Fall 9-25-2019

The Effectiveness of a Robotic Seal on Compassion Satisfaction in Acute Care Nurses: A Mixed Methods Approach

Jo S. Henson
University of Texas at Tyler

THE EFFECTIVENESS OF A ROBOTIC SEAL ON COMPASSION SATISFACTION IN ACUTE CARE NURSES: A MIXED METHODS APPROACH

by

JO SHEREE HENSON

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Nursing
Department of Nursing

Dr. Gloria Duke, Committee Chair

College of Nursing and Health Sciences

The University of Texas at Tyler
August 2019

The University of Texas at Tyler

Tyler, Texas

This is to certify that the Doctoral Dissertation of

JO SHEREE HENSON

has been approved for the dissertation requirement on AUGUST 1, 2019

for the Nursing PhD degree

Approvals:

Dissertation Chair: Gloria Duke

Member:Sandra Petersen

Member:Eric Stocks

Chair, Department of Nursing

Dean, College of Nursing and Health Sciences

Acknowledgements

Thank you, my children, Joshua, Benjamin, and Sarahbeth Hussey, for your love, encouragement, and support to help me achieve this dream. Innumerable weekends and evenings were spent reading and writing papers and through it all you were there cheering me on. Thank you, Joshua and Patricia, for reading my entrance essay and championing my return to school yet again. Your love, support, and prayers kept me going. Sarah, thank you for the numerous times you told me "you can do this" and "I am so proud of you". Those words of encouragement were motivational. You are all the best of my world!

Thank you, Bill and Joan Henson for your love and support of my education from the very beginning. You instilled in me a curiosity and a passion for lifelong learning. You ensured I could attend Baylor University and graduate with no school loans. Although it took me many years to attend graduate school programs, you encouraged me to keep going.

A special thank you to Dr. Gloria Duke for your encouragement, patience, guidance, and caring. You were there for me providing support at each step of this journey, personally and professionally. Dr. Melinda Hermanns, thank you for your initial guidance into the PhD program. As my advisor for the first year, you helped me transition back into school with ease. Thank you, Dr. Eric Stocks for providing insight into the study to provide a better comparator for control and intervention and helping me survive the statistical analysis. Dr. Sandra Petersen, without you and Oscar, the possibility of this study would have never solidified, so thank you for your innovation, inspiration, and dedication to nursing research.

I appreciate greatly the support of the nurses at Texas Health Southwest, support for me, nursing research, and the professional quality of life for all nurses. Without your participation, this study would not have been completed. Dr. Kathy Baldwin, thank you for encouraging me to enroll in this program and rooting for me all the way through, you are a great friend and mentor. Dr. Linda Humphries, thank you for always encouraging me, you are my doctoral hero. Dr. Sally Carmen, Leisha Buller, Ashley Hodo, Julie Holland, Kim Williams, and Viji George, as a team, you will always hold a special place in my heart for your continued encouragement. I am lucky to have my own cheerleading squad. Dr. Mary Robinson, you have supported me through the past several years as my mentor, leader, and friend, so for that and believing in me, I thank you.

These acknowledgements wouldn't be complete without extending my gratitude to my dear friends, Beverly, Bessie, Darlene, Pebbles, and Karen, thank you for your patience as I was unavailable for our "girl's' adventures". A special thank you to Jodi Patterson. I don't know where I would be, probably not here, without you encouraging me through statistics and all those papers. I am blessed that through this journey my Heavenly Father has placed each of you in my life to continue to love and support me.

Table of Contents

List of Tables

List of Figures

Abstract

THE EFFECTIVENESS OF A ROBOTIC SEAL ON COMPASSION SATISFACTION IN ACUTE CARE NURSES: A MIXED METHODS APPROACH

Jo Sheree Henson

Dissertation Chair: Gloria Duke, PhD

The University of Texas at Tyler
July 2019

Nurses are expected to provide compassionate care without a complete understanding of the price of continuously exhibiting compassion. Compassion satisfaction, or the satisfaction derived from providing care, can be depleted. This depletion of compassion leads to compassion fatigue, impacting the nurse's ability to provide compassionate care. Nurses face a variety of stressors in the work environment that can result in decreased levels of compassion resulting in compassion fatigue. The existence of stress and the impact it has on compassion fatigue has been established, however, interventions to relieve stress in the work environment have not been examined fully.

A state of the science paper is a synthesis of current research on a pertinent topic. Chapter 2, "When Compassion is Lost" examines and synthesizes research on compassion fatigue and the bearing it has on nurses. Concept analysis assists in the identification of a concept that is unclear. Chapter 3, "Burnout or Compassion Fatigue: A Comparison of Concepts" contributes to the clarity of differentiation between burnout and compassion fatigue.

This research study evaluated the effectiveness of a robotic baby harp seal with artificial intelligence on decreasing stress in acute care nurses. The intervention group interacted with the robotic seal while the control group interacted with an unanimated seal. A mixed methods design

was used that included a single study site with acute care nurses from medical-surgical, step-down, float pool, and PACU nurses. Quantitative data was collected using the Nurse Stress Scale and the Professional Quality of Life 5 tool. Following the quantitative data collection, focus groups were held to assist with the explanation of the quantitative data.

Chapter 1

Overview of the Research

Nursing is more than science; it encompasses the art of compassion. Compassion satisfaction is the pleasure the nurse experiences from being able to provide care (Stamm, 2010) while compassion fatigue (CF) is the loss of a nurse's ability to nurture or adequately care for patients; a desensitization to the suffering of the patient (Hinderer et al., 2014). The compassion level of the nurse may be at the satisfaction level, the fatigue level, or anywhere in-between. Nurses participate in processes that promote healing, creating a nurse-patient relationship that can keep CS levels high (Todaro-Franceschi, 2013). In contrast, nurses working in high stress environments may have a prevalence of compassion fatigue (Bao & Taliaferro, 2015).

Nurses experience stress during regular encounters with patients who are suffering and while fulfilling responsibilities of managing complex aspects of patient care. These work environment stressors can cause the nurse to lose compassion and the ability to feel for patients (Kelly & Lefton, 2017). While eustress, or good stress, can be motivating, other stressors can have deleterious effects. These stressors, if not managed, could cause the nurse to lose compassion and the ability to care for patients (Kelly & Lefton, 2017).

Suffering is a part of the human condition and the nurse's experience. Nurses experiencing compassion fatigue may internalize pain and suffering from their relationships with their patients (Todaro-Franceschi, 2013). Nurses experiencing CF or burnout can place themselves and their patients at risk (Magtibay et al., 2017; Todaro-Franceschi, 2013).

Frequently, CF and burnout are viewed as the same, although they are quite different (Sorenson, Bolick, Wright, & Hamilton, 2017). Burnout is an accumulation of stress related to work environment whereas CF is depletion of compassion resulting from repeated exposure to suffering and/or trauma. Further research identifying effective interventions for burnout and loss of compassion would benefit nurses, health care professionals and other caregivers. Development of coping strategies that address work and lifestyle to promote rest, relaxation, social support, and exercise can lead to prevention of both burnout and CF (Clifford, 2014; Hinderer et al., 2014; Whitebird et al., 2013). Self-awareness is important for the nurse to recognize CF and burnout and to assist the nurse in identifying resources and support systems (Lachman, 2016).

Nursing scholars have explored multiple methods of coping with workplace stressors to maintain CS and reduce the risk for compassion fatigue. Mind-body exercises such as Tai Chi and yoga (Raingruber & Robinson, 2007), support groups (Medland, Howard-Ruben, & Whitaker, 2004), biofeedback-assisted techniques (Cutshall et al., 2011), and meditation (Bonamer & Aquino-Russel, 2019; Hevezi, 2015) are reported to increase or maintain CS levels and in some cases, lower the risk for compassion fatigue. However, other than meditation, these interventions do not take place on the unit at the time the stressors occur and stress relief is needed. While these programs show some improvement in CS, they also require time commitment outside of work, personal or institutional costs for participation are likely, and trained leaders are needed to provide the intervention.

Purpose

Nurses face a variety of stressors that can result in decreased levels of CS. The purpose of this study is to investigate the efficacy of an interactive social assist robot with artificial intelligence (PARO) to decrease work environment stressors and increase compassion levels of acute care nurses in an inpatient setting.

Introduction of Articles

The manuscripts in this portfolio examine compassion fatigue using a synthesis of current literature and a concept analysis. A state of the science paper identifies, reviews, synthesizes, and analyzes research regarding an issue that is of interest to nurses. The purpose of the first manuscript is to review current literature regarding compassion fatigue and identify influencers of the concept. This manuscript explores existing evidence, gaps in the literature, and implications for the nursing profession. The manuscript in Chapter 2 was published in the 2017 March/April edition of the MEDSURG Nursing Journal.

The manuscript in Chapter 3 is a comparative analysis to determine the distinction between compassion fatigue and burnout to enhance a deeper and clearer understanding of the concepts. Conducting a concept analysis is an effective method to identify the defining attributes of a concept to clearly recognize and explain the term (Walker & Avant, 2019). Using the Walker and Avant (2019) method of concept analysis, the concepts were selected, purpose determined, uses identified, defining attributes established, antecedents and consequences named, and empirical referents defined. Each concept also had a model, borderline, related, and

contrary case developed. This manuscript set for publication in the November/December edition of MEDSURG Nursing Journal in 2019. This comparative concept analysis gave insight into the differences between burnout and CF. Burnout builds over time and is influenced by the work environment, while CF occurs quickly and is due to relationships that are formed with patients. Burnout can result in CF when a breaking point is reached, but CF can also be caused by extended exposure to patient suffering.

Chapter 2

When Compassion is Lost

Abstract

Compassion and caring are foundational to the practice of nursing (American Nurses Association [ANA], 2010). The profession's *Code of Ethics* emphasized the centrality of caring and compassion for patients, colleagues, and self (ANA, 2015). Caring is an integral part of the nurse's work. According to Duffy (2013), the caring nurse as a person relates to the patient as a person. Caring involves forming relationships through supportive, nurturing, and assistive acts for another individual, and promotes the advancement of the nurse, patient, and health system (Duffy, 2013; Todaro-Franceschi, 2013). Todaro-Franceschi (2013) further noted compassion is not just the feeling of wanting to help others, but the experience of feeling with others. According to Watson's Theory of Human Caring (2007), the goal of nursing is to help patients improve body, mind, and spirit to result in self-knowledge and self-healing through compassionate caring. Nurses can gain satisfaction from the ability to provide compassionate care to their patients. However, the connection between nurse and patient can place the nurse at risk for compassion fatigue. When nurses are no longer able to experience feeling or compassion for others, the result is compassion fatigue (Todaro-Franceschi, 2013).

Background

Compassion fatigue involves desensitization toward patients and subsequent loss of a nurse's ability to nurture or care adequately for patients (Hinderer et al., 2014). Joinson (1992) introduced the concept of compassion fatigue in 1992 while investigating *burnout*, and Figley (1995) adopted the term as an alternative to *secondary traumatic stress disorder*. Although similar in some characteristics, compassion fatigue, secondary traumatic stress, and burnout should be distinguished from each other.

Burnout results from feelings of frustration and powerlessness that gradually increase in the nurse and can lead to compassion fatigue (El-bar, Levy, Wald, & Biderman, 2013.). While compassion fatigue is correlated closely to burnout, the symptoms are different (Todaro-Francheschi, 2013). Secondary traumatic stress (similar to posttraumatic stress disorder) results from witnessing a patient's traumatic stress and feeling empathy with the patient (Hinderer et al., 2014). Compassion fatigue, which can be viewed as the culmination of burnout or secondary traumatic stress, can occur in the nurse as a result of patient death, trauma, or unexpected outcome (Todaro-Franceschi, 2013).

Compassion fatigue

Compassion fatigue is reported to have a sudden onset often triggered by nurses' inability to separate feelings of stress and anxiety that come from caring for patients who have experienced traumatic events (Thompson, 2013). Additionally, compassion fatigue may be caused by prolonged, continuous, intense contact with patients leading to exhaustion of nurses'

resources for empathy and compassion (Coetzee & Klopper, 2010; Mazzotta, 2015). Compassion fatigue is evidenced by emotional, physical, social, and spiritual exhaustion that lead to the inability to care or feel for others (Slocum-Gori, Hemsworth, Chan, Carson, & Kazanjian, 2011; Stewart, 2009). Persons experiencing compassion fatigue may exhibit a state of chronic worry as well as depression, moral distress, and stress-related illnesses (Sanso et al., 2015; Van Mol et al., 2015) (see Table 1.1). Nurses with compassion fatigue may demonstrate anxiety at work and home, errors in judgment, and difficulty sleeping as symptoms of stress. In addition, trauma and hospice nurses in two qualitative studies reported nightmares (Berg, Harshbarger, Ahlers-Schmidt, & Lippoldt, 2016; Melville, 2012). Caring and compassion, which provide nurses with satisfaction and fulfillment in patient care, can contribute to the exhaustion of those emotions and lead to compassion fatigue.

Environmental influence

Multiple researchers have identified various influencers of compassion fatigue and compassion satisfaction (see Figure 1) (Clifford, 2014; Gabrial, Erickson, Moran, Diefendorff, & Bromley, 2013; Hinderer et al., 2014; Kelly, Runge, & Spencer, 2015; Khamisa & Oldenburg, 2013; Kovjanic, Schuh, & Jonus, 2013; Saber, 2014; Sacco, Ciurzynski, Harvey, & Ingersoll, 2015; Syrek, Apostel, & Antoni, 2013; Whitebird, Asche, Thompson, Rossom, & Heinrich, 2013). Poor nurse staffing, unhealthy work environments, high workloads, and the increasing complexity of health care can decrease nurse satisfaction and lead to development of compassion fatigue (Aiken, Sloan, Bruyneel, Van den Heede, & Sermeus, 2013). Stress that continues

without social or spiritual intervention can lead to adverse psychological effects and ultimately compassion fatigue (Whitebird et al., 2013).

Table 1.1

Signs of Compassion Fatigue

Study	Sample	Emotional effects	Physical effects	Spiritual effects
Hegney et al., 2013	132 inpatient/ emergency units	Stress, anxiety		
Khamisa et al., 2013	63 studies	Stress, anxiety, emotional exhaustion, depersonalization. Depression	Headaches, loss of sleep	Moral distress, decreased spiritual well being
Adriaenssens et al., 2015	17 studies	Depression, desensitization		
Hinderer et al., 2014	128 nurses in multiple inpatient units	Stress		
Rushton et al., 2015	114 nurses in pediatric, oncology, neonatal critical care, critical care settings	Stress, emotional exhaustion, depersonalization		Moral distress, decreased spiritual well being
Berg et al., 2016	12 Focus group of trauma nurses	Stress, anxiety, nightmares	Loss of sleep	Errors in judgment

Environments that promote compassion satisfaction decrease the development of compassion fatigue. According to Clifford (2014), intervention after occurrence of compassion

fatigue is not enough; healthy work environments are needed to prevent its development. Assistance with coping strategies to promote rest, relaxation, social support, and exercise is needed to prevent compassion fatigue (Clifford, 2014; Hinderer et al., 2014; Whitebird et al., 2013). Leaders' negative behaviors can contribute to psychosocial conditions and stress in the work environment (Syrek et al., 2013). In contrast, transformational leadership behaviors can promote healthy work environments and can prevent compassion fatigue (e.g., idealized influence [to gain trust through a clear vision], inspirational motivation [to develop professionally], intellectual stimulation [through support of innovation], individualized consideration [by attending to and meeting needs of followers]) (Kovjanic et al., 2013).

