variable

Source	DF	SS	Mean Square	F-value	P-value
Oncology Nursing Work Experience	3	644.66	214.89	2.74	0.0577

Note. DF=degree of freedom. SS=sum of squares.

Research Question 4. ***What are the most frequently used coping behaviors for occupational stress of outpatient oncology nurses?***

The fourth research question was used to explore coping behaviors for work-related stress of oncology staff nurses in outpatient units. Participants were asked to write responses to three open-ended questions concerning occupational stress. The first open-ended question was: "How would you describe your coping behavior to manage work-related stress?" To answer the research question, content analysis was performed to seek thematic trends of the qualitative data obtained from the first open-ended question because it was directly related to coping behaviors

of participants. The researcher collected 50 responses from 38 nurses since each participant had an opportunity to express one or more answers, with a response rate of 95%. The responses were classified into five themes, namely verbalization, exercise/relaxation, taking time for self, separation between work and home life, and others. As seen in Table 13, the three most frequently used coping behaviors to relieve occupational stress were verbalizing (18 responses), exercising/relaxing (13 responses), and taking time for self (8 responses). Most participants expressed that they talked to other nurses, co-workers, spouses, or friends either inside of work or outside of work regarding stressful issues. In addition, the coping behaviors of the 'others' theme included physical responses such as crying, struggling with headaches, or feeling up tight; doing work; and bringing stress home.

There was additional data on resources available at the workplace for occupational stress of nurses. The data was gained from the second open-ended question "What resources has your workplace made available to help mange work-related stress?" The researcher collected 41 responses from 34 nurses for a response rate of 85%. The responses were categorized into five themes: spiritual resource, administrative resource, discussion meetings, yoga class, and others, as shown in Table 14. Many participants stated that chaplain service and managers were available to relieve their occupational stress.

The information about additional resources at the organizational level for work-related stress of oncology nurses was obtained from the third open-ended question "What would help you to improve your management of work-related stress?" With a response rate of 72.5%, 37 responses from 29 nurses were collected and divided into five themes after content analysis. Five themes included more staffing, support from management, breaks, more meetings, and others, as seen in Table 15. Most of the participants commented they needed more nursing staff and better

support from unit supervisors to cope with their stress at the workplace. A few participants also wanted support from physicians (e.g., less work volume for physicians' orders) and other nurses.

Table 13

Coping Behaviors for Occupational Stress

Theme	Number	Specific Statement
1. Verbalization	18	-Talking to other nurses/co-workers/spouses/ friends -Debriefing with family members -Venting to co-workers -Discussing with co-workers openly -Providing time to talk myself -Receiving support from co-workers and family
2. Exercise/Relaxation	13	-Exercising regularly -Working out after work -Going for a run/walk -More sleeping, eating well -Getting some rest or nap -Going home and collapse -Eating sugar -Using laughter at work, joking with patients/staff, using humor -Going out with co-workers
3. Taking Time for Self	8	-Trying to stay open-minded, positive attitude -Taking "one minute at a time" -Keeping a warm and good attitude -Keeping most of my feelings internal; putting patient first internally, holding back tears -Reflecting on a patient's life that is memories regarding that patient if they've passed -Doing the best I can with the time I have, counting my blessings -Using prayer -Being levelheaded, realistic, rational
4. Separation between Work and Home Life	7	-Leaving work at work -Having clear separation of work and home life -Trying to do fun stuff outside of work
5. Others		
- Physical Response	2	-Crying, struggling with headaches, feeling up tight, anxious
- Doing Work	1	-Just doing the work
- Bringing Stress Home	1	-Usually bringing stress home

Table 14

Resources Available at Work for Occupational Stress

Theme	Number	Specific Statement
1. Spiritual Resource	7	-Sister Julie -Some chaplaincy -Spiritual resource -Good relationship with our chaplain Sister Julie
2. Administrative Resource	6	-Open door policy and management -Managers are readily available to talk with; are good about developing ideas/plans to help -Open door of manager -Open door approach -Supervisor always available
3. Discussion Meetings	5	-Meetings, huddles, discussion grief and loss of patient -Some de-briefings after deaths of patients -De-briefing with co-workers; co-workers listen and provide support to each other -Monthly meetings -Talking with other co-workers
4. Yoga Class	4	-New yoga classes -Yoga on Tuesdays -Offering yoga to our staff once a week; it is from 11 to noon
5. Others		
- None	13	-None, nothing, unknown, none that I am aware of
- Counselor	3	-We do have EPI, a counselor available to us
- Social Outing	2	-Outings as a group, social outings after work
- More Work	1	-Generally more tasks are added to help ease stress