Sources: Clifford, 2014; Gabrial et al., 2013; Hinderer et al., 2014; Kelly et al., 2015; Khamisa & Oldenburg, 2013; Kovjanic et al., 2013; Saber, 2014; Sacco et al., 2015; Syrek et al., 2013; Whitebird et al., 2013

Figure 1.1: Environmental Influences on Compassion Satisfaction and Compassion Fatigue

Work environments with strong leadership (Sacco et al., 2015), meaningful recognition (Kelly et al., 2015), and nurse engagement (Gabrial et al., 2013; Khamisa & Oldenburg, 2013; Saber, 2014) have high levels of compassion satisfaction and lower levels of compassion fatigue. In addition, nurses with higher levels of education have been found to have the greatest risk and highest levels of compassion fatigue (Kelly et al., 2015).

Work Settings and Compassion Fatigue

Compassion fatigue has been explored in a variety of settings, but little has been reported on medical surgical settings. Sung, Seo, and Kim (2012) found nurses in Korea working in ICU, hospice, emergency, and general medical wards had very high levels of compassion fatigue on the Professional Quality of Life 5 instrument (ProQOL 5), especially young nurses with 3 or less years of experience. Authors also found the high levels of compassion fatigue to be correlated (r=0.55, $p \leq 0.001$) with intent to leave, but they did not report a significant difference between types of work settings.

In a qualitative study of ICU nurses, their self-care, ability to modify responses based on situations, social support in and out of work, and view of nursing care influenced the level of compassion fatigue (Mealer, Jones, & Moss, 2012). Additional studies have used medical-surgical work settings, but they did not identify differences in levels of compassion fatigue by work setting (Bao & Taliaferro, 2015, Kelly et al., 2015). However, Smart and colleagues (2014) reported nurses working in critical care units had lower burnout and compassion fatigue scores on the ProQOL 5 than nurses working in medical-surgical units (t=2.23, p=0.31), suggesting the

need for further exploration between work settings.

Prevention

Preventing compassion fatigue is key to maintaining a balance of caring and compassion in nursing practice. Again, a gap exists in the literature regarding prevention strategies in the medical-surgical setting. Kelly and colleagues (2015) reported nurses in all inpatient settings who have received meaningful recognition report high job satisfaction and lower compassion fatigue. Resiliency programs designed to provide education about compassion fatigue and promote self-coping skills in nurses working in trauma and oncology have been successful in decreasing the risk of developing compassion fatigue (Clifford, 2014; Potter et al., 2013). In their exploration of unresolved psychological stress, burnout, and compassion fatigue in hemodialysis nurses, Lee and King (2014) implemented education on stressful work environments that was followed by a decreased mean score of emotional exhaustion, an influence on developing compassion fatigue. While these strategies could be generalized to medical-surgical nurses, more research needs to be done to identify specific prevention strategies for the medical-surgical setting.

Implications for Nursing Practice

Interventions to support healthy work environments and development of nurses' self-coping skills may help maintain compassion and caring as well as promote well-being. The price for nurses' dissatisfaction and leaving can be high for healthcare institutions (Saber, 2014). Strategies to support nurses' self-care and self-compassion, and decrease stress include

autonomous practice, training on self-coping skills, transformational leadership, teamwork, and peer support (Adriaenssens, De Gucht, & Maes, 2015). Continued research on the development of compassion fatigue and efficacy of sustainable strategies for improving compassion satisfaction is recommended to provide healthcare leaders with the knowledge to prevent or intervene with compassion fatigue.

Conclusion

Nurses experiencing compassion fatigue can place themselves and their patients at risk (Bao & Taliaferro, 2015). Further research is needed to identify relationships among work unit, job satisfaction, compassion fatigue, and nurses' general health. While all nurses can be at risk for compassion fatigue, little is known about its existence in medical-surgical settings and potential strategies to decrease the risk. Understanding individual nurses and their environments can lead to development of support programs and adaptation of the work environment to prevent compassion fatigue.

References

Adriaenssens, J., De Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies, 52,* 649–661.

Aiken, L.H., Sloan, D.M., Bruyneel, L., Van den Heede, K., & Sermeus, W. (2013). Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. *International Journal of Nursing Studies, 50*(2), 143-153. doi: 10.1016/j.jinurtu.2012.11.009

American Nurses Association (ANA). (2010). Nursing: Scope and standards of practice. Silver Springs, MD: Author.

American Nurses Association (ANA). (2015). Code of ethics for nurses with interpretive statements. Retrieved from nursingworld.org/MainMenuCategories/EthicsStandards/CodeofEthicsforNurses.

Bao, S., & Taliaferro, D. (2015). Compassion fatigue and psychological capital in nurses working in acute care settings. *International Journal of Human Caring, 19*(2), 35-40.

Berg, G.M., Harshbarger, J.L., Ahlers-Schmidt, C.R., & Lippoldt, D. (2012). Exposing compassion fatigue and burnout syndrome in a trauma team: A qualitative study. *Journal of Trauma Nursing, 16*(31), 3-10.

Clifford, K. (2014). Who cares for the carers? Literature review of compassion fatigue and burnout in military health professionals. *Journal of Military and Veterans' Health, 22*(3), 53-63.

Coetzee, S.K., & Klopper, H.C. (2010). Compassion fatigue within nursing practice: A concept analysis. *Nursing and Health Sciences, 12,* 235-243. doi: 10.1111/j.1442-2018.2010.00526.x

Duffy, J.R. (2013). *Quality caring in nursing and health systems: Implications for clinicians, educators, and leaders* (2nd ed.). New York, NY: Springer Publishing Company.

El-bar, N., Levy, A., Wald, H.S., & Biderman, A. (2013) Compassion fatigue, burnout and compassion satisfaction among family physicians in the Negev area-A cross-sectional study. *Israel Journal of Health Policy Research, 2*(1), 31-39.

Figley, C.R. (1995). Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized. New York, NY: Brunner-Mazel.

Gabriel, A.S., Erickson, R.J., Moran, C.M., Diefendorff, J.M., & Bromley, G.E. (2013). A multilevel analysis of the effects of the practice environment scale of the nursing work index on nurse outcomes. *Research in Nursing & Health, 36*, 567-581. doi: 10.1002/nur.21562

Hegney, D.G., Craigie, M., Hemsworth, D., Osseiran-Moisson, R., Aoun, S., Francis, K., & Drury, V. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression and

stress in registered nurses in Australia: Study 1 results. *Journal of Nursing Management, 22*, 506-518. doi: 10.1111/jonm.12160

Hinderer, K.A., VonRueden, K.T., Friedmann, E., McQuillan, K.A., Gilmore, R. Kramer, B., & Murray, M. (2014). Burnout, compassion fatigue, compassion satisfaction, and secondary traumatic stress in trauma nurses. *Journal of Trauma Nursing, 21*(4), 160-169. doi: 10.1097/JTN.0000000000000055

Joinson, C. (1992). Coping with compassion fatigue. *Nursing*, *22*(4), 116-121.

Kelly, L., Runge, J., & Spencer, C. (2015). Predictors of compassion fatigue and compassion satisfaction in acute care nurses. *Journal of Nursing Scholarship, 47*(6), 522-528. doi: 10.1111/jnu.12162

Khamisa, N., Peltzer, K., & Oldenburg, B. (2013). Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review. *International Journal of Environmental Research and Public Health*, 10, 2214-2240. doi: 10.3390/ijerph10062214

Kovjanic, S., Schuh, S., & Jonas, K. (2013). Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology, 86*, 543-555. doi: 10.1111/joop.12022

Lee, V.L., & King, A.H. (2014). Exploring death anxiety and burnout among staff members who work in outpatient hemodialysis. *Nephrology Nursing Journal, 41*(5), 479-518.

Mazzotta, C.P. (2015). Paying attention to compassion fatigue in emergency nurses. *Journal of Clinical Nursing, 115,* 454-479.

Mealer, M., Jones, J., & Moss, M. (2012). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine, 38*(9), 1445-1451. doi: 10.1007/s00134-012-2600-6

Melville, C. (2012). Professional compassion fatigue: What is the true cost of nurses caring for the dying? *International Journal of Palliative Nursing, 18*(22), 606-611.

Potter, P., Deschields, T. Berger, J.A., Clarke M., Olsen, S., & Ling, C. (2013). Evaluation of a compassion fatigue resiliency program for oncology nurses. *Oncology Nursing Forum, (40)*2, 180-187.

Rushton, C.H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high intensity settings. *American Journal of Critical Care, 24*(5), 412-420. doi: 10.4037/ajcc2015291

Saber, D.A. (2014). Frontline registered nurse job satisfaction and predictors over three decades: A meta-analysis from 1980 to 2009. *Nursing Outlook, 62*, 402-414. doi: 10.1016/j.outlook.2014.05.004

Sacco, T.L., Ciurzynski, S.M., Harvey, M.E., & Ingersoll, G.L. (2015). Compassion satisfaction and compassion fatigue among critical care nurses. *Critical Care Nurse, 35*(4), 32-42.

Sanso, N., Galiana, L., Oliver, A., Pascual, A., Sinclair, S., & Benito, E. (2015). Palliative care professionals' inner life: Exploring the relationships among awareness, self-care, and

compassion satisfaction and fatigue, burnout, and coping with death. *Journal of Pan and Symptom Management, 50*(2), 200-207. doi: 10.1016/j.painsymman.2015.02.013

Slocum-Gori, S., Hemsworth, D., Chan, W.W., & Carson, A. (2011). Understanding compassion satisfaction, compassion fatigue, and burnout: A survey of the hospice palliative care workforce. *Palliative Medicine, 27*(2), 172-178. doi: 10.1177/0269216311431311

Smart, D., English, A., James, J., Wilson, M., Daratha, K.B., Childers, B., & Magera, C. (2014). Compassion fatigue and satisfaction: A cross-sectional survey among US healthcare workers. *Nursing and Health Sciences, 16,* 3-10. doi: 10.1111/nhs.12068

Stewart, D.W. (2009). Casualties of war: Compassion fatigue and health care providers. *MEDSURG Nursing, 18*(2), 91-94.

Sung, K., Seo, Y, & Kim, J.H. (2012). Relationships between compassion fatigue, burnout, and turnover intention in Korean hospital nurses. *Journal of Korean Academic Nursing, 42*(7), 1087-1094. doi: 10.4040/jkan.2012.42.7.1087

Syrek, C., Apostel, E., & Antoni, C. (2013) Stress in highly demanding IT jobs: transformational leadership moderates the impact of time pressure on exhaustion and work-life balance. *Journal of Occupational Health Psychology, 18*(3), 252-261. doi: 10.1037/a0033085

Thompson, A. (2013). How Schwartz rounds can be used to combat compassion fatigue. *Nursing Management, 20*(4), 16-20.

Todaro-Franceschi, V. (2013). *Compassion Fatigue and Burnout in Nursing: Enhancing Professional Quality of Life.* New York, NY: Springer.

Van Mol, M.C., Kompanje, E.J., Benoit, D.D., Bakker, J., & Nijkamp, M.D. (2014). The prevalence of compassion fatigue and burnout among healthcare professionals in intensive care units: A systematic review. *PLoS ONE, 10*(8), 1-22. doi: 10.1371/journal.pone.0136955

Watson, J. (2007). *Nursing: Human science and human care. A theory of nursing.* Boston, MA: Jones & Bartlett.

Whitebird, R.R., Asche, S.E., Thompson, G.L., Rossom, R., & Heinrich, R. (2013). Stress, burnout, compassion fatigue, and mental health in hospice workers in Minnesota. *Journal of Palliative Medicine. 16*, 1534-1539. doi: 10.1089/jpm.2013.0202

Chapter 3

Burnout or Compassion Fatigue: A Comparison of Concepts

Abstract

Compassion fatigue and burnout affect nurses in multiple areas of practice. The prevalence of both concepts is growing and compounding the problem is the incongruency of the definitions of the concepts. The Walker and Avant method of concept analysis was used to compare burnout and compassion fatigue. This comparison of concepts contributes toward clarity of differentiation between burnout and compassion fatigue in order to properly address prevention and intervention.

Burnout or Compassion Fatigue in Nurses: A Comparison of Concepts

Burnout and compassion fatigue (CF) are prevalent across healthcare professions, but particularly within nursing. Burnout and CF are detrimental to the professional quality of life (PQoL) of nurses (Magtibay, Chesak, Coughlin, & Sood, 2017) contributing to nearly 20% of nurses leaving a position in the first year and many leaving the nursing profession (Kelly & Todd, 2017). The definitions of burnout and CF are inconsistent; subsequently, the relationship between the two is unclear (Elkonin & Van de Vyver, 2011; Sabo, 2011). Healthcare organizations and the professional nursing workforce are weakened when nurses experience CF or burnout (Kelly & Todd, 2017). Clear understanding of each concept is needed to prevent development of and to address interventions for burnout or CF. The aim of this concept analysis is to compare CF and burnout using the Walker and Avant method (2019).

Background

Burnout was first used by American psychologist, Dr. Herbert Freudenberger (1974) to describe what occurs following exposure to constant occupational stress over time. The term compassion fatigue was first used to describe nurses who had disconnected from or had become desensitized to patients and families (Joinson, 2002). While relationships between the two are unclear, burnout has been identified as a concept that is related to CF (Jenkins & Warren, 2012), as an antecedent (Klein et al., 2017), or a consequence (Kelly & Todd, 2017).

Nurses can draw great satisfaction from patient care resulting in a positive PQoL. Regrettably, the negative aspects of providing care, burnout or CF, exist and are detrimental to the PQoL (De La Rosa, Webb-Murphy, Fesperman, & Johnston, 2018). Compassion fatigue was found to be found associated with a nurse's intent to leave, job satisfaction (Kelly, Runge, & Spencer, 2015), poor patient outcomes, and poor quality of life for nurses (Adriaenssens, Gucht,

& Maes, 2015; Bao & Taliaferro, 2015). Nurses experiencing CF and burnout cannot provide the level of care needed to satisfy patients (Maslach, Jackson, & Leiter, 2012).

The concepts of CF and burnout lack clear definitions or boundaries and are viewed differently throughout the literature. Are they the same, CF and burnout, does one exist without the other, or are they two different but connected concepts? This concept analysis will compare burnout and CF to determine to what degree they are similar and different from each other, and whether they can be used interchangeably.

Concept Analysis

Concepts encompass unique attributes that allow them to be the foundation of theory construction (Walker & Avant, 2019). Conducting a concept analysis assists in the identification of the concepts defining attributes to clearly recognize and explain the word (Walker & Avant, 2019). Comparative concept analysis of burnout and CF was selected (step 1) with an aim of clarifying the differences of the two concepts (step 2) (Walker & Avant, 2019). Completing a comparative concept analysis for CF and burnout allows for distinction between these related concepts along with identification of concept uniqueness (Walker & Avant, 2019). Walker and Avant's (2019) concept analysis procedure uses eight steps (Table 2.1). While these steps appear to be sequential, the process to analyze concepts is fluid and frequently requires modifying previous steps.

Table 2.1

Walker and Avant's Eight Steps of Concept Analysis	
1.	Select a Concept
2.	Determine the aims or purposes of analysis
3.	Identify all uses of the concept that you can discover
4.	Determine the defining attributes
5.	Identify a model case
6.	Identify borderline, related, contrary, invented, and illegitimate cases
7.	Identify antecedents and consequences
8.	Define empirical referents

Identification of Uses

For a concept to be analyzed, the definition or structure along with the uses or functions must be clearly identified (Walker & Avant, 2019). According to Walker and Avant (2009), clear identification of the structure and function of the concept provides an unmistakable understanding of the concept when it is used. Differentiating uses provides valuable information that assists the selection of the defining attributes and provides evidence to support the analysis (Walker & Avant, 2019).

Joinson (1992) uses CF to portray the cost of caring, while Figley (1995) adopted the term CF to describe clients experiencing secondary traumatic stress (STS). Figley determined the clients experienced more complex issues than solely secondary exposure to traumatic events, therefore, a more complex concept was needed (Coetzee & Klopper, 2010). Figley specified CF as "a state of exhaustion and disfunction…as a result of prolonged exposure to compassion stress" (Figley, 2015, p. 253). According to Coetzee and Klopper (2010), CF is the depletion of

compassionate energy to the point there are no remaining restorative processes. For the nursing profession, CF is emotional, physical, social, and spiritual exhaustion leading to desensitization towards patients and the loss of a nurse's ability to nurture or adequately care for self or patients (Hinderer, 2014).

In comparison, burnout is defined as the loss of control of how a job is done, working toward goals that do not make sense, and the lack of social support (Psychology Today, n.d.). Building on Freudenberger's definition presented earlier, social psychologists Maslach and Jackson (1981) conceptualized burnout by three dimensions: emotional exhaustion, depersonalization, and a sense of low personal accomplishment. Later, Platt and Olsen (1990) affirmed burnout to be a "syndrome of emotional exhaustion and cynicism that frequently occurs among individuals who spend considerable time in close encounters with others under conditions of chronic tension and stress" (p.192). Confusion of terms began early, Aycock and Boyle (2009) suggest that CF has replaced the term burnout, Elkonin & Van der Vyver (2011) define burnout as an extreme case of CF, and alternatively, Sabo (2011) proposed burnout was an antecedent of CF.

Functions. While the concept of CF is commonly used in healthcare settings, it affects the PQoL in various helping professions such as counselors, first responders, social workers, ministers, and teachers (Jenkins & Warren, 2012). Nurses are known for being caring and compassionate and according to the American Nurses Association (ANA) nurses protect, promote, and optimize health whenever this is a need for nursing knowledge, compassion, and expertise (American Nurses Association, 2015). When the nurse is unable to provide this compassionate care, CF occurs.

Burnout functions similarly to CF in that it interferes with the nurse's quality of care as well as quality of life and is frequently used to describe the same issues in nurses as CF. Nurses are accountable for the integration of all aspects of patient care, communication and collaboration with other care providers, education of the patient and family, driving health care policy, directing quality improvement, providing a safe environment for patients, while maintaining a compassionate relationship with the patient and families. Burnout occurs with the divergence that exists between the nurse's expectations of what should be accomplished and what can be accomplished; when the requirements and responsibilities are greater than her resources (Paterson, Luthans, & Wonho, 2013). Just as in CF, there is decreased PQoL (Dugani et al., 2018) and decreased quality of patient care (Lewis et al., 2015).

Defining Attributes

Defining attributes, or characteristics of a concept distinguish one concept from another which diminishes ambiguity (Walker & Avant, 2019). Those attributes are "frequently associated with the concept" and "immediately bring the concept to mind" (Walker & Avant, 2019, p. 173) The defining attributes of compassion fatigue and burnout are listed in Table 2. Studies have shown a significant positive correlation between CF and burnout, suggesting an overlap of components of these concepts (vanMol et al., 2015; Whitebird et al., 2013). Nurses experiencing CF or burnout can be angry, frustrated, depressed, and anxious. The key differences in the concepts are noted in the defining attributes.

CF: defining attributes. The characteristics of CF apply to anyone in the community at large, not just nurses, however the focus of this article is nurses. The defining attributes of CF include: 1) sudden onset, 2) emotional exhaustion, 3) perceived failure, 4) desensitization to patients, 5) apathy, and 6) helplessness (Clifford, 2014). Compassion fatigue can occur in an

instant, resulting in immediate behavior changes and with little warning (Figley, 2015). Caregivers often feel the need to hide their emotions from clients, which can lead to emotional exhaustion (Berg, Harshbarger, Ahlers-Schmidt, & Lippoldt, 2016; Ledoux, 2015). Nurses with CF have reported symptoms of stress manifested through anxiety at work, errors in judgment, difficulty sleeping, and even nightmares which can result in physical and emotional exhaustion (Bert et al., 2016). When a nurse is no longer able to feel compassion for a patient, contentment is replaced with apathy and patient connection is lost (Todaro-Franceschi, 2013). Helplessness results when no coping strategies for stress exist or those strategies have been exhausted (Clifford, 2014). The nurse with CF perceives no one or nothing can help. Providing patient care is emotionally, physically, socially, and spiritually exhausting, which causes desensitization, apathy, and/or depersonalization for others Although the nurse continues to function, there is a sense of unreality during trauma or suffering along with the loss of empathetic ability, the nurse can no longer feel empathy for the patient (Figley, 2015).

Table 2.2 Defining Attributes: Compassion Fatigue & Burnout

Compassion Fatigue	**Burnout**
sudden onset	develops over time
emotional and physical exhaustion	emotional exhaustion
apathy	cynicism
helplessness	hopelessness
desensitization to patients and	
depersonalization	

Burnout: defining attributes. The defining attributes of burnout are uniquely different than CF and include: 1) progressive development, 2) feelings of exhaustion, 2) cynicism, and 4)

hopelessness (Maslach & Leiter, 2005). Unlike the sudden onset of CF, burnout can appear as subtle changes in personality, perspective, values, and behavior (Maslach & Leiter, 2005). Overtime, the imbalance of workplace demands, and available resources build up along with the feeling that reality does not match the ideal (Todaro-Franceschi, 2013). Frequently burnout is referred to as running on empty, the nurse has given all with the feeling there is nothing being accomplished which results in emotional exhaustion (Todaro-Franceschi, 2013). According to Maslach and Leiter (1999), when the workplace does not recognize the continued efforts in the workplace, the result is emotional exhaustion. Moderate to high levels of emotional exhaustion and cynicism due to moral distress have been reported in healthcare providers with burnout (Dugani et al., 2018) Moral distress is the result of the nurse recognizing the responsibility they have to the patient and being unable to fulfill that responsibility due to ineffective communication, lack of teamwork, value conflicts, policies and tasks that go against the nurse's moral compass (Rushton, 2017).

Compassion Fatigue Model Case

According to Walker and Avant (2019), a model case is an example of the concept that demonstrates all the defining attributes. This model case for CF involves an experienced nurse, who worked on the progressive care unit for 12 years. She had the unexpected outcome of the death of a 28-year-old mother of two little girls resulting in abrupt changes in behavior. The nurse was apathetic, desensitized to her patients, and emotionally as well as physically exhausted. She called her patients by room number instead of name, nodded off continually, and began to make errors. This nurse exhibited all defining attributes and was determined to be experiencing CF.

Burnout Model Case

Another nurse was a BSN with 4 years of experience on the Medical Surgical floor, was engaged with her team, and spent as much time teaching and interacting with patients as possible. Due to changes in the work environment, Nurse C began to believe there were more tasks being assigned to nurses with less nurses to do the work. She struggled to provide the high level of care she normally did and began to feel like her work did not make a difference. She became emotionally exhausted and hopeless, she was developing burnout. This nurse demonstrated cynical behavior when she told her teammates she was not going to be available to help with anything extra stating "why bother nothing ever changes".

Compassion Fatigue Borderline Case

A borderline case contains most but not all the defining attributes of the concept and is used to help clarify thinking regarding the concept characteristics (Walker & Avant, 2019). In this borderline case, the nurse was 36, father of 4, and had worked in the Emergency Department for 3 years. He was assigned a patient who was male, 36 and had 3 children. This patient's van was crushed by an 18-wheel truck on the interstate that resulted in multiple broken bones for the patient, a severe head injury for one of his children, and the death of another. The next shifts following this event, he frequently forgot to administer medication or treatment as assigned, was often found dozing in the breakroom, ignored call lights, and avoided families and coworkers. He still viewed his patients as individuals and knew he could make a difference, but he just couldn't focus and realized he needed to get help. This nurse had a secondary exposure to trauma which resulted in a sudden change in behavior. He demonstrated emotional and physical

exhaustion, and apathy, but his case is borderline because he did not experience depersonalization of patients or feel helpless.

Burnout Borderline Case

In a borderline burnout case, one nurse experienced work stress that gradual built and resulted in emotional exhaustion. The acuity of his patients increased while the staffing matrix did not cover the patient need. He did not believe he was making a difference because he never had time to provide the type of care he is desired. This nurse is on the verge of burnout due to emotional exhaustion, but he had not yet become cynical or hopeless.

Related Cases: Compassion Fatigue and Burnout

Related cases help to recognize how the concept fits with other concepts that are similar (Walker & Avant, 2019). Walker and Avant go on to discuss that related cases don't contain all the defining attributes, but they are connected to the main concept in some way. Burnout and CF are related concepts with some of the same antecedents and consequences, but they differ in defining attributes. Secondary Traumatic Stress (STS) is also a concept related to CF. In this related case the nurse worked in the ED where she cared for trauma patients, victims of violence, and for the third time in one week was assigned a rape victim to care for. She did not speak to the patient while she collected specimens and treated the wounds. Once she left the room she began to sob and told the charge nurse she couldn't do this anymore. While this was a sudden onset of behaviors, it also was proceeded by a build-up of stress. This nurse experienced hopelessness like burnout but depersonalized the patient like CF. This could be burnout that became CF or could be STS.

CF Contrary Case

Contrary cases are helpful "because it is often easier to say what something is not than what it is" (Walker & Avant, 2019 p 177). Contrary cases are examples that are nothing like the concept and do not demonstrate any of the defining attributes. In a CF contrary case, the nurse provided compassionate care to patients and left her shift knowing that her work had an impact on her patients. Even though she worked in the ED and experienced traumatic events, she was resilient and found an outlet for the frustration, anger, or anxiety she experiences. This nurse knew there was always help for any situation and was satisfied with her career.

Burnout Contrary Case

In the burnout contrary case, the nurse had multiple coping strategies to relieve stress so that it does not accumulate. He believed the administrators were open to hear from the staff and he would share his ideas for process improvement when needed. Even though there is a hiring freeze, he and his coworkers created innovative solutions and met the staffing needs. This nurse did not burnout because he continued to demonstrate hope, was emotionally strong, and had a positive outlook for the future of nursing.

Antecedents and Consequences

Walker and Avant (2019) discuss the importance of antecedents and consequences in further identification of the defining attributes. "Antecedents are those events that must occur or be in place prior to the occurrence of the concept" (Walker & Avant, 2019, p. 178). Consequences are the outcomes that occur as the result of the concept (Walker & Avant, 2019).

Antecedents: CF and burnout

There are several triggers for CF, but just a few true antecedents. The antecedents currently are:

1. Secondary exposure to traumatic event or secondary traumatic stress
2. Perceived relationship between a person and the perceived victim
3. Perceived futility

Experiencing trauma first hand, such as first responders or experiencing trauma vicariously, such as nurses, social workers, and family caregivers is an antecedent of CF (Berg, et al., 2016). Exposure to traumatic events such as death, fatal diagnoses, or abuse can trigger CF. Trauma can take many shapes and is unique to each person. Second, to experience CF there must first be a perception of a relationship between the caregiver and the patient or client. The person experiencing CF must have the ability to perceive and comprehend what the perceived victim or client is feeling (Clifford, 2014). Lastly, there must be a perception of futility, that no action will change the outcome. This perception of futility is almost debilitating, especially to a nurse (Clifford, 2014).

Job related stressors lead to burnout (Aronsson et al., 2017). The following job stressors are the current antecedents of burnout:

1. Goal-oriented mindset
2. Excessive workload
3. Negative work environment or occupational factors

Those experiencing burnout tend to be focused on achievement, take pride in their work, and frequently have some level of perfectionism (van Mol et al., 2015). The personal factors included in the goal-oriented mindset can lead to self-pressure for perfectionism, frustration with

professional growth, and decreasing teamwork as withdrawal begins. The next antecedent is excessive workload which plays a sizeable role in the development of burnout (Baier, Roth, Felgner, & Henschke, 2018). Workload can include high numbers of patients/clients, tight deadlines or time limitations, high turnover of patients/clients, and or high caseloads. As the final antecedent to burnout, work environment includes changes in team dynamics or leadership that sway the work environment in a negative direction (van Mol et al., 2015). Work environment also includes, loss of autonomy, an imbalance in the resources or recognition, and the amount of work during the shift compile and lead to burnout (Baier et al., 2018).

Consequences: CF and burnout

Several consequences of CF occur in nursing. Psychological effects of CF result in isolation, depersonalization, apathy, and emotional, physical, and spiritual exhaustion (Fetter, 2012). Physical consequences of CF include decline in the immune system, forgetfulness, headaches, hypertension, weight gain, and stomachaches (Fetter, 2012). Compassion fatigue also results in decreased quality of patient care, increased risks to patient safety, and decreased professional and personal quality of life for the nurse (Adriaenssens et al., 2015; Bao & Taliaferro, 2015).

Like CF, burnout has several devastating consequences. Nurses experiencing burnout experience absenteeism, job dissatisfaction, and lack of confidence in performance (van Mol et al., 2015). Burnout negatively impacts the physical and emotional health of the worker, decrease patient/client satisfaction, and influences patient outcomes and mortality (Clifford, 2014). Employees that experience burnout are more likely to move away or isolate from coworkers (Baier et al., 2018).

Empirical Referents

Delineating the empirical referents is the final step of the Walker and Avant method of concept analysis. “Empirical referents relate directly to the defining attributes and not the entire concept itself” (Walker & Avant, 2019, p.180). Compassion fatigue is measured by observing behaviors of desensitization, depersonalization, and apathy (Todaro-Franceschi, 2013). Along with these behaviors, patient complaints, clinical errors, and absenteeism are measures of how much of self the nurse is giving. Continual exposure to suffering or trauma can be measured by the nurse’s assignments and the patient census.

Observations of behaviors such as frustration, anger, and cynicism measure burnout (Aronsson et al., 2017). According to Maslach and Jackson (1981) other behaviors include emotional exhaustion, depersonalization, and a sense of low personal accomplishment. Still more measures include low patient satisfaction, high work-loads, and levels of engagement in projects (Aronsson et al., 2017).

Significance to Nursing

Nurses experiencing CF or burnout can place themselves and their patients at risk (Magtibay et al., 2017). While the concepts of CF and burnout have often been used interchangeably, this analysis provides support that they are, in fact, different concepts. Burnout is an accumulation of stress related to work environment whereas CF is depletion of compassion resulting from exposure to suffering and/or trauma. The consequences discussed demonstrate the harm these concepts can have on nurses.