Table 15

Additional Resources for Occupational Stress

Theme	Number	Specific Statement
1. More Staffing	14	-Support staffing; less patient to nurse ratio -Less patient load with high acuity patients -Staffing toward duties, not numbers; having management staff that is familiar with oncology -More staffing available, having a resource team -Not cutting staff -Revising our duties/less clerical work or duties
2. Support from Management	10	-Improvement in management's response/ intervention to concerns -More education for managers on how to talk and work with staff -More support from management -Better management/leadership -Better communication from supervisors, acknowledgement of stress from supervisors -Less mandatory RWIT(shift) -Scheduled and budgeted pay increases
3. Breaks	4	-Breaks in am/pm of 10 minutes; getting lunch break some days -Time off the unit -Break room
4. More Meetings	4	-Having a grief meeting with loss patient, huddles, and open communication -Having a monthly meeting to discuss patients who had died -More time to deal with issues that arise while working -More time with patients, doctors, and others doing their job
5. Others		
- Support from Physicians	2	-Support from physicians, less work volume for physicians' orders
- Support from Nurses	1	-Support from other nurses
- Social Outing	1	-Fun gathering outside of work
- Better Skills	1	-Better skills

CHAPTER V. DISCUSSION

Interpretation of Results

Demographic data revealed that 100% (n=40) were female, 40% (n=16) were in the age range 20-30 years, 80% (n=32) were married, and 70% (n=28) were RNs with a BSN degree. Thirty percent (n=12) had over 21 years of experience in nursing. Most respondents had work experience of oncology nursing for up to five years (32.5%, n=13) or between 6 and 10 years of experience (32.5%, n=13). These results of demographic characteristics are consistent with the previous results of studies on work-related stress, coping strategies, and burnout in oncology nurses (Davis et al., 2013; Campos de Carvalho et al., 2005; Escot et al., 2001).

In this study sample, the NSS total score ranged from 51 to 92 with a mean of 71.35 (SD=9.43). Over half of the respondents were considered either as 'moderately stressed' (52.5%, n=21) with the NSS total scores of 71-90, or as 'highly stressed' (2.5%, n=1) with the NSS total scores of 91-110. On the other hand, 45% (n=18) were regarded as 'no stress or less stressed' with the NSS total scores of 70 or less. Overall, the results of the study suggest that oncology nurses experience a moderate frequency of work-related stress. Given these data, there seems to be a need for managing occupational stress to prevent nurses from transitioning to 'highly stressed' and to assist them in turning to 'no stress or less stressed.'

Finding that the highest sources of stress were the factors of work load (M=16.15) and death and dying of patients (M=15.33) can be supported by previous research. Rodrigues and Chaves (2008) identified the most stressful situations for oncology nurses were patient death (28.6%), emergency situations (16.9%), relationship issues with the nursing team (15.5%), and work-process situations (15.5%). In addition, the factor of relationship with professional co-workers (M=18.5) could be the most important factor for outpatient oncology nurses because the

stressful factor had the highest stress mean score after the combination of the two subscales of conflict with physicians and conflict with other nurses. Conflict with colleagues or relationship difficulties with other healthcare staff has led to frequent work-related stress for oncology nurses (Escot et al., 2001; Isikhan et al., 2004). These findings support the need for organizations to design strategies that increase a sense of cohesion, support co-workers, and encourage nurses to express stressful situations and to share methods to manage their emotions (Davis et al., 2013).

The Nursing Stress Scale (NSS) was useful to examine which of its items lead to greater stress for oncology nursing staff. The score means of each item varied from 1.15 to 2.93. Out of the 34 items, seven items having over 2.5 mean scores were investigated: "unpredictable staffing and scheduling" (M=2.93), "not enough time to provide emotional support to a patient" (M=2.75), "not enough staff to adequately cover the unit" (M=2.73), "too many non-nursing tasks required, such as clerical work" (M=2.68), "not enough time to complete all of my nursing tasks" (M=2.55), "breakdown of computer" (M=2.53), and "fear of making a mistake in treating a patient" (M=2.53). Six of the seven items came from the work load subscale of the NSS except the last item. There appears to be a close relationship between work load and nurse staffing. A low staffing level in oncology settings is also classified as a stressful environment (Medland et al., 2004; Toh et al., 2012). Oncology nurses who had work experience in substandard staffing units showed high levels of job dissatisfaction, burnout, and concerns about inadequacy to provide end-of-life care (Toh et al., 2012; Caton & Klemm, 2006; Papadatou, Bellali, Papazoglou, & Petraki, 2002). Therefore, health care institutions need either to make effective strategies or to offer more supportive work environments for the improvement of the job satisfaction and psychosocial wellness of oncology nursing staff.

According to demographic variables influencing occupational stress scores, oncology nursing staff who had high stress scores were between 41 and 50 years old (M=79.86, SD=9.46), were married (M=72.38, SD=8.71), were RNs with an ADN degree (M=73.1, SD=11.62), had work experience in nursing for 11-15 years (M=75.86, SD=7.43), and had work experience in oncology units for 11-15 years (M=78.63, SD=8.42). Among demographic characteristics of respondents, only the two variables of age and work experience in nursing had a significant effect on work-related stress scores as p-values for the two variables were 0.0411 and 0.0412, respectively. Other variables of marital status, educational level, and oncology nursing work experience had no significant differences on stress levels ($p>0.05$).

An interesting finding of the present study was the age variable that was an important factor in the differences between occupational stress scores ($p<0.05$). The older oncology nurses were found to have a bigger mean stress score than the younger nurses. The mean stress score was found to be 79.86 in those between 41 and 50 years; those aged between 20 and 30 years old had the smallest mean score with 68.31. These results are inconsistent with a recent study by Isikhan et al. (2004) using the Job Stress Inventory for oncology nurses and oncologists. Isikhan et al. (2004) found those between 21 and 36 years old had a higher mean stress score (M=31.59) than those who were 36 or older (M=29.47) ($p<0.05$). Furthermore, a study by Purcell, Kutash, and Cobb (2011) using the NSS for hospital nurses reported that younger nurses had more stress (M=92.70) than older nurses who were more than 37 years old (M=86.41) ($p<0.05$). There are inconsistencies between previous literature and this study of oncology nursing staff. More research in this area is needed to verify the relationship between stress levels and the age variable by using the same research instruments, populations, and age categories.

The study results indicate that the work experience variables of general nursing and oncology nursing were significant factor affecting nurses' stress levels. Nurses who had the largest stress scores had nursing work experience for 11-15 years (M=75.86) and oncology nursing work experience for 11-15 years (M=78.63). Oncology nurses' work experience both in nursing and in oncology units can influence the occurrence of burnout and compassion fatigue. Potter et al. (2010) reported oncology healthcare providers who had the oncology work experience for 11-20 years had the greatest risk for burnout and compassion fatigue. Moreover, RNs with a bachelor's degree were the highest risk for compassion fatigue, and RNs with an associate degree had the highest percentage of low compassion satisfaction scores (Potter et al., 2010). Since work experience and educational level of nurses were closely related to the occurrence of burnout and compassion fatigue, further correlation research is needed to develop tailored interventions to help nurses gain effective skills for dealing with stress.

Apart from nurses' demographic variables, type of oncology work settings can be a crucial factor in the level of work-related stress among cancer nurses. According to Potter et al. (2010), inpatient oncology staff had a higher percentage of high-risk burnout scores (44%) than outpatient staff (33%). However, there were no significant differences in the percentages of high-risk scores for compassion fatigue among inpatient (37%) and outpatient staff (35%). Interestingly, Davis et al. (2013) noted that emotional exhaustion was significantly higher for RNs working in the outpatient setting than those in the inpatient setting. Due to mixed results, more research is needed to identify the relationship between the level of occupational stress and work setting characteristics and to investigate whether demographic variables or work settings play a larger role in burnout and compassion fatigue.

Qualitative data obtained from three open-ended questions regarding work-related stress was fruitful to look into coping behaviors, resources available at work, and additional resources requested from oncology nurses. First, with 95% response rate, coping behaviors for occupational stress of nurses were verbalizing, exercising/relaxing, taking time for self, separating between work and home life, and others, as described in Table 13. The results of the study are consistent with the findings by Ekedahl and Wengstrom (2006) which indicated that cancer nurses used coping strategies of making boundaries, venting emotions, receiving supports from colleagues, or using humor.

Second, there were resources available at work for work-related stress of nurses. As seen in Table 14, the cancer center study provided nurses with institutional supports, and oncology nursing staff appeared to utilize the resources although it was not clear how often these were being used. Surprisingly, however, of the 34 surveys completed, 13 respondents did not know the resources available to them as they answered "none" or "unknown." There is a need to publicize the real resources for increasing utilization rates.

Finally, participants also desired additional resources for their job-related stress as shown in Table 15. The two major additional resources requested were related to the issues of staffing level and nursing management support. Especially, more nursing staff was found to be an important resource for participants to provide them with more favorable work environments. Favorable practice environments, such as adequate staffing or better communication with unit supervisors can significantly influence high-quality oncology nursing care (Friese, 2005). Therefore, nurse managers or leaders should continuously assess nurses' work environments to promote patient outcomes and to help nurses reduce the level of their occupational stress. Overall, the researcher found that fewer participants responded to open-ended questions than the NSS.

Thus, oncology outpatient nurses should pay more attention to the subjects of coping behaviors and organizational supports for work-related stress.

Limitations

A significant limitation of this study was related to the small number of the target population. This study was conducted at only one outpatient oncology setting in a medical center. Because a total of 40 surveys were completed, the small sample size limits the generalizability of the study findings to other oncology nursing settings. In the future, the researcher may consider other health institutions located in North Dakota to increase the sample size. Since there were seven uncompleted surveys, adding a statement requesting participants to answer all questions to the survey instruction sheet may be effective to increase the response rate. Approximately two weeks after distribution of the survey, a reminder letter can also be sent via weekly newsletters to all potential respondents for encouraging nurses to participate in the survey.