Further research identifying effective interventions for burnout and loss of compassion would benefit not just nursing but all caregivers. Development of coping strategies that address work and lifestyle to promote rest, relaxation, social support, and exercise can lead to prevention

of both burnout and CF (Clifford, 2014; Hinderer et al., 2014; Whitebird et al., 2013). Self-awareness is important for the nurse to recognize CF and burnout as well as help the nurse to identify resources and support systems (Lachman, 2016). Recognition that nursing is facing two different concepts is important for prevention and intervention. Attention to the antecedents and defining attributes of these separate concepts can assist in developing interventions and strengthening coping skills that could help prevent burnout and CF and possibly be the answer to a healthy nursing workforce.

References

Adriaenssens, J., Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies, 52,* 649–661.

American Nurses Association. (2015). *Nursing: Scope and standards of practice.* Silver Springs, MD: Nusingworld.org

Aronsson, G., Theorell, T., Grape, T., Hammarström, A., Hogstedt,C., Marteinsdottir, I., … & Hall, C. (2017). A systematic review including meta-analysis of work environment and burnout symptoms. *BMC Public Health 17*:264 doi 10.1186/s12889-017-4153-7

Aycock, N, & Boyle, D. (2009). Interventions to manage compassion fatigue in oncology nursing. *Clinical Journal of Oncology Nursing 13*: 183–191. doi: 10.1188/09.CJON.183-191

Baier, N., Roth, K., Felgner, S., & Henschke, C. (2018). Burnout and safety outcomes-a cross-sectional nationwide survey of EMS-workers in Germany. *BMC Emergency Medicine* 18(1), 24. doi: 10.1186/s12873-018-0177-2

Bao, S., & Taliaferro, D. (2015). Compassion fatigue and psychological capital of nurses working in acute care settings. *International Journal for Human Caring, 19*(2), 35-40.

Berg, G., Harshbarger, J., Ahlers-Schmidt, C., & Lippoldt, D. (2016). Exposing compassion fatigue and burnout syndrome in a trauma team: A qualitative study. *Journal of Trauma Nursing*, 23(1), 3-10. doi: 10.1097//JTN.0000000000000172

Boyle, D. A. (2015). Compassion fatigue: The cost of caring. *Nursing, 45*(7), 48-51. doi: 10.1097/01.NURSE.0000461857.48809.a1

Burnout. (n.d.) *Psychology Today*. Retrieved from https://www.psychologytoday.com/us/basics/burnout

Clifford, K. (2014). Who cares for the carers? Literature review of compassion fatigue and burnout in military health professionals. *Journal of Military and Veterans Health, 22*(3), 53-63.

Coetzee, S. K., & Klopper, H.C. (2014). Compassion fatigue within nursing practice: A concept analysis. *Nursing and Health Sciences, 12,* 235-243. doi:10.1111/j.1442-2018.2010.00526.x

De La Rosa, G., Webb-Murphy, J.A., Fresperman, S.F., & Johnston, S.L.(2018) Professional quality of life normative benchmarks. *Psychological Trauma: Theory Research, Practice, and policy, 10*(2), 225-228. doi.org/10.1037/tra0000263

Dugani, S., Afari, H., Hirschhorn, L.R., Ratcliff, H., Veillard, J., Martin, G., … Bitton, A. (2018). Prevalence and factors associated with burnout among frontline primary health care providers in low- and middle-income countries: A systematic review. *Gates Open Research, 2*(4). doi: 10.12688/gatesopenres.12779.3

Elkonin, D, & Van der Vyver, L., (2011). Positive and negative emotional responses to work-related trauma of intensive care nurses in private health care facilities. *Journal of Interdisciplinary Health Sciences 16*:1–8.

Fetter, K. (2012). We grieve too: One inpatient oncology unit's interventions for recognizing and combating compassion fatigue. *Clinical Journal of Oncology Nursing, 16*(6), 559-561. doi: 10.1188/12.CJON.559-561

Figley, C. (2017). Compassion fatigue awareness project. Retrieved from compassionfatigue.org

Freudenberger, H.J. (1974). Staff burn-out. *Journal of Social Issues, 30*(1), 159-165.

Hinderer, K.A., VonRueden, K.T., Friedmann, E., McQuillan, K.A., Gilmore, R. Kramer,B., & Murray, M. (2014). Burnout, compassion fatigue, compassion satisfaction, and secondary traumatic stress in trauma nurses. *Journal of Trauma Nursing, 21*(4), 160-169. doi:10.1097/JTN.0000000000000055

Jenkins, B., & Warren, N.A. (2012). Concept analysis: compassion fatigue and effects upon critical care nurses. *Critical Care Nursing Quarterly, 35*(4), 388-395.

Joinson, C. (1992). Coping with compassion fatigue. *Nursing, 22*(4), 116-121.

Kelly, L., Runge, J., & Spencer, C. (2015). Predictors of compassion fatigue and compassion satisfaction in acute care nurses. *Journal of Nursing Scholarship, 47*(6), 522-528, doi: 10.1111/jnu.12162

Kelly, L., & Todd, M., (2017). Compassion fatigue and the healthy work environment. *AACN Advanced Critical Care, 28*(4), 351-358.

Klein, C.J., Riggenbach-Hays, J.J., Sollenberger, L.M., Harney, D.M., & McGarvey, J.S. (2018). Quality of life and compassion satisfaction in clinicians: A pilot intervention study for reducing compassion fatigue. *American Journal of Hospice and Palliative Care, 35*(6), 882-888.

Lachman, V.D. (2016). Compassion fatigue as a threat to ethical practice: identification, person, and workplace prevention/management strategies. MEDSURG Nursing 25(4), 275-279.

Ledoux, K. (2015). Understanding compassion fatigue: understanding compassion. *Journal of Advanced Nursing, 71*(9), 2041-2050. doi:10.111/jan.12686

Loder, V. (2015). How to prevent burnout: 13 signs you are on the edge. Retrieved from: https://www.forbes.com/sites/vanessaloder/2015/01/30/how-to-prevent-burnout-13-signs-youre-on-the-edge.

Magtibay, D., Chesak, S., Coughlin, K., Sood, A. (2017). Decreasing stress and burnout in nurses: Efficacy of blended learning with stress management and resilience training program. *Journal of Nursing Administration, 47*(7/8):391-395.

Maslach, C., & Jackson, S.E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior, 2*, 99-113. doi.org/10.1002/job.4030020205

Maslach, C., Leiter, M. P., & Jackson, S. E. (2012). Making a significant difference with burnout interventions: Researcher and practitioner collaboration. *Journal of Organizational Behavior, 33*, 296-300 doi: 10.1002/job.784

Paterson, T.A., Luthans, F., & Wonho, J. (2013). Thriving at work: Impact of psychological capital and supervisor support. *Journal of Organization Behavior, 35*(3),434-446. doi.org/10.1002/job.1907

Platt, J., & Olsen, J. (1990). Why teachers are leaving special education: Implications for preservice and inservice for educators. *Teacher Education and Special Education, 13*(3-4), 192-196.

Rushton, C.H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high intensity settings. *American Journal of Critical Care, 24*(5), 412-420. doi:org/10.4037/ajcc2015291

Sabo, B. (2011). Reflecting on the concept of compassion fatigue. *Online Journal of Issues in Nursing*, 16: 1.

Todaro-Franceschi, V. (2013). *Compassion Fatigue and Burnout in Nursing: Enhancing PQoL*. New York, NY, Springer.

van Mol, M.C., Kompanje, E.J.O., Benoit, D.D.M., Bakker, J., & Nijkamp, D. (2015). The prevalence of compassion fatigue and burnout among health care professional in intensive care units: A systematic review. *PLoS ONE, 10*(8), 1-22. doi:10.1371/journal.pone.0136955

Walker, L. O., & Avant, K. C. (2019). *Strategies for theory construction in nursing (6th ed.).* New York, NY: Pearson.

Whitebird, R.R., Asche, S.E., Thompson, G.L., Rossom, R., & Heinrich, R. (2013). Stress, burnout, compassion fatigue, and mental health in hospice workers in Minnesota. *Journal of Palliative Medicine (16)*12, 1534-1539. doi:10.1089/jpm.2013.0202

Chapter 4

The Effectiveness of a Robotic Seal on Compassion Satisfaction in Acute Care Nurses: A Mixed Methods Approach

Abstract

Problem: Nurses face a variety of stressors that can result in decreased levels of compassion satisfaction. The purpose of this study was to investigate the efficacy of a computerized interactive social assist robot (PARO) to decrease stressors and increase compassion levels of acute care nurses in an inpatient setting.

Theory: The Professional Quality of Life Model posits that low Compassion Satisfaction, Burnout, and Secondary Traumatic Stress leads to Compassion Fatigue.

Hypotheses: It was hypothesized that interaction with a social assist robot with artificial intelligence will result in decreasing levels of stress therefore increasing levels of compassion satisfaction in nurses working in the inpatient setting.

Design/Methods: This was an explanatory sequential mixed methods study. In the first quantitative phase, data were collected before and after the intervention. The qualitative component occurred during the second phase at which time focus group interview sessions were used to explain the results of phase one.

Analysis: Phase one, quantitative data were analyzed using repeated measures analysis of covariance. Phase two, qualitative data were coded and thematic analysis conducted for focus group transcripts. Data from both the quantitative and qualitative phases were integrated to further explain the results.

Keywords: compassion fatigue, compassion satisfaction, burnout, stress, social assistive robots

The Effectiveness of a Robotic Seal on Compassion Satisfaction in Acute care nurses: A Mixed Methods Approach

The American Nurses Association (ANA) Code of Ethics emphasizes the centrality of caring and compassion for patients, for colleagues, and for self (ANA, 2015, p.1). The first provision in the ANA Code of Ethics states" the nurse practices with compassion and respect for the inherent dignity, worth, and uniqueness of every individual" (ANA, 2015). The expectation is for nurses to treat patients with compassion during their encounters. Todaro-Franceschi (2013) provides definitions of compassion that include: (a) the Latin meaning, which is to co-suffer, (b) Aristotle's conceptualization of compassion as pity, (c) feeling with someone not just feeling for them as a reaction to their suffering, and (d) more recently defined as placing others at the center of your world instead of yourself. Based on Aristotle's definition, the thought processes of compassion must enable the nurse to picture himself or herself in the patient's place (Todaro-Franceschi, 2013). Nursing is more than science; it is founded on the art of compassion. It is possible that becoming a good and prudent nurse is dependent on the ability to feel compassion for others and that compassion is a key element for nurse satisfaction. Feeling compassion for others cultivates the development of nurse-patient relationships and is fundamental to the nurse actualizing their potential (Todaro-Franceschi, 2013). Nurses experience stress during regular encounters with patients who are suffering and/or are in pain as well as facilitating and managing complex aspects of their patients' care. These stressors could cause the nurse to lose compassion and the ability to feel for patients (Kelly & Lefton, 2017). Joinson (1992) first coined the term compassion fatigue while investigating burnout. Compassion fatigue is conceptualized as psychological and physiological responses to prolonged chronic emotional interpersonal

stressors (Lachman, 2016)). The stressors of caring for suffering people can result in compassion fatigue (Portnoy, 2011). The concept of compassion fatigue warrants further exploration because of the influence on the professional quality of life for the nurse.

Problem and Significance

Compassion satisfaction is the pleasure the nurse experiences from being able to provide care (Stamm, 2010) while compassion fatigue is desensitization towards patients and the loss of a nurse's ability to nurture or adequately care for patients (Hinderer et al., 2014). The compassion level of the nurse may be at the satisfaction level, the fatigue level, or anywhere in-between. Nurses participate in processes with patients and families that result in health and healing of the patient, creating oneness between patient and nurse that can keep CS levels high (Todaro-Franceschi, 2013). Work environments that support compassionate caring enhance these connections felt towards patients and co-workers to help discern meaning, purpose and satisfaction (Todaro-Franceschi, 2013). However, nurses work in high stress environments with continued exposure to the pain and suffering of their patients that can result in a prevalence of compassion fatigue (Bao & Taliaferro, 2015). Suffering is a part of the human condition and the nurse's experience. Nurses experiencing compassion fatigue are internalizing pain and suffering from their relationships with their patients and those working in settings where the patients do not return to a previous state of wellness, are at risk for the development of compassion fatigue (Todaro-Franceschi, 2013). Compassion fatigue negatively correlates with positive patient care outcomes, patient safety, and quality of life for the nurse (Adriaenssens, Gucht, & Maes, 2015; Bao & Taliaferro, 2015). A decrease in CS can affect the nurse's ability to provide care for the patient and family.

The professional quality of life model (Appendix A) describes the positive (compassion satisfaction) and negative (compassion fatigue) aspects of doing one's job (Stamm, 2010). Nurses experiencing lower levels of CS or those with compassion fatigue place themselves and their patients at risk. Researchers have explored multiple methods of coping with workplace stressors to maintain CS and reduce the risk for compassion fatigue. Mind-body exercises such as Tai Chi and yoga (Raingruber & Robinson, 2007), support groups (Medland, Howard-Ruben, & Whitaker, 2004), biofeedback-assisted techniques (Cutshall et al., 2011), and meditation (Hevezi, 2015) are reported to increase or maintain CS levels. However, other than meditation, these interventions do not take place on the unit at the time the stressors occur, and the stress relief is needed. While these programs show improvement in CS, they require time commitment outside of work, there are likely personal or institutional costs for participation, and trained leaders are needed to provide the intervention. The purpose of this study was to assess the effectiveness of a social assist robot (SAR) pet therapy in improving CS in nurses working in acute care settings. Compared to the costs of burnout and CF, robotic pet therapy is relatively inexpensive and takes place on the unit during the work shift to decrease stress. Identifying interventions to reduce stressors in nurses during the work shift in the practice environment could increase CS and an emotionally healthy nurse workforce. This study provided quantitative results that were subsequently explained qualitatively.

Review of Literature

Professional quality of life (PQL) as a concept is gaining importance in a variety of settings particularly in healthcare due to its connection with the innate characteristics of workers and their exposure to pain and suffering in the workplace (Stamm, 2010). Professional quality of life (PQL) is a term that refers to the quality of our work lives. Most people spend more time

throughout their adult lives at work than they do anywhere else (Todaro-Franceschi, 2013). The concept of PQL in nursing includes a spectrum reflecting both the negative and positive aspects of caring for patients. The positive aspects help maintain CS while the negative aspects deplete compassion levels resulting in compassion fatigue. Nurses are motivated by a sense of fulfillment and well-being when caring for patients that leads them confidently and enthusiastically toward meeting patient needs (Coetzee & Klopper, 2010). Nurses working as first responders and in acute care settings are at risk for losing this motivation and enthusiasm to meet patient needs, resulting in a higher risk for diminished PQL This review of the literature explored both the positive (CS) and the negative (compassion fatigue) ends of the PQL spectrum.

Compassion Satisfaction

Compassion satisfaction is feeling satisfied with the job of helping others, feeling invigorated by the work, feeling successful, and feeling happy (Stamm, 2010). Phelps, Lloyd, Creamer, and Forbes (2009) reports CS is the positivity that comes from caring for patients. Compassion satisfaction has also been defined as "the sum of all the positive feelings a person derives from helping others" (Sacco, Ciurzynski, Harvey, & Ingersoll, 2015). Work that is meaningful and rewarding (Todaro-Fancheschi, 2013) and work that creates a sense of achievement, inspiration, enjoyment, and persistent motivation (Wagaman, Geiger, Shockley, & Segal, 2015) generates CS.

High levels of CS have been linked to higher self-efficacy (Tremblay & Messervey, 2011), strong support systems (Hinderer et al., 2014), and meaningful recognition (Kelly, Runge, & Spencer, 2015). Ray, Wong, White, and Heaslip (2013) reported a significant positive association ($r = .52$, $p = <.01$) between CS and the area of work which includes: workload, control, reward, community, values, and fairness.

Interventions to increase or maintain CS have been implemented in several studies and are generally stress reduction techniques. In their study using yoga and Tai Chi to support CS, Raingruber and Robinson (2007) reported three themes: feelings of warmth and calm, enhanced problem-solving ability, and increased ability to focus on patient needs. Support groups (Medland, Howard-Ruben, & Whitaker, 2004) and meditation (Hevezi, 2015) were found to decrease levels of burnout and significantly increase CS. Meaningful recognition such as acknowledging behaviors and the impact of actions through public awards or induvial feedback was shown to increase CS significantly in 726 critical care nurses (Kelly & Lefton, 2017). Targeted interventions can improve or maintain CS, which can be a protective function against compassion fatigue (Tremblay & Messervey, 2011).

Compassion Fatigue

Compassion fatigue is a progressive and cumulative process precipitated by prolonged, continuous, and intense contact with patients resulting in the exhaustion of the individual's resources for empathy and compassion (Coetzee & Klopper, 2010; Mazzotta, 2015). Nurses and other healthcare providers working with death and dying, severe trauma, and those with dynamic roles in caregiving can be at risk for developing compassion fatigue (Berg, Harshbarger, Ahlers-Schmidt, & Lippoldt, 2016; Clifford, 2014; Whitebird, Asche, Thompson, Rossom, & Heinrich, 2013). Compassion fatigue can occur as nurses provide care to patients in pain and distress resulting in depression, decreased job satisfaction, and desensitization towards families and patients (Adriaenssens et al., 2015; Hinderer et al., 2014; Senyuva, Kaya, Isik, & Bodur, 2014). The simple act of feeling compassion can trigger compassion fatigue (Emergency Nurses Association [ENA], 2014; Lachman, 2016). Some studies use the concepts of compassion fatigue, burnout (BO), and secondary traumatic stress (STS) interchangeably. Table 1 identifies

the characteristics of the three concepts. Stamm (2010) concludes that BO and STS potentiate compassion fatigue. The concepts BO and STS share signs and symptoms with compassion fatigue and can contribute to its development, but do not have to be precursors. Hegney et al. (2014) reported a significant correlation between compassion fatigue with anxiety (r = 0.56, p = <0.01), stress (r = 0.63, p = <0.01), and depression (r = 0.48, p = <0.01). Whitebird et al. (2013) reported compassion fatigue highly correlated with burnout (r =0.69) and moderately correlated with anxiety (r = 0.52) in nurses and social workers in hospice settings.

Signs of compassion fatigue include a state of chronic worry (Sanso et al., 2015), depression, moral distress, and stress related illnesses (Sanso et al., 2015; van Mol, Kompanje, Benoit, Bakker, & Nijkamp, 2015). It is emotionally, physically, socially, and spiritually exhausting, leading to the inability to care or feel for others (Slocum-Gori, Hemsworth, Chan, Carson, & Kazanjian, 2011; Stewart, 2009). Nurses with compassion fatigue have reported symptoms of stress manifested through anxiety at work and at home, errors in judgment, difficulty sleeping, and nightmares (Bert et. al, 2016; Melville, 2012). Nurses experiencing compassion fatigue are exhausted and cannot provide the level of care that is needed to satisfy patients (McHugh, Kutney-Lee, Cimiotti, Sloan, & Aiken, 2011). The area of hospital practice for nurses has little to no effect on compassion fatigue. Nurses in medical-surgical settings are not frequently included in studies of compassion fatigue or burnout, however in a correlational study of 126 nurses from nine medical surgical units (72.2%), two emergency departments, and two critical care units, the mean compassion fatigue score was 14.64 with an at-risk score of 26.4% (Burtson & Stichler, 2010). Hegney et al. (2014) reported a survey of nurses from critical care units, medical units, outpatient chemotherapy, and emergency department in Australia had 20% demonstrating potential risk for compassion fatigue. Rushton, Batcheller, Schroeder, and

Donohue (2015), conducted a cross-sectional survey of 114 acute care nurses using the Maslach Burnout Inventory reported high levels of emotional exhaustion which can lead to CF; critical care nurses (*n*=56, m= 31.9, SD 10.3), pediatric nurses (*n*= 38, m= 33.0, SD 13.8), and medical surgical nurses (*n*=20, m=31.1, SD=11.3).

Table 4.1

Characteristics: Compassion Fatigue, Burnout, & Secondary Traumatic Stress

Compassion Fatigue	Burnout	Secondary Traumatic Stress
sudden onset	develops over time	can be sudden or develop over time
brought on by stressors	brought on by stressors	brought on by primary/secondary trauma
exhaustion	exhaustion	
frustration	frustration	
anger	anger	anger
depression	depression	depression
anxiety	anxiety	anxiety
desensitization to patients and families		
helplessness		helplessness

Low CS causes nurses to experience an inability to trust, inability for intimacy, unexplained anger, loss of control, and intrusive imagery that leads to lack of sleep and the inability to focus and can ultimately result in compassion fatigue (Sabo, 2011). Kelly et al. (2015) found compassion fatigue was associated with a nurse's intent to leave (r = 3.79, p = < .001) and job satisfaction (r = -4.06, p = <.001). Hinderer et al. (2014) reported compassion fatigue negatively correlated with strong coworker relationships (r = -0.309, p = .001) and positively correlated with working a greater number of hours per shift (r = 0.255, p = .006), resulting in higher compassion fatigue levels when there were weak relationships and long shifts. The collaborative culture, job satisfaction, and transformational leadership in healthy work

environments promote CS and can decrease the development of compassion fatigue. Wentzel and Brysiewicz (2017) conducted a systematic review of interventions for compassion fatigue, searching databases from 1992-2015, which demonstrated the lack of empirical evidence in evaluating successful CF interventions for nurses. In a qualitative study of ICU nurses, the nurse's self-care, ability to modify responses based on situations, social support in and out of work, and the nurse's view of nursing care influenced the level of compassion fatigue (Mealer, Jones, & Moss, 2012). A compassion fatigue resiliency program which included 13 oncology nurses showed a significant decrease in compassion fatigue immediately after the program, at three months, and then dropped again at six months (X difference = 3.54, p=0.044, 95% CI[0.09, 6.99]) (Potter et al., 2013). The use of personal reflection and debriefing may increase resiliency and decrease compassion fatigue (Schmidt & Haglund, 2017). While some positive results have been found from these interventions, a sustainable program to prevent or decrease compassion fatigue has not been identified.

Nurse Stress

Stress is a state of mental or emotional strain or tension resulting from adverse or demanding circumstances (Oxford Dictionary Online, n.d.). Stress also defines the body's physical or emotional reaction to environment often mediated by perception and ability to cope (Lazarus, 1993). Workplace stress is complex and is a combination of factors in personal and work lives of nurses. Job stress for the nurse is the divergence that exists between the expectations of the role and what can be accomplished in that role (McVicar, 2003). When the requirements and responsibilities of the nurse are greater than his or her resources, nurse job stress occurs (Paterson, Luthans, & Wonho, 2013). Healthcare providers, including nurses that work in hospitals, face some of the most stressful situations found in any workplace (NIOSH,

2018). In a qualitative study of workplace stressors related to mental health workers (Currid, 2009) several themes causing stress were identified including, pressures from manager, increased demand due to increase patients and not enough beds, violence and aggression from patients and staff, and the inability to stop thinking about work when at home.

Many challenges face nurses in the workplace such as providing complex care, shortage of staff, decreasing resources (Marine, Ruotsalainen, Serra, & Verbeek, 2009), organizational focus on performance targets and increased workload (Paterson et al., 2013), increasingly complex patients, decreased length of stay, long shifts, and technology changes (McCloskey & Taggart, 2010). In a study of 100 critical care nurses, Salem (2015) identified major stressors included working with physicians and nurses who were not as competent as the patient requires, dealing with death and dying, workload, and shortage of staff. Other stressors for nurses include administrative demands, co-workers, and the inability to complete work in a timely manner (Canady & Allen, 2015). In their study of 464 RNs, Canady & Allen (2015) reported major stressor in all nursing areas were increased high work demands, with the three highest stressors being intensity of work, speed of work, and not having the ability to make decisions.

Stress affects the nurse in a variety of ways. Job stress for the nurse is the divergence that exists between the expectations of the role and what can be accomplished in that role. Nurses experience workplace stressors are susceptible to sleep deprivation, chronic illnesses such as hypertension, diabetes, obesity, and mental health issues (Creedy, Sidebotham, Gamble, Pallant, & Fenwick, 2017; van Mol et al., 2015). Symptoms of nurse stress can be physical or psychological and can range from headaches, sleeping problems, back pain, and digestion issues to inability to focus, irritability, anger, decreased confidence, and emotional instability (van Mol et al., 2015).

According to the Health and Safety Executive (2018) of Great Britain, stress is a health and safety issue and requires organizations to complete risk assessments to identify stress related health issues. Firth-Cozens and Cornwell (2008) identified that increased stress in healthcare workers, including nurses, is linked to a reduction in compassion. In a survey of 10,000 British nurses, 62% stated they had considered leaving the profession due to stress (Paterson et al., 2013). Excess stressors can lead to increased turnover, increased staff absences, and prolonged can lead to burnout and compassion fatigue (Marine et al, 2009). Stress from work that continues without social or spiritual intervention lead to adverse psychological effects and ultimately compassion fatigue (Sabo, 2011). Aromatherapy was found to decrease workplace stress in a randomized control trial of 110 nurses with the experimental group reporting a significant decrease in stress (p= 0.126) compared to the control group (Chen, Fang, & Fang, 2015). A significant reduction in work-related stress (t = 2.128, p = .040) was reported by Lin, Huang, Shiu, and Yeh (2015) in their randomized controlled trial of mental health professionals participating in yoga.

Work Environments and Compassion

The nursing professional practice environment is multifaceted. It is the environment where nurses practice, where there is constant decision-making as individuals or as a team as well as the conditions of the unit that helps or limits nursing practice (Wiskow, Albreht, & Pietro, 2010). Nurses report high levels of CS and lower levels of compassion fatigue in healthy work environments. Healthy practice environments support excellence and decent work while striving to ensure the health, safety, and physical, mental, and social well-being of staff (WHO, 2018). According to the Academy of Medical-Surgical Nurses (AMSN, 2018), there are eight attributes of a healthy practice environment. These include: (1) support for education, (2)

working with clinically competent nurses, (3) collegial and collaborative interprofessional relationships, (4) autonomous nursing practice, (5) control over nursing practice, (6) supportive nurse managers, (7) perceived adequacy of staffing, and (8) culture in which concern for the patient is paramount (AMSN, 2018). A healthy practice environment can also be defined as a setting that has the structure and processes in place to meet the organizational mission and vision, satisfaction at work, and provide all healthcare providers the opportunity to participate in collaborative decision-making (Lambrou, Merkouris, Middleton, & Papastravtou, 2014). The practice environment that includes poor nurse staffing, unhealthy teams, and high workloads, along with the increasing complexity of healthcare reform can decrease nurse compassion and can lead to the development of compassion fatigue (Aiken, Sloan, Bruyneel, Van den Heede, & Sermeus, 2013).

Healthy work environments include strong positive leadership, (Sacco et al., 2015) meaningful recognition, (Kelly et al., 2015) and nurse engagement (Gabriel, Erickson, Moran, Diefendorff, & Bromley, 2013; Khamisa, Peltzer, & Oldenburg, 2013; Saber, 2014; Yoder, 2010). These components of a healthy work environment are associated with unit level transformational leadership and support from the organization. Transformational leadership behaviors include idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (Kovjanic, Schuh, & Jonus, 2013), which promote healthy work environments and can ultimately prevent the development of compassion fatigue. Nurses in emergency and critical care settings have been found to have higher levels of compassion fatigue (Hinderer et al., 2014; Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010; Hunsaker, Chen, Maughan, & Heaston, 2015), (Kelly et al., 2015; Smart et al., 2014; Yoder, 2010). A cross-sectional survey of critical cares nurses and progressive care nurses revealed higher levels of

compassion fatigue in nurses working in mixed acuity units, and nurses with a recent change in management (Sacco et al., 2015). The nurses on the mixed acuity units had the added stress of caring for critical care, progressive care, and general medicine. Sung, Seo, and Kim (2012) identified nurses in Korea working in ICU, hospice, emergency, and general ward had very high levels of compassion fatigue (mean score 50.58), which were correlated with intent to leave. Hinderer et al. (2014) found that out of 262 trauma nurses, 27.3% experienced compassion fatigue that was slightly lower than nurses in ED (29%) and ICU (28%).

Healthy practice environments promote CS and can decrease the development of compassion fatigue. A healthy practice environment influences the recruitment and retention of nurses as well as the quality of patient care (Wiskow et al., 2010) In a systematic review, Lambrou et al. (2014) reported nurses who perceived the practice environment as stressful reported low job satisfaction and perceived low quality of patient care therefor supporting the need to establish healthy nurse practice environments. Nurses can gain satisfaction from the ability to provide compassionate care to their patients in a low stress environment.

Animal Assisted Therapy

Integrating AAT into the practice setting has been shown to be beneficial to patients' recovery, most likely due to the known health benefits of human-animal interaction (Hediger & Hund-Georgiadis, 2017). These authors reported that nurses in the units where AAT is used have improved job satisfaction, which might lead to the prevention of burnout. Nurses and other healthcare providers that engage with the animals also report feeling less stressed and more relaxed (White, 2016). Concerns about hygiene and injuries (7.5% and 5.8%, respectively) were reported by staff members working in a rehabilitation clinic (Hediger & Hund-Georgiadis, 2017). Further, staff member relationships with the animals correlated significantly (r_s: 0.286, n=98,

p=.004) with the pleasant anticipation of AAT, 81.1% of staff reported the experience was positive, but the negative perceptions remained the same after experiencing ATT. In a pilot study exploring the efficacy of animals to decrease stress in healthcare staff, (*n*=74) there was a significant decrease (*p*=0.047) in physical signs of stress of staff reported (Foith, 2017). Significant increases in feelings of accomplishment following a work day (*p*=0.021), clinically significant decreases in stress (*p*=0.083), and clinically significant decreases in feeling "used up at the end of the day (*p*=0.96) were also reported. However, there remains the negative perceptions of animals, such as previous negative experiences resulting in fear and the unknown of animal reaction such as biting or scratching (Foith, 2017).

Socially Assistive Robots

Robots are machines that resemble living creatures programed to perform complicated and often repetitive tasks (Merriam-Webster, n.d.). John McCarthy first coined the term artificial intelligence (AI) in 1956 as 'the science and engineering of making intelligent machines" (Stanford University, n.d.). McCarthy additionally states these intelligent machines, especially computer programs, can understand human intelligence, not just imitate it (Stanford University, n.d.). Robots with artificial intelligence (AI) have the capability of imitating human reasoning and behavior. A socially assistive robot (SAR) is an advanced interactive robot with AI that provides the benefits of animal assisted therapy (AAT) without the risks of live animals.

SAR as a Form of AAT

Most healthcare facilities do not allow the patients or residents to bring their pets due to the expense and physical exertion needed to care for the as well as the risk the pet brings to other patients (Edney, 1995). Instead of animals, the SAR can provide a resource for physical contact.