Furthermore, since all respondents were female, the researcher could not conduct data analysis regarding the gender variable of participants to determine whether stress levels of female and male groups differ. This limitation seems to stem from the gender imbalance in the cancer nursing workforce and the small sample size. Healthcare organizations could consider raising the recruitment of male nurses to reduce the gender imbalance among oncology nurses and provide male nurses with more opportunities to participate in nursing research on stress levels.

This study was also limited to measuring the stress levels and sources. Because the NSS was designed to assess the frequency with which nursing situations were perceived as stressful by nurses (Gray-Toft & Anderson, 1981), the study did not measure the intensity of stress for participants. The researcher used the NSS to investigate the levels of work-related stress and the

stressful factors at work of participants. Further research is needed to gauge the intensity of occupational stress for this target population by modifying the NSS or developing a new nursing stress instrument.

Recommendations for Further Research

There has been discussion about scarcity of research on both the levels of stress and specific stressors to outpatient oncology nursing (Davis et al., 2013). This study was conducted in a medical center and included a small sample size. A larger sample size in various regions of the northern Midwest United States would be beneficial not only to help better understand the importance of nurses' health, the existence of stressful factors in oncology units, and unique stressors of nurses, but also to allow for more nurses to participate in the study. The larger sample size would also provide a broader range of analysis with regard to demographic variables.

Research investigating the relationship between the demographic variables of age and working experience and stress levels of oncology nursing staff would be helpful to narrow the gap between previous studies and the present study. The study found nurses who were between 41 and 50 years old and had working experience in oncology units of 11-15 years had the greatest stress scores, whereas Isikhan et al. (2004) found that oncology nurses and physicians who were between 21 and 36 years old and had working experience in oncology units of 1-10 years had higher stress scores.

In addition, the variables of age and work experience of nurses can significantly influence their emotional exhaustion (EE). Quattrin et al. (2006) reported oncology nurses who were more than 40 years old and had more than 15 years of work experience had high levels of EE. Davis et al. (2013) also found the oldest age group of nurses had the greatest levels of EE. Therefore, further investigation clarifying relations between the two variables of age and nursing

work experience and EE would be useful in planning and developing support programs to meet the needs of nurses at risk of EE.

More research is needed to identify the relationship between job stress level and coping strategies utilized by oncology nurses in outpatient settings. The results of a correlation study would be helpful to evaluate the effectiveness of coping strategies for reducing stress levels. For assessment of coping behaviors, an instrument that has well-tested validity and reliability would be beneficial to collect useful data for developing customized interventions for oncology nurses.

Correlation studies could provide critical information for effective management of oncology nursing workforce. The levels of occupational stress have been associated with several factors, such as retention, health status, job satisfaction, burnout or compassion fatigue occurrence among nurses, and nurses' ability to provide quality care (Grafton & Coyne, 2012; Sherman et al., 2006; Aycock & Boyle, 2009; Isikhan et al., 2004; Davis et al., 2013). A study by Davis et al. (2013) found there was a significant inverse correlation between emotional exhaustion and job satisfaction, and between job satisfaction and the desire to leave one's job. Moreover, Isikhan et al. (2004) identified stress-related health problems of oncology nurses that included headache, excessive nervousness, ulcer and gastritis, sleep disorders, high blood pressure, and nausea. Examples of correlation studies can include the relationship between levels of stress and job performance, between levels of stress and job satisfaction, and between job satisfaction and the ability to provide quality care.

For better understanding of vulnerability of outpatient oncology nurses to stress, comparative studies on stress levels of nurses at different outpatient settings could be conducted. For instance, the researcher could conduct a comparative study between oncology outpatient nurses and nephrology outpatient nurses. Such comparative studies would be useful to identify

specific stressors in oncology nursing practice and to develop tailored interventions for the unique needs of nurses. Furthermore, another comparative study at diverse regions or nations would also be useful to examine the difference in stress levels and coping behaviors of nurses such as between American oncology outpatient nurses and Korean oncology outpatient nurses.

Implications for Nursing Practice

Despite the small size of the sample, this study adds to the body of knowledge regarding outpatient oncology nurses' stress levels, stressful factors at the workplace, and coping behaviors for work-related stress. The study assessed occupational stress levels of oncology nurses in outpatient units which indicated that slightly more than half of the participants were regarded as either 'moderately stressed' (52.5%) or 'highly stressed' (2.5%). Given the results of the survey, the study has clinical implications in terms of developing interventions to help nurses positively respond to stress thereby lowering the stress levels of nurses with a goal of reducing to the lowest level of stress, which is regarded as 'no stress or less stressed.'