Interaction with SARs has a positive effect on socialization, physiological measures, and psychological outcomes (Petersen, Houston, Qin, Tague, & Studley, 2017). The use of SARs with the elderly population has been reported to improve cognitive function (Pollack, 2005), decrease hostility, increase smiling and laughter, along with increase in social communication (Tapus, Maja, & Scassellatti, 2007). A review of studies using SARs reported increased health through decreased level of stress, increased positive mood, decreased loneliness, increased communication, and increased activity with others (Broekens, Heerink, & Rosendal, 2009). The use of SARs is an affordable and successful alternative to AAT.

PARO (short for "personal robot" in the Japanese language) is an advanced interactive SAR, FDA approved, and designed to look like a baby harp seal. It is a neurological therapeutic medical device that can be used to enhance communication, socialization, and emotional connection (PARO, n.d.). This device is also intended to provide mental services to users by eliciting positive mental effects such as pleasure and relaxation (PARO, n.d.). PARO has tactile, light, audition, temperature, and posture sensors, which assists the robot in responding (PARO, n.d.). PARO can recognize being stroked, held, or beaten and can see light and dark. PARO recognizes the direction of the voice speaking to it along with several words such as its name, greetings and praise. Through interaction with people, PARO responds to the user preference and responds as if alive, moving making sounds, and showing a preferred behavior. PARO facilitates human connection and emotional responses, responds to and accepts everyone just as they are, bridges people of all ages together, and gives people the opportunity to care about something to improve quality of life (PARO, n.d.).

PARO has been reported to lower stress, improve depression, and reduce anxiety in many cases as well as decrease loneliness (Robinson, MacDonald, Kerse, & Broadbent, 2013). A

recent study using a robotic pet (PARO) in 61 patients with mild to moderate dementia demonstrated significant decreases in anxiety ($p=0.003$), depression ($p=0.001$), and pulse rate ($p=0.0001$) following twenty minutes with PARO three days a week for three months (Petersen et al., 2017). Interaction with PARO also decreased medication use for pain ($p= 0.005$) and behavior ($p=0.0009$) in dementia patients (Petersen et al., 2017). Petersen et al. (2017) also noted the calming effect of PARO lasted almost two hours longer than pain medication. Qualitative studies of staff and residents of an Australian nursing home reported findings of increased social interaction with the use of AI robots (Robinson & Broadbent, 2016). In a randomized control trial of these same Australian residents, interaction with robots were reported to significantly decrease systolic pressure, ($F(1,16)=4.6$, $P=0.048$), diastolic pressure ($F(1,16)=4.4$, $P=0.05$), and heart rate ($F(1,16)=6.0$, $P=0.03$) (Robinson & Broadbent, 2016). Robots with AI such as PARO have been used to improve social interaction for children (Fong, Nourbakhsh, & Dautenhahn, 2003) and specifically children with autism (Dautenhahn & Werry, 2004). In their study of children ages 6-9, interacting with the AI robot following a stressful situation, Crossman, Kazdin, and Kitt (2018) reported improved positive mood improving their mental health.

Evidence exists that nurses experience stress in their practice of caring for those who are suffering. The evidence also supports that CS can decrease and compassion fatigue increase because of those stressors. Several studies have shown interventions that help improve CS by decreasing stress, but those interventions can be costly and time consuming. Additionally, evidence exists that robotic pets with AI, which are more intuitive than the toy robotic pets, can reduce stress, improve quality of life in elderly dementia patients, and improve social interaction of children with autism, but there have been no studies using robotic pets to aid in stress reduction in nurses. PARO can be a stress reliever for staff by brightening their moods and

provide meaningful engagement (Robinson et al., 2013). Limited research exists regarding the use of any SAR to decrease stress and anxiety in nurses or other healthcare providers. The purpose of this study is to evaluate the effectiveness of a SAR on nurse stress at work to decrease compassion fatigue and increase CS.

Conceptual Framework

The Professional Quality of Life Model (PQoL), developed by Beth Hudnall Stamm (Stamm, 2010) depicts the two ends of the spectrum for PQoL: CS and compassion fatigue. Stamm suggests that burnout and secondary trauma are components of compassion fatigue (Stamm, 2010). The model was adapted with permission to use in this study and depicts the nurse stress which influences CS and compassion fatigue. Nurses face stressors in the practice environment and without coping skills or interventions, these stressors can deplete CS (Tremblay & Messervey, 2011). The addition of PARO therapy is expected to provide a healthy approach to stress for the nurse in the practice environment. The PQoL model was adapted for this proposed study to include the good and bad stressors that influence the professional quality of life (Appendix B and Figure 1).

Professional quality of life is the quality one feels in relation to their work as a caregiver whether positive or negative (Stamm, 2010). According to Stamm (2010), those who work in helping professions such as nursing may face stress or crisis daily. Two aspects of professional quality of life are the positive, which is CS, and the negative, which is compassion fatigue. A nurse could be at any area on the continuum between CS and compassion fatigue depending on the resources available to address stress.

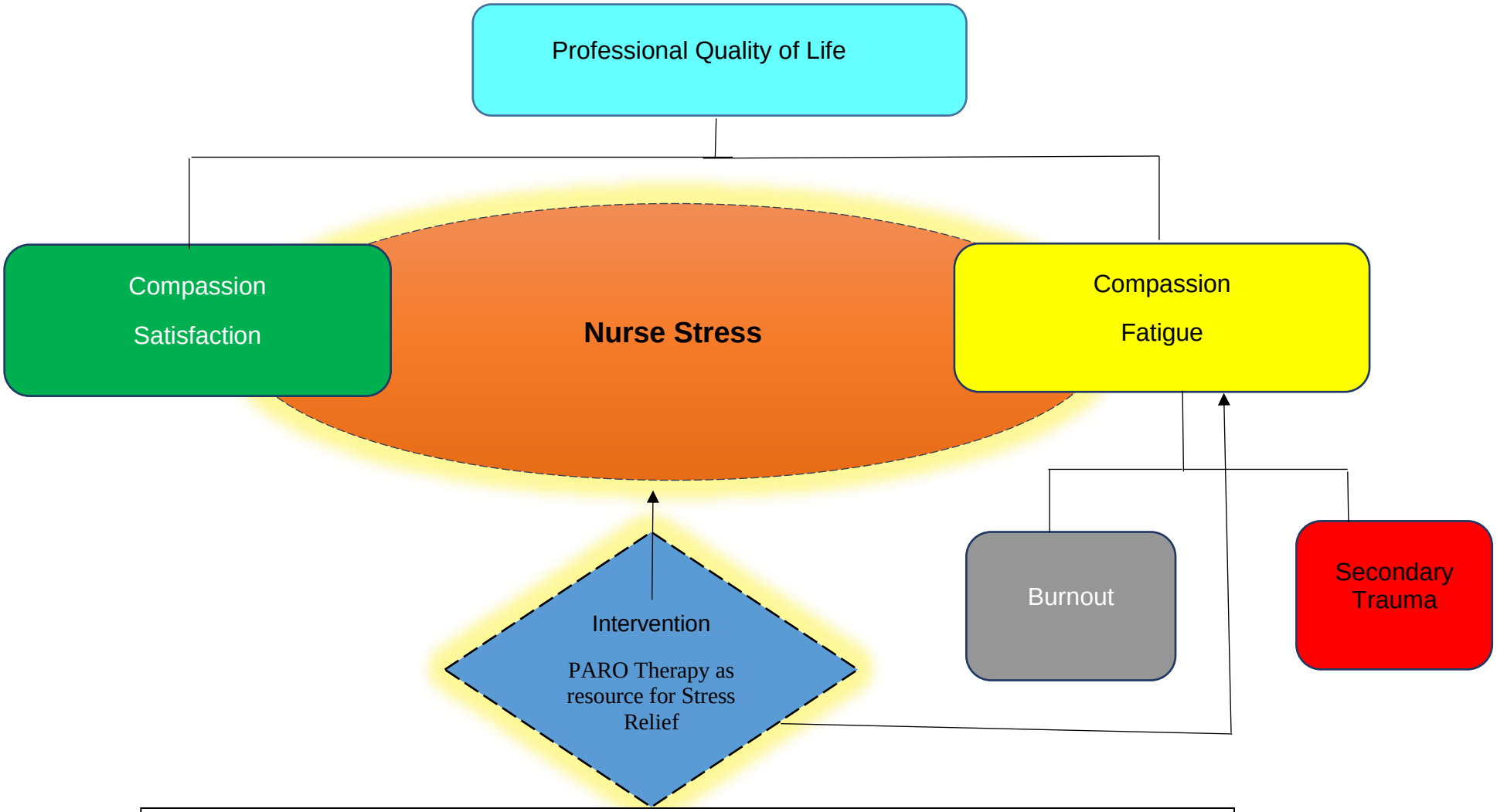


Figure 4.1 Adapted Professional Quality of Life Conceptual Model

Compassion fatigue is divided into two parts, burnout and secondary traumatic stress (STS). Burnout includes symptoms of exhaustion, frustration, anger, and depression while STS is a reaction to work-related trauma (Stamm, 2010). Nurses exposed to work stressors that are traumatic, such as death and violence, are at risk for developing negative symptoms associated with burnout, depression, and STS. The negative aspect of caring for patients includes stressors that can affect the nurse, their family, co-workers, as well as patients and families (Stamm, 2010). A healthy quality of life for a nurse does not result from simply providing competent care to the patient but can also be determined by quality caring or CS (Todaro-Franceschi, 2013). PARO serves as a resource to improve nurse capabilities to effectively deal with the inevitable stress experienced in their professional lives.

The conceptual framework demonstrates that stress occurs in the professional life of a nurse. This stress might be eustress or good stress that challenges or motivates the nurse, or it could become chronic stress which is a negative response to stressors (APA, n.d.). Chronic stress occurs when there are relentless demands and pressures that appear to be never-ending and/or the nurse never sees a way out of the dismal work experience (APA, n.d.). Stress responses are largely dependent on the resources available to the nurse to relieve stress during work hours. Interventions or resources to relieve stress and decrease compassion fatigue have more importance than identifying the level of compassion fatigue (Todaro-Fancheschi, 2013). PARO is a resource that could improve the acute stress of the nurse and increase CS. The nurse might be in the lower levels of CS, but interaction with Paro could improve the current level of CS by decreasing stress. Additionally, interaction with PARO to reduce stress might provide the resource needed to move from compassion fatigue closer to CS.

Variable Conceptual and Operational Definition

Variable Definitions

Conceptual definitions (Table 4.2) of dependent variables include basic dictionary type descriptions as they are used in this study, while operational definitions are those describing how they were be measured (Waltz, Strickland, & Lenz, 2017). Conceptually, CS is the pleasure and positive feelings that result from caring for patients and families. Compassion satisfaction is characterized by the nurse feeling satisfied with their work, want to continue doing it, having the ability to keep up with technology and evidence-based practice, and believing they can make a difference (Stamm, 2010). Operationally CS is defined by a score of 42 or higher on the CS subscale of the Professional Quality of Life (ProQOL) 5 (Stamm, 2010). The ProQOL 5 tool is used to measure compassion fatigue and CS. This 30-item survey has three subscales: 1) burnout, 2) secondary traumatic stress, and 3) CS.

The conceptual definition of compassion fatigue is the inability to feel compassion for those who are suffering (Stamm, 2010). Compassion fatigue breaks into two aspects, first, anger exhaustion, frustration, and depression that are the typical signs of burnout (Stamm, 2010). Stamm (2010) goes on to describe the second part as secondary traumatic stress (STS), which is a negative feeling driven by work-related trauma. Secondary traumatic stress can be primary, meaning the nurse experienced the trauma, secondary following exposure to victims of trauma, or a combination (Stamm, 2010). The ProQOL 5 tool also measures compassion fatigue. As described above, this 30-item survey has three subscales and combines two of them, burnout and secondary traumatic stress, to obtain the compassion fatigue score. Operationally the scores obtained on the burnout and STS scales combined define compassion fatigue. A score greater

than 57 on either scale demonstrates compassion fatigue, while scores above 43 demonstrate risk for compassion fatigue.

Table 4.2

Variable Definitions

Conceptual and Operational Definitions of Variables		
DV	**Conceptual**	**Operational**
Compassion Satisfaction	Positive feelings that result from caring for patients and families	Pre-and post-tests ProQOL 5
Compassion Fatigue	Inability to feel compassion • Burnout • Secondary traumatic stress	Pre-and post-tests ProQOL 5
Nurse Stress	The physical and emotional responses that can be either positive or negative depending on the degree to which the requirements of the job match or do not match the capabilities, resources, or needs of the nurse.	Nurse Stress Scale (NSS) is a 40-item scale with 7 subscales. Scores from all subscales are summed with the higher score indicating higher stress level.
IV	**Conceptual**	**Operational**
Nurse age, gender, degree level, years in nursing, work unit	The unique person of the nurse.	Demographic tool
Intervention: SAR/PARO	Stress relief through interaction	Each nurse in the intervention group will interact with PARO for a minimum of 15 minutes for three 12-hour shift over 2 weeks.
Control group: Stuffed Baby Harp Seal	Stress relief through interaction	Each nurse in the control group will interact with stuffed baby harp seal (no AI) for a minimum of 15 minutes for three 12-hour shift over 2 weeks.

Research Question and Hypotheses

This study endeavored to answer three research questions. The first two questions were answered quantitatively. What relationships exist among age, years of nursing experience, degree level, and gender with acute care nurses' CS, stress, and compassion fatigue and does the use of the SAR (PARO) improve CS, reduce stress, and decrease compassion fatigue scores in acute care nurses more than a placebo-intervention group? The third question is qualitative and asked in what way does the interaction with the SAR (PARO) affect stress, CS, and compassion fatigue reported by the acute care nurses?

Based on the research questions and PQoL conceptual framework, three hypotheses were derived. First, interaction with a SAR (PARO) during a 12-hour shift will reduce stress in acute care nurses. Second, interaction with a SAR (PARO) during a 12-hour shift will decrease compassion fatigue in acute care nurses and third, interaction with a SAR (PARO) during a 12-hour shift will increase compassion satisfaction in acute care nurses.

Design

A mixed methods design was used to determine the effects of a SAR (PARO) on CS, compassion fatigue, and stress in acute care nurses. Mixed methods studies are a combination of qualitative and quantitative approaches that combine the strengths of both approaches (Fetters, Curry, & Creswell, 2013; Tashakkori &Teddlie, 1998). Creswell and Plano-Clark (2011) further define mixed methods as a combination of philosophical assumptions that guide the collection and analysis of qualitative and quantitative data to provide a better understanding of research problems. This mixed method design was used to enhance information on the use of the SAR from the nurses' perspective (Greene, Caracelli, & Graham, 1989). A broader understanding of the concept of CS was found though the use of mixed methods, specifically when the

quantitative data alone did not provide an adequate understanding (Doyle, Brady, & Byre, 2016). Using the explanatory sequential design allowed for a deeper interpretation of why there were not significant changes in the quantitative data (Creswell & Plano-Clark, 2011).

This explanatory sequential study had two phases; the first quantitative phase measured stress, CS, and compassion fatigue in inpatient nurses before and after the intervention. The quantitative phase was a between 2-groups pretest-posttest. The second phase, the qualitative phase used focus group interview sessions for discussion and explanation of the quantitative results. This triangulation of the data enriched the understanding through explanation of the different aspects of the results and also assisting with decreased measurement bias (Creswell & Plano-Clark, 2011).