First and foremost, it is highly recommended that nurse educators and leaders should add strategies for dealing with job-related stress of oncology nurses into their continuing education curriculum. Stress management can be essential to accomplish two outcomes, first, increasing awareness of the existence of stressful factors in oncology settings, second, providing nurses with practical information on how to effectively manage their stress. Stress management intervention can be provided through web-based materials that could offer an effective learning opportunity to nurses without time restrictions.

The results of the study suggest that nurses should continuously utilize current resources available at Sanford Health, such as chaplain service, open door policy of supervisors, discussion meeting, yoga class, counseling service, etc. Since some nurses were not aware of those

resources, an advertising campaign by individual emails or the bulletin board at the cancer center is necessary so that nurses can be motivated to play an active role in their stress management. Further research is also needed to evaluate the effectiveness of the resources, and if more wellness programs are needed to provide greater support for oncology nurses. In addition, unit supervisors could be an important contributor to successful management of occupational stress among staff nurses. Unit supervisors or nurse leaders could have a vital role in providing education, training for oncology nurses, and creating a good work climate to help decrease vulnerability to workplace stress and its impact and to help cope with stress (Peters et al., 2012; Ekedahl & Wengstrom, 2006).

The findings also suggest that there is a need for intervention to manage stress attributed to work load of oncology nurses, which was the highest source of stress at work. Health care organizations can consider establishing more supportive work environments and developing interventions tailored to the specific stressors of nurses. In response to request of participants, several avenues either at an organizational level or at the unit level can be used such as increasing staffing levels, offering support from better management of unit supervisors, providing more breaks, offering more meetings, or providing support from physicians.

Clinical nurse educators could consider developing continuing education programs with regard to end-of-life (EOL) care to meet the diverse needs of nurses. Because patient death and dying was the second highest source of stress among nurses in the study, educational programs of EOL care in their workplace would help nurses increase familiarity with high-quality EOL care and reduce levels of stress caused from the situation of patient death and dying. Thus, providing educational materials and continuing education on EOL care could be useful to

improve nurses' ability to cope with EOL care and increase positive perceptions about their work environments.

In addition to tailored interventions both at the organizational level and at the unit level, it is recommended for individual nurses to cultivate self care competencies to retain their optimal wellness status and control over their stress at work. Oncology nurses must be able to provide care for their own needs to cope with stress in the workplace by developing effective coping activities and accepting various forms of preventive strategies. Creating a culture of self-care and self-respect can promote a healthier lifestyle for their professional and personal lives. Several interventions can be utilized: not ignoring their feelings and physical symptoms; acknowledging the health care needs for themselves; developing their own support networks in their work environments and outside of work (e.g., churches or fitness clubs); having somewhere safe to express their needs or stress; practicing meditation, conscious breathing, or self-reflection; and receiving massage and aromatherapy (Fairbrother & Paice, 2005; Grafton & Coyne, 2012).

With developing self care competencies, there needs to be customized intervention strategies for oncology nursing staff who are between 41 and 50 years old since that age group had the biggest stress score (M=79.86). The stress levels reported by the nurses could be affected by personal life stressors which are factors external to the work environment. The nurses aged 41 to 50 are part of the 'sandwich generation,' those individuals who raise their children and at the same time care for their aging parents or relatives (Halbert, 2012). These middle-aged people (or 'sandwich workers') are usually overworked, more stressed, easily tired, and frequently suffer from financial burdens (Halbert, 2012; Williams, 2005). According to Parikh, Taukari, and Bhattacharya (2004), nurses with dual responsibilities, such as those in the sandwich generation, could have extra sources of stress that negatively influence their emotional and physical health as

well as aggravate levels of work-related stress. Healthcare institutions should understand the unique needs of the more vulnerable group of nurses with occupational stress. Providing positive work environments would help nurses cope with various sources of stress. Some interventions could include offering group training programs (e.g., a day-long retreat workshop), providing flexible work scheduling, or offering eldercare services in the workplace.

Due to the vulnerability of oncology nursing staff to work-related stress, nurse educators working in academic settings can consider teaching strategies regarding stress prevention and coping with evidence-based resources to nursing students. This early awareness through undergraduate nursing programs would allow new graduates to be better educated and prepared to care for themselves, patients, and their families more effectively and to have longevity in oncology nursing practice.

Moreover, oncology nurses who continuously learn and use effective coping strategies for occupational stress would be able to more easily share information on practical stress management (e.g., exercise or self-reflection) with cancer patients and their families. The nurses would also be able to support their patients and families to reframe stressful experiences and cultivate their own resilience in effective stress management (Grafton & Coyne, 2012; Grafton et al., 2010). Therefore, nurses who have good coping behaviors could positively influence cancer care and the level of patient satisfaction.

Conclusion

Oncology nurses are an invaluable resource within the healthcare system because of increased disease incidence of cancer and longer cancer survival time. Nurses are particularly qualified to provide care on a lengthy journey across the continuum of cancer treatment, such as providing good EOL care. Skilled and experienced oncology nurses are especially precious

resources to provide high-quality cancer care and improve patient outcomes (Wenzel et al., 2011). At the same time, nurses working with cancer patients and their families frequently experience various stressful situations in the workplace that can lead to physical, mental, and psychosocial health problems. As a professional healthcare provider, oncology nurses must be able to care for themselves to maintain their optimal health conditions and to reduce or prevent stress at work. The most important action is to recognize the adverse effects of work-related stress on health and to acknowledge their emotional experiences.

With a goal of promoting retention of nurses in the oncology specialty, nurses should be nurtured and supported through tailored interventions at multiple levels. Oncology nurses should find effective coping strategies and develop constructive self-care behaviors at an organizational level (e.g., using spiritual resources or continuing education programs on stress management), at a unit level (e.g., receiving support from unit supervisors or monthly unit meetings), and at a personal level (e.g., exercising at a fitness center or receiving support from friends outside of work). Such methods for coping with job-related stress can be helpful to strengthen the resilience of nurses in stress management and to become more interested in their health care. Ultimately, using customized interventions at various levels for outpatient oncology nurses can result in a healthier, more satisfied and quality nursing workforce. This, in turn, will likely impact positively on the quality of patient care.

Nurse educators are significant players in strengthening the nursing workforce (Nurses for a Healthier Tomorrow, 2006). Clinical nurse educators working in oncology units should continuously support nurses through the roles of researcher and motivator. To become more comfortable with evidence-based strategies and interventions among oncology nurses, nurse educators should provide valuable information on stress research and related nursing literature

and offer opportunities to attend nursing research conferences where nurses get the latest findings. Finally, nurse educators should frequently monitor stress levels of oncology nurses and their coping behaviors to improve job satisfaction of nurses, as well as to prevent nurses from either acute or chronic occupational stressors.

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APPENDIX A. PERMISSION TO USE THE NEUMAN SYSTEMS MODEL

Legal/Permissions
One Lake Street
Upper Saddle River, NJ 07458
Fax: 201-236-3290
Phone: 201-236-3263

March 14, 2014 PE Ref # 183453

Woonhwa Ko
1334 9th Ave N Apt# 11
Fargo, ND 58102
Fax #: 701-231-6257

Dear Woonhwa Ko:

You have our permission to include content from our text, ***NEUMAN SYSTEMS MODEL, THE, 4th Ed. by NEUMAN, BETTY; FAWCETT, JACQUELINE,*** in your Masters Thesis entitled, Stress Levels of Nurses in Oncology Outpatient Units for your course NURS 798 taught by Instructor Dr. Norma Kiser-Larson at North Dakota State University.

Content to be included is:
P. 20 Figure 1-5 The Neuman System's Model

Permission is granted to print the material as needed for the Instructor, Committee and for your personal file. Material may also be stored on the University of North Dakota website.

Please credit our material as follows:
NEUMAN, BETTY; FAWCETT, JACQUELINE, NEUMAN SYSTEMS MODEL, THE, 4th Edition, © 2002. Reprinted and Electronically Reproduced by permission of Pearson Education, Inc., Upper Saddle River, NJ

Sincerely,

Mary Ann Vass, Permissions Specialist

APPENDIX B. CONSENT LETTER

North Dakota State University
Department of Nursing
1401 Albrecht Boulevard
NDSU Dept. 2670/ PO Box 6050/136 Sudro Hall
Fargo, ND 58108-6050
(701) 231-7395

Title of master's study: Stress Levels of Nurses in Oncology Outpatient Units

Dear oncology nurses:

My name is Woonhwa Ko. I am a graduate nursing student at North Dakota State University. I am conducting a research project to assess stress levels and stressful factors of oncology nurses at the workplace, to identify differences in stress levels among nurses' demographic characteristics, and to identify coping behaviors of oncology nurses. The process of assessing stress levels and stressful factors is important for oncology nurses and their employers to help understand the importance of nurses' mental health and the existence of stressful factors in oncology settings.

Participating in this study will be useful to improve the working environments because the most stressful factors of oncology nurses at the workplace will be identified by this survey. Results of the study can be applied to other nursing populations so they can receive organizational support for effective management of their work-related stressors.

As a licensed practical nurse and registered nurse in an oncology outpatient setting, you are invited to take part in this survey at monthly unit meetings from September 2013 to October 2013. You are asked to complete the survey at the unit meeting and return it to the researcher at the unit meeting. If you are unable to attend a unit meeting or would like to complete the survey later, you may send the completed survey directly to the researchers using a self-addressed stamped envelope which will be provided.