Methods

Sample/Setting

The target population of this study was nurses working in acute care settings located in a 263-bed hospital located in a suburban area of north central Texas. Sampling occurred at two distinct points to support the sequential explanatory design (Creswell & Plano-Clark, 2011). The quantitative phase used a stratified random sample of acute care nursing units for the intervention and the control group. The stratification process divided the inpatient nurses into subgroups based on like units, medical-surgical was one group and progressive care was another. A total of four units were recruited, one medical-surgical unit and one progressive care unit for each the control and the intervention groups. This type of sampling decreased the risk for sampling error through improving representativeness (Portney &Watkins, 2015). The inclusion criteria were acute care nurses (employed full or part time) providing at least 50% of time in patient care a week over the past six months. Nurse leaders who spend 50% or more of their time in direct

patient care were also included. Excluded from the study were nurses in procedural areas, newborn or neonatal intensive care, and emergency department. The sample size was determined using G*Power (2008). Using a power of 1-β= 0.8, α=0.05, *d*=2, a sample size of 64 was required with 32 in each group (Faul, Erdfelder, Buchner, & Lang, 2009). Participants were recruited through email and flyers (Appendix C) posted on each unit. The nurse manager of each unit was contacted to secure permission to recruit nurses on those units. This resulted in 52 acute care nurses participating in the study.

The qualitative phase used a smaller purposeful sample pulled from the sampling in the quantitative phase. The intent of the explanatory design was to use the qualitative data to provide more detail about the quantitative data (Creswell & Plano-Clark, 2011). Each participant was invited to attend one of the focus groups with intervention and control focus groups held separately. Based on Creswell and Plano-Clark's (2011) suggestion to use a smaller sampling to identify meaningful themes, four focus groups were held with a total of 11 participants.

Protection of Human Subjects

The study was approved by The University of Texas at Tyler (UT Tyler) Institutional Review Board (IRB) and the Texas Health Resources (THR) IRB for approval. The ethical principles of research were maintained as outlined by both IRBs. The invitation to participate included a statement of purpose allowing the potential participants to determine if they want to participate (Portney & Watkins, 2015). Informed consent (Appendix D) was obtained prior to data collection. The consent disclosure included study purpose, collection procedures, expectations of commitment, potential risks and benefits of participation, protection of participant data, the voluntary nature of this study, the right to withdraw from the study at any time without prejudice, and the researcher's contact information. Each participant signed a

confidential informed consent form and was assigned a unique identifier to attach to surveys. Study participants were reminded of the freedom to withdraw consent at any time with no adverse consequences. The primary investigator was not a nurse manager and had not authority over any of the participants decreasing the chance of coercion (Portney & Watkins, 2015).

Instruments

All surveys were entered into Qualtrics© to allow for ease of completion. A demographic tool (Appendix E) was used to collect age, gender, work unit, ethnicity, level of education, and years of experience as an RN. Questions were included in the demographic tool to identify perception of work environment. These questions were developed to assist in controlling for unit differences when analyzing the data and to further identify any affect leadership, teamwork, or support system had on stress, CS, or CF. The questions were; do you perceive your unit leadership is positive, does your leader listen to you, do you perceive your unit works as a team, and do you have a support system outside of work?

The Professional Quality of Life 5 (ProQOL5) instrument was used to assess compassion levels (Appendix F). The ProQOL5 was originally developed in 1995 (Stamm, 2010) and is now on its fifth version. The ProQOL5 has two major subscales, CS, and compassion fatigue. The compassion satisfaction scale measures the pleasure derived from helping others, positive feelings about colleagues, and the ability to contribute through work. The compassion fatigue subscale measures burnout and secondary traumatic stress to obtain the compassion fatigue score. The first part concerns issues such as such as exhaustion, frustration, anger and depression typical of burnout and the negative feeling driven by fear and work-related trauma in the STS portion. Trauma at work can be direct, secondary, or a combination of both primary and secondary trauma. Each subscale has 10 items and asks participants to rate items on a 5-point

Likert scale ranging from 0 (never) to 5 (very often). According to Stamm (2010), the average scores on the combined compassion fatigue subscales within the ProQOL5 ranged from 23-41 and scores of 42 or higher are considered high compassion fatigue. The same is true for the stand-alone CS subscale. Stamm (2010) has reported reliability of the ProQOL5 subscales with alphas of 0.75, 0.81, and 0.88. A strong construct validity was also demonstrated with separate construct measurement, the compassion fatigue scale reporting a 2% shared variance (r = .23) with Secondary Traumatic Stress and 5% variance (r = -.14) with burnout (Stamm, 2010).

The Nurse Stress Scale (NSS) was used to identify stress experienced by acute care nurses in the performance of their duties (Gray-Toft & Anderson, 1981). The 34-item scale developed by Gray-Toft and Anderson (1981) provides a total stress score on seven subscales (Appendix G). The seven subscales are a) conflict with other nurses; b) conflict with physicians; c) inadequate preparation; d) lack of support; e) patient death and dying; f) uncertainty concerning treatment; and g) workload. Each item has a four-point rating from 1 (never) to 4 (very frequently). Scores are summed with the higher score indicating greater levels of stress. NSS has internal consistency coefficients ranging from 0.79-0.89 and a test-retest reliability coefficient of 0.81 (Gray-Toft & Anderson, 1981).

The focus groups following the completion of the quantitative analysis gathered information to explain the quantitative results (Creswell & Plano-Clark, 2011). The questions for the focus groups were determined following the analysis of the quantitative data and based on data results that needed further explanation. According to Creswell & Plano-Clark (2011) qualitative data collection in explanatory studies should focus on quantitative results that are statistically significant, key significant predictors, and/or co-variants.

Intervention

The intervention was the PARO Socially Active Robot (SAR) pet (Appendix H) for the intervention group and a stuffed baby harp seal for the placebo control-group. The intervention group spent fifteen minutes of each shift interacting with PARO. During the shift, each nurse was be allowed to hold, talk to, and pet PARO, documenting the experience on the time sheet (Appendix I). This interaction was to take place in the location of choice for the nurse. The only exception to this was PARO was not to leave the unit and not to go into patient rooms during the nurse interaction. This was continued for two weeks allowing participants a minimum of three opportunities to experience time with PARO (Table 3).

The control group was provided an inanimate stuffed baby harp seal to interact with during the 12-hour shift. This baby harp seal looked like the PARO but had no interactive response to the nurse. This group was not exposed to PARO during the study. During the shift, each nurse interacted with the assigned baby harp seal, documenting the experience on the time sheet (Appendix I).

Data Collection

Data collection in this mixed methods study occurred at three points with one building on the other with the emphasis on quantitative data (Creswell & Plano-Clark, 2011). Prior to the intervention, consenting participants completed the online pretest instruments: ProQOL5, NSS, and a short demographic survey. The link to the surveys, pre- and post-intervention, were distributed through personal email. The survey was available for several weeks with reminder emails sent on week two and week three to increase response rate. Once the participants were enrolled, the Paro and the inanimate baby harp seal were delivered to the intervention and control units respectively. Instructions to both groups were the same for use of the PARO and the

inanimate baby harp seal. Following the completion of the intervention, ProQOL5 and NSS were again distributed to the participants via email and several email reminders sent due to the low response rate.

Table 4.3

Intervention and Data Collection Timeline

Following IRB approval	Participants recruited, and informed consent signed for both intervention and control groups (I & C).
Three weeks prior to intervention	Data collection tools disseminated to participants; I & C
Week one, Day one	Take stuffed baby harp seal to first set of units-C Take Tex/Rosie to first set of units in am-I Take Tex/Rosie to second set of units in pm-I
Week one, Days two through seven	Take stuffed baby harp seal to first set of units-C Take PARO to first set of units in am-I Take PARO to second set of units in pm-I
Week two, Days one through seven	Take stuffed baby harp seal to first set of units-C Take PARO to first set of units in am-I Take PARO to second set of units in pm-I
Week three through week six	Data collection tools disseminated to participants- I & C
Week eight, Day one	Data collection during focus groups in am-C Data collection during focus groups in pm-I
Week eight, Day two	Data collection during focus groups in am-I Data collection during focus groups in pm-C

**C=Control group; **I= Intervention group*

Phase two of the study followed the first two data collection points. Study participants were invited to attend the appropriate focus group to participate in open-ended interviews. Each focus group lasted approximately 30 minutes with either breakfast or lunch provided. Conducting the focus group interviews allowed for observation of non-verbal communication as well as helped to establish a rapport between interviewer and participants (Portney & Watkins, 2015). By creating the opportunity for participants to engage in meaningful conversations during the focus groups, the researcher uncovered more about participants' perspectives (Patton, 2015).

The focus group discussions included open-ended questions, active listening, and provided each participant the opportunity to speak. (Appendix K Focus group questions and probes) Focus group participants were interactive and stimulated responses from each other that contributed to provision of robust data. Each focus group audio recorded with the assurance of informed consent for each participant prior to beginning.

Pre-designed questions drove each group discussion to preserve focus; an essential element for effective focus groups (Patton, 2015). To avoid investigator bias, question probes were used instead of affirmations (Patton, 2015). These pointed questions and probes were designed to provoke explanations of the participants' feelings and thoughts that occurred during the interactions with the seal with the intent to explain the quantitative data. All data collected was secured in a locked file cabinet in a locked office in a proxy access location. (Table 3)

Data Analysis

Analysis in a mixed methods study includes analyzing the quantitative and qualitative data separately and then analyzing both sets of information to synthesize the data (Creswell & Plano-Clark, 2011). Quantitative and demographic data was downloaded from Qualtrics© into the Statistical Package for the Social Sciences (SPSS) (IBM. 2017). Analysis of the quantitative and

demographic data included descriptive statistics to assess for distribution and linearity while hypotheses were tested using inferential statistics (Portney & Watkins, 2015). ANOVA was used to determine the relationships between compassion fatigue, CS, and nurse stress in the intervention and control groups (Munro, 2001). Repeated measures (RM) analysis of covariance (ANCOVA) was used to determine the differences within groups and between groups (Munro, 2001). ANCOVA is a general linear model (GLM) that combines ANOVA with regression (Field, 2013). The GLM assumes a straight-line relationship between the dependent and independent variables (Field, 2013). The first part of ANCOVA which is the ANOVA, measures the scores for CS, compassion fatigue, and nurse stress between groups to determine differences, while the second part of ANCOVA, multiple regression, assists to explain the relationship between the dependent and independent variables and make predictions based on that relationship (Field, 2013). As a blend of ANOVA and multiple regression, ANCOVA determines the differences between the group means while controlling for the variance not explained by the independent variables, to determine if a difference remains after removal of other variables (Munro, 2001). Controlling for covariates such as unit of work, education level, experience, gender, positive leadership, support system, and teamwork provided a clearer assessment of the differences between the intervention group and the control group and the three dependent variables (Munro, 2001). RM ANCOVA involves determining the variance of the groups over time (Munro, 2001; Portney & Watkins, 2015) and it compares the means of pre- and post-scores of both the intervention and the control group while controlling for the covariates (Munro, 2001; Portney & Watkins, 2015). All SPSS data was stored on a password-protected computer in a locked office.

Analysis of the qualitative data began during the focus groups to identify and record

emerging themes or patterns (Patton, 2015). Qualitative analysis encompassed identification of key terms and phrases from the focus group interviews (Patton, 2015). Following the content analysis, inductive analysis was conducted to search the data for patterns and themes. To completely analyze the concepts and themes, both quantitative and qualitative phases were reviewed together, and meta-inferences drawn (Creswell & Plano-Clark, 2011). According to Creswell and Plano-Clark (2011), synthesizing the qualitative and quantitative data provided a clearer understanding of the intervention effect on CS, compassion fatigue, and nurse stress.

Procedures to Enhance Control and Rigor

Because a mixed methods design incorporates both quantitative and qualitative methods, steps toward facilitating rigor in both paradigms must be addressed (Creswell & Plano-Clark, 2011). The approaches that were used to prevent validity threats in this study, as suggested by Creswell and Plano-Clark include: (a) data was collected from the same sample for both phases, (b) a smaller qualitative sample was derived from the larger quantitative sample, (c) instruments used reflected sound psychometric qualities, and (d) the qualitative phase focused on those aspects of the quantitative phase that required explanation. In addition, other common validity threats were addressed through: (a) tests of homogeneity with pre-tests to ensure control and intervention groups do not have significant differences in outcomes prior to the interventions, (b) randomization of control and intervention groups, and (c) qualitative data was collected until data saturation was achieved. Additionally, to facilitate that changes in the dependent variables were due primarily to the independent variable of the PARO, covariates that were assessed on the pre-tests include type of work unit, level of education, acuity, and self-reporting of perceived unit work environment. Triangulating the data further demonstrated any connection between theory and findings, challenge the theory assumptions, and perhaps lead to the development of a

new CS theory (Ostlund, Kidd, Wengstrom, & Rowa-Dewar, 2011). To address dependability, the investigator provided detail of the study to others to determine if the study findings are supported by the data and to address neutrality or confirmability, the investigator used structured questions and probes to avoid investigator bias (Cresswell & Plano-Clark, 2011). An expert nurse scientist reviewed the data collected from both phases.

Results

Results from this study are presented by first, the quantitative phase followed by the qualitative phase that was used to further explain the quantitative results. Quantitative results including descriptive and inferential data are presented by hypothesis as are also the qualitative results.

Quantitative Evidence

Fifty nurses working in an acute care, medium size suburban hospital participated in the study (Table 4). Over half of the students were White at 70% (*n*=35). The other thirty percent was divided between Hispanic or Latino 16% (*n*=8), Black or African American 8% (*n*=4), and Asian 6% (*n*=3). Most of the participants were female at 96% (*n*=48) with 4% male (*n*=2). The age range for the participants was 23-70. Most of the respondents were between 23-33 years, 48% (*n*=24), followed by 28% (*n*=14) between 34-44 years, 18% (*n*= 9) between 45-55 years, and 6% (*n*=3) 56-70 years. Incremental years of nursing experience was reported by participants; 40% of participants (*n*=20) with 2-5 years of experience in nursing. Twenty-four percent of nurses (*n*=12) reported 11- 19 years of experience and 22% (*n*=11) reported 6-10 years nursing experience. The smallest group, 14% (*n*=7) reported 20 or more years of experience.

Table 4.4

Demographic Characteristics of Participants (n=50)

Characteristic	*n*	%
Gender		
Female	48	96
Male	2	4
Age		
23-33	24	48
34-44	14	28
45-55	9	18
56-70	3	6
Ethnicity		
Asian	3	6
Black or African American	4	8
Hispanic or Latino	8	16
White	35	70
Experience (years)		
2-5	20	40
6-10	11	22
11-19	12	24
20 or more	7	14
Education level		
Diploma	1	2
Associates	6	12
Bachelors	42	84
Masters	1	2

Participants reported level of education as diploma, associate, bachelor, or master's degree. Eighty-four percent (*n*=42) held a Bachelor of Science in Nursing. The other participants were divided between 2% (*n*=1) diploma, 2% (*n*=1) master's degree, and 12% (*n*=6) associates degree.

Perceived Support

Three questions to assess perceived support in the work-unit and one to assess support outside of work were added to the demographic data collection form. Most of the nurses (94%, n=47) agreed that the unit worked as a team while 6% felt teamwork did not exist. A total of 86% (*n*=43) participants perceived having positive leadership or a leader who listens. Less than 1% of participants never perceived positive leaders or leaders who listen while 1% reported positive listening leaders sometimes or about half the time. Ninety-six percent (*n*= 48) of

participants perceived they had a support system outside of work while only 2% (n=1) believed they rarely had support outside of work.

Hypothesis testing

Three hypotheses were tested, and results are reported by individual hypothesis. Prior to hypothesis testing normality and homogeneity were assessed. To examine normality, the histograms, Q-Q plots, and box plots were viewed followed by the Kolmogorov-Smirnov (K-S) test. Table 5 illustrates that skewness and kurtosis met the assumption of normality according to the results of the K-S test. Visualization of the histograms and box plots illustrated normal skew and kurtosis.

Table 4.5

Normality and homogeneity

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Ethnicity	0	.450	20	.000	.583	20	.000
	1	.397	30	.000	.654	30	.000
Age	0	.319	20	.000	.743	20	.000
	1	.266	30	.000	.816	30	.000
Years of Experience as RN	0	.303	20	.000	.728	20	.000
	1	.235	30	.000	.831	30	.000
Degree Level	0	.427	20	.000	.676	20	.000
	1	.528	30	.000	.347	30	.000

a. Lilliefors Significance Correction

Treatment group: 0= control group and 1 = intervention group
p=0.05

A Levene's test was used to validate the assumption of homogeneity. The assumption of homogeneity was not met due to significant Levene's test. The variances were unequal for age, ethnicity, years of experience, and degree level.

Hypothesis #1: Interaction with the SAR during a 12-hour shift will reduce stress in acute care nurses. Hypothesis one purported interaction with the SAR during a 12-hour shift would reduce stress in acute care nurses. An independent *t*-test was used to compare NSS by group prior to the intervention. The control group reported a statistically significant higher stress level prior to (p=0.03). Following the intervention, the difference between groups was not statistically significant (p=0.23). The control group pretest reported significantly higher nurse stress than the intervention group while the posttest nurse stress decreased. This higher stress could have been related to vacancy of the manager role for one of the control group units. The manager position was filled by the time the posttest was administered.

Table 4.6

Group Differences for Nurse Stress Scale

	Control (n=20)		Intervention (n=30)				
	M	SD	M	SD	*df*	*t*	*p*
Pre-test	89.90	15.51	80.63	15.73	48	2.09	.03
Post-test	84.45	9.33	80.00	12.50	48	1.44	0.23

Equal variances not assumed: M indicates mean, SD indicates standard deviation, df indicates degrees of freedom, t indicates t-test value, and p indicates significance level
p=0.05

A repeated measures analysis of variance (RM ANOVA) was conducted to determine if the SAR had statistically significant effect (Table 4.7) on nurse stress in acute care nurses from pre-test to post-test. There were no outliers and the data were normally distributed at each time point by Wilks' Lambda test (p> 0.01). With only two-time points, Mauchly's Test of Sphericity is not reported. The SAR intervention did not elicit statistically significant changes; (F(1/48)=0.03, p=0.60) in stress therefore the null hypothesis was supported.

Table 4.7

Nurse Stress Scale Repeated measures analysis of variance

	SS	df	MS	F	Sig.	η^2
Between Groups	873.63	1	873.63	5.20	0.03	0.09
Time	117.93	1	117.93	0.60	0.50	0.01
Time-Treatment	60.20	1	60.20	0.30	0.60	0.01

Legend: SS indicates sum squared, df indicates degrees of freedom, MS indicates mean square, η^2 *indicates eta squared*
p=0.05

Hypothesis #2: Interaction with the SAR during a 12-hour shift will decrease compassion fatigue in acute care nurses. The CF score is obtained by combining the scores of the subscale's burnout and STS of the ProQOL5. The groups, control and intervention, were not statistically different on the pre-test CF scores [M=51.25, SD=12.24; M=48.03, SD= 8.94, *t* (1,48) = 1.01, *p*=.26]. According to Stamm, (2010), CF scores ranging from mid-forties and higher, such as those reported by both groups, demonstrate risk for CF.

Table 4.8

Means and Standard Deviations for Control and Intervention Groups

	Control (n=20)		*Intervention(n=30)*	
	M	**SD**	**M**	**SD**
Burnout Pre	27.35	4.70	24.37	4.94
Burnout Post	24.90	4.16	40.17	6.50

The two groups were significantly different on the burnout subscale with the control group (M=27.35, SD= 4.70) reporting higher burnout than the intervention group [M= 24.37, SD=4.94, *t*(48)=2.16, *p*=0.04]. Burnout scores greater than 23 reflect moderate to high risk of burnout (Stamm, 2010). Both groups began the study with a moderate risk for burnout and the

intervention group was at high risk for burnout upon completion of the study (M= 40.17, SD=6.5). The RM ANOVA identified a statistically significant difference between the control group and the intervention group on the burnout subscale ($F(1/48)=24.00$, $p=0.01$). Within the intervention group a statistically significant change was also noted ($F(1/48)= 110.80$, $p=0.01$) between pre-and post-burnout scores. The statistically significant increase in the burnout scores were unexpected. The data for burnout was double checked for reporting errors or entry errors of which there were none. These results were further explored in the qualitative phase of the study identifying unforeseen variables that occurred during the study timeframe.

A Pearson's correlation was conducted to further examine the relationships between the covariates and the post-intervention burnout scores. There were no significant correlations between the burnout scores and the covariates. A weak positive correlation between burnout scores and support outside of work [$r(48)= .113$, $p = .44$], level of education [$r(48)= .017$, $p= .38$], teamwork [$r(48)= .144$, $p = .32$], and leaders who listen[$r(48)= .018$, $p = .90$] were found. Years of experience [$r(48)= -.013$, $p = .93$] and positive leadership [$r(48 = -.022$, $p = .88$] were negatively correlated to burnout scores. While these correlations were not statistically significant, they did offer some support to the possibility that nurses with more years of experience and positive leadership are at a lower risk for burnout.

Table 4.9

Group differences for Burnout, Secondary Traumatic Stress, and Compassion Fatigue

Burnout						
	SS	df	MS	F	*p*	η^2
Between Groups	905.28	1	905.28	24.00	0.01	0.33
Time	1069.33	1	1069.33	110.80	0.01	0.60
Time and Treatment	1998.40	1	1998.40	110.78	0.01	0.70
Secondary Traumatic Stress						
	SS	df	MS	F	*p*	η^2
Between Groups	98.42	1	98.42	2.35	0.13	0.05
Time	57.04	1	57.04	2.70	0.11	0.05
Time and Treatment	11.50	1	11.50	0.54	0.47	0.01
Compassion Fatigue						
	SS	*df*	MS	F	*p*	η^2
Between Groups	218.40	1	218.40	1.62	0.21	0.03
Time	96.00	1	96.00	1.90	0.18	0.04
Time and Treatment	0.96	1	0.96	0.02	0.90	0.01

Legend: SS indicates sum squared, df indicates degrees of freedom, MS indicates mean square, η^2 *indicates eta squared*
p=0.05

Although no statistically significant correlations were found between the covariates and the burnout scores, an analysis of covariance (ANCOVA) was conducted to determine if a difference existed between the burnout posttest scores controlling for age, gender, ethnicity, years of experience as a nurse, level of education, and the four perceived support questions (Table 4.10). As seen in Table 4.10, the covariates had no significant effect on the burnout scores. Once the change in staffing ratios was identified, an ANCOVA was conducted to determine the effect of

this confounding variable on burnout scores. After adjusting for the effect of decrease in staffing ratios, the burnout post-test scores were insignificant [F(1/48)=1.41, *p*=0.24].

T**able 4.10**

Burnout ANCOVA

Burnout post-test controlling for covariates						
	df	SS	MS	F	*P*	η^2
Ethnicity	1	0.003	0.003	0.00	0.97	0.00
Experience	1	55.15	55.15	0.66	0.42	0.02
Education	1	43.27	43.27	0.52	0.48	0.01
Gender	1	109.43	109.43	1.31	0.26	0.03
Age	1	50.34	50.34	0.60	0.44	0.02
Support	1	150.25	150.25	1.80	0.19	0.04
Positive Leader	1	36.10	36.10	0.43	0.51	0.01
Leader Listens	1	15.93	15.93	1.80	0.19	0.04
Teamwork	1	73.91	73.91	0.89	0.40	0.02
Staffing	1	124.32	124.32	1.41	0.24	0.29
Error	43	2350.01				
Total	50	116030.0				

Legend: SS indicates sum squared, df indicates degrees of freedom, MS indicates mean square, η^2 *indicates eta squared*
$p = 0.05$

The second subscale that contributes to the CF score is the STS. The STS subscale pre-test scores were not significantly different between control group (M=25.00, SD=6.50) and intervention group [M=23.67, SD=5.10, *t* (48) =0.77, *p*=0.44]. The mean scores were at or below a moderate risk for STS (Stamm, 2010). Both the control and intervention groups showed a slight decrease in the STS scores on the post-test scores, however no significant differences

[$F(1/48)=1.62$, $p=0.21$] were found between the control and intervention groups pre-and post-test scores (Table 4.11).

Table 4.11

Means and Standard Deviations for Control and Intervention Groups

	Control (n=20) *Intervention(n=30)*			
	M	**SD**	**M**	**SD**
Burnout Pre	27.35	4.694	24.37	4.937
Burnout Post	24.90	4.166	40.17	6.502

Following the analysis of the individual subscales, the scores were summed to provide the CF score. There was no significance between group scores (Table 4.9) on the pre- and post-test. The decrease in STS (M= 21.43, SD=5.30) combined with the increase in the intervention group burnout scores (M= 40.17, SD=6.5) did not increase the CF (M=46.2, SD=9.1) scores; $t(9)=1.01$, $p=.32$. Based on the analysis of the STS, burnout, and CF subscales, interaction with the SAR did not have a statistically significant effect on CF in acute care nurses and the null hypothesis is accepted.

Hypothesis # 3: Interaction with the SAR during a 12-hour shift will increase compassion satisfaction in acute care nurses. The control group (M=37.90, SD=5.58) and the intervention group (M= 40.20, SD=4.94) had no statistical differences [$t(48)=-1.53$, $p= 0.13$] on the pre-CS subscale. To determine if the SAR had a statistically significant effect on CS in acute care nurses, an RM ANOVA was conducted (Table 4.10). Again, the statistically significant decrease in CS in acute care nurses was unexpected therefore, a Pearson's Correlation was conducted to determine relationships between burnout post-test scores and CS post-test scores. There was a statistically significant negative correlation between CS and burnout ($r(48)=-.79$, $p=<0.05$), as burnout increases, CS decreases. Correlations were employed to address other

relationships that decreased CS. Although weak, some correlations were evident among the covariates. Support outside of work (r(48)=0-.20, p=0.16), ethnicity (r(48)=0.85, p=0.56), and years of RN experience (r(48)=0.29, p= 0.84) were positively correlated to CS; however, not at a level of statistical significance. Additionally statistically insignificant covariates that were negatively correlated to CS included positive leadership [$r(48)$=-0.20, p=0.16], leader who listens[($r(48)$-0.7, p=0.66], teamwork [$r(48)$=-0.90, p=0.50], gender [$r(48)$=-.197, p= 0.25], and degree level [$r(48)$ -.15, p=0.30]. The SAR had a statistically significant negative effect on CS in acute care nurses, however, after the staffing ratio was controlled, an insignificant change resulted, [F(48)=0.69, p=0.41]. The hypothesis posited the SAR would increase CS in acute care nurses, therefore the null hypothesis is accepted.

Table 4.12

Compassion Satisfaction RM ANOVA

	SS	df	MS	F	*p*	η^2
Between	678.41	1	678.41	28.48	0.01	0.99
Time	1215.53	1	1215.53	49.89	0.01	0.51
Time and Treatment	1392.35	1	1392.33	57.15	0.01	0.54

p=0.05

Qualitative Evidence

Both the intervention group and the control group were exposed to a baby seal. The intervention group had two PAROs, Tex and Rosie, while the control group had two stuffed unanimated baby seals named Lucy and Ricky. Focus groups (FG) were used to gather qualitative data following the intervention and the post-test. Each of the FGs lasted 45 minutes

where either breakfast or lunch were provided. The FGs were separated into control and intervention. Four acute care nurses from the intervention group attended FG1 and three attended FG2. Three acute care nurses from the control group attended FG3. Focus group 4 was scheduled but had no attendees. One participant from the control group requested a one-on-one interview due to conflicts with the focus group scheduling. The FG participants were comprised of one male and ten female participants. The ethnicity was one Black, one Hispanic, and nine White. (Table 4.11) Most participants indicated a Bachelor of Science in Nursing degree was their highest education obtained with two to five years of experience in nursing.

Based on the acceptance of the null hypotheses, questions were developed to investigate reasons why the PARO did not decrease stress and CF in acute care nurses, and to explore reasons CS was decreased (Creswell & Plano-Clark, 2011). Quantitatively in the intervention groups, burnout increased while the CS scores decreased; therefore, the qualitative questions to explore the unexpected phenomena focused the cause of harmful stressors, the activities that decreased harmful stressors, and the experience that led the participants to enjoy or get satisfaction from work. Content analysis revealed two conflicting themes regarding interaction: positive distraction and added task. Another theme was awareness of the concepts of CS and CF.

Perceived support. Each participant in the FG or individual interview was asked the four work unit perception questions prior to other structured questions. Most participants reported that they perceived their leaders as positive and their leaders listened to them always or most of the time. A few reported a recent change in their leader; however, reported their previous leader listened and was positive sometimes. Finally, a few reported the leader was positive and listened to them about half the time. One of the control units experienced a vacancy in unit leadership at the beginning of the study timeline and one of the intervention units experienced a change in unit

leadership during the last week of the study. Nurses from both units felt the new unit leaders were positive and always listened.

Table 4.13

Demographic Characteristics of Focus Group Participants

Characteristic	*n*	%
Gender		
Female	10	90
Male	1	10
Age		
23-33	4	36
34-44	4	36
45-55	2	18
56-70	1	10
Ethnicity		
Asian	0	0
Black or African American	1	10
Hispanic or Latino	1	10
White	9	80
Experience (years)		
2-5	6	54
6-10	2	18
11-19	2	18
20 or more	1	10
Education level		
Diploma	0	0
Associates	1	10
Bachelors	10	90
Masters	0	0

All the participants reported teamwork on their respective units and support systems outside of work. The follow up prompt was given to elicit further response on teamwork. “We help each other out by having buddies” stated one participant and another stated, “sometimes when it is all hands-on deck, that’s all we have to say, and everyone works together”. A couple of participants reported there were a few “rotten apples”, or “loners”, but most felt comfortable asking teammates for help. When asked about the type of support systems, most reported family and many referred to religious affiliations. The participants were prompted by the interviewer to discuss other changes in teamwork during the study time frame. Thematically, most responses

centered around decreased staffing. Depending on the participant, decreased staffing either increased or decreased teamwork; however most described that teamwork increased because of the nursing unit workforce reduction.

Nurse stress and compassion satisfaction. Based on the statistically insignificant results of the post-test scores of the NSS, questions were developed to elicit participant responses that could substantiate why the PARO did not have an effect on stress (Creswell