Participation is completely voluntary and confidential. You have the right to change your mind or quit participating at any time, with no penalty to you or loss of benefits to which you are entitled. There are no significant physical or emotional risks in research procedures. Any results will be kept confidential and remain secure in a locked filling cabinet, until the research has been completed. No individual scores will be reported. All results will be reported as aggregate data.

Completing the questionnaires will take approximately 10 minutes. The questionnaires include the Nursing Stress Scale (NSS), three open-ended questions, and demographic information.

If you have any questions or concerns about the study, please contact me at (701) 446-7569 (woonhwa.ko@my.ndsu.edu) or my advisor Dr. Norma Kiser-Larson at (701) 231-7775 (norma.kiser-larson@ndsu.edu). If you have any questions or concerns about the rights of human research subjects, please contact the North Dakota State University Institutional Review Board at (701) 231-8908 or Toll-Free at 1-855-800-6717 or the Sanford Health IRB at (605) 312-6430.

Thank you for participating in this study.

Sincerely,
Woonhwa Ko, RN, BSN, NDSU graduate nursing student

APPENDIX C. SURVEY QUESTIONNAIRE

Nursing Stress Scale

Below is a list of situations that commonly occur in a hospital unit. For each item indicate by means of a check (√) how often in your present unit you have found the situation to be stressful.

1. Breakdown of computer.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
2. Criticism by a physician.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
3. Performing procedures that patients experience as painful.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
4. Feeling helpless in the case of a patient who fails to improve.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
5. Conflict with a supervisor.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
6. Listening or talking to a patient about his/her approaching death.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
7. Lack of an opportunity to talk openly with other unit personnel about problems on the unit.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
8. The death of a patient.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
9. Conflict with a physician.
   __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
10. Fear of making a mistake in treating a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
11. Lack of an opportunity to share experiences and feelings with other personnel on the unit.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
12. The death of a patient with whom you developed a close relationship.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
13. Physician not being present when a patient dies.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
14. Disagreement concerning the treatment of a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
15. Feeling inadequately prepared to help with the emotional needs of a patient's family.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
16. Lack of an opportunity to express to other personnel on the unit my negative feelings towards patients.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
17. Inadequate information from a physician regarding the medical condition of a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently

18. Being asked a question by a patient for which I do not have a satisfactory answer.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
19. Making a decision concerning a patient when the physician is unavailable.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
20. Floating to other units that are short-staffed.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
21. Watching a patient suffer.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
22. Difficulty in working with a particular nurse (or nurses) outside the unit.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
23. Feeling inadequately prepared to help with the emotional needs of a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
24. Criticism by a supervisor.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
25. Unpredictable staffing and scheduling.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
26. A physician ordering what appears to be inappropriate treatment for a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
27. Too many non-nursing tasks required, such as clerical work.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
28. Not enough time to provide emotional support to a patient.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
29. Difficulty in working with a particular nurse (or nurses) on the unit.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
30. Not enough time to complete all of my nursing tasks.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
31. A physician not being present in a medical emergency.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
32. Not knowing what a patient or a patient's family ought to be told about the patient's medical condition and its treatment.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
33. Uncertainty regarding the operation and functioning of specialized equipment.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently
34. Not enough staff to adequately cover the unit.
    __ (1) Never __ (2) Occasionally __ (3) Frequently __ (4) Very frequently

Open-ended Questions

1. How would you describe your coping behavior to manage work-related stress?

2. What resources has your workplace made available to help manage work-related stress?

3. What would help you to improve your management of work-related stress?

Demographic Questionnaire

Please circle the best response.

1. What is your gender?
   Male Female
2. What is your age?
   20-30 yrs old 31-40 yrs old 41-50 yrs old 51 yrs old <
3. What is your marital status?
   Single Married Divorced Widowed
4. What is your position and educational level?
   LPN with ADN degree RN with ADN degree RN with BSN degree
   RN with Graduate nursing degree
5. How many years of work experience do you have in nursing?
   0-5yrs 6-10 yrs 11-15 yrs 16-20 yrs 21yrs <
6. How many years of work experience do you have in oncology units?
   0-5 yrs 6-10 yrs 11-15 yrs 16-20 yrs 21 yrs <

APPENDIX D. BRIEF EXPLANATION SHEET OF THE STRESS LEVEL STUDY

Dear Oncology Nurses,

Please allow me to introduce myself. My name is Woonhwa Ko. I am a nursing graduate student at NDSU. I am conducting a research project to assess stress levels and stressful factors of oncology nurses at the workplace and to identify coping behaviors for work-related stress. I think this study is important for you because it provides an excellent opportunity to express your feelings or experience. In addition, this study results may provide general information of nurses' stress levels and stressful circumstances they experience.

I would like to provide you with some instructions to participate in this study as listed below:

1. Read Consent letter
2. Decide whether to participate in this study
3. Complete the survey if you decided to participate in the study
4. Put the complete survey into the envelope
5. Seal the envelope
6. Drop in the US Mail by November 30

Thank you so much for your participation in the study.

Sincerely,

Woonhwa Ko

APPENDIX E. SURVEY INSTRUCTION SHEET

Dear Oncology Nurses,

Please follow the instructions listed below:

1. Read Consent Letter
2. Decide whether to participate in this study
3. Complete the survey if you decided to participate in the study
4. Put the completed survey into the envelope
5. Seal the envelope
6. Drop in the US Mail by November 30

Thank you so much for your participation in the study and your cooperation

Appreciatively,

Woonhwa Ko

APPENDIX F. NDSU IRB APPROVAL

NDSU NORTH DAKOTA STATE UNIVERSITY

September 3, 2013 FederalWide Assurance FWA00002439

Dr. Norma Kiser-Larson
Department of Nursing
Sudro 222C

IRB Approval of Protocol **#PH14018, "Stress levels of nuses in oncology outpatient units"**
Co-investigator(s) and research team: **Woonhwa Ko**

Approval period: 9/3/2013 **to** 9/2/2014 **Continuing Review Report Due:** 8/1/2014

Research site(s): **Sanford Health Oncology** Funding agency: **n/a**
Review Type: Expedited category # 7
IRB approval is based on original submission, with revised: revised protocol and consent (received 9/3/2013).

Additional approval is required:

- prior to implementation of any proposed changes to the protocol (*Protocol Amendment Request Form*).
- for continuation of the project beyond the approval period (*Continuing Review/Completion Report Form).* A reminder is typically sent two months prior to the expiration date; timely submission of the report is your responsibility. To avoid a lapse in approval, suspension of recruitment, and/or data collection, a report must be received, and the protocol reviewed and approved prior to the expiration date.

A report is required for:

- any research-related injuries, adverse events, or other unanticipated problems involving risks to participants or others within 72 hours of known occurrence (*Report of Unanticipated Problem or Serious Adverse Event Form*).
- any significant new findings that may affect risks to participants.
- closure of the project (*Continuing Review/Completion Report Form*).

Research records are subject to random or directed audits at any time to verify compliance with IRB regulations and NDSU policies.

Thank you for cooperating with NDSU IRB procedures, and best wishes for a successful study.

Sincerely,
Kristy Shirley
Kristy Shirley, CIP
Research Compliance Administrator

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb
Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo, ND 58102

APPENDIX G. SANFORD HEALTH IRB APPROVAL

SANFORD HEALTH

September 19, 2013

PI: Norma Kiser-Larson, Ph.D., RN, CNE
Project: 03-13-114 Stress levels of nurses in oncology outpatient units
Project Review Level: Exempt 2
Project Risk: No more than minimal
Approved through exempt review: 09/18/2013

The study submission and consent letter for the proposal referenced above has been reviewed and approved via the procedures of the Sanford Health Institutional Review Board (IRB).

Attached is your original consent letter that has been stamped with the IRB approval date. You must keep this original on file. Please use this original consent document to make copies for subject enrollment/re-consent. No other consent form should be used.

Prior to initiation, promptly report to the IRB, any proposed project updates / amendments (e.g., protocol amendments/revised informed consents) in previously approved human subject research activities.

The forms to assist you in filing your: project closure, continuation, adverse/unanticipated event, project updates /amendments, etc. can be accessed online at SanfordConnect.

You have approval for this project starting from the approval date. Exempt projects do not expire; however, please update the IRB of your study status annually. Exempt projects can be closed when data collection is completed. When this study is completed please notify the Human Research Protection office.

Sincerely,

Deb Langstraat, CIP
Director-Sanford IRB

Sanford Health Human Research Protection Program, Route #5033 • 1305 W. 18th Street • Sioux Falls SD 57117-5039 • P 605-312-6430

APPENDIX H. WRITTEN PERMISSION TO USE THE NSS

PURDUE
UNIVERSITY

COLLEGE OF LIBERAL ARTS

Department of Sociology

June 11, 2013

RE: Nursing Stress Scale

I have enclosed a copy of the Nursing Stress Scale. You have our permission to use the Nursing Stress Scale in your research. Please cite the original source in the Journal of Behavioral Assessment, Vol. 3, No. 1, 1981, pp. 11-23. Please note that six of the items were dropped on the basis of the factor analysis. I have checked the final 34 items that were included on the enclosed copy of the NSS.

Good luck. I would be most interested in receiving a copy of any of the publications that result from the research. Please call me at (765) 494-4703 or send me an email if you have any questions.

Sincerely yours,

James G. Anderson, Ph.D.
Professor of Medical Sociology
Professor of Health Communication
(765) 494-4668
FAX: (765) 496-1476
e-mail: andersonj@.purdue.edu
web.ics.purdue.edu/janders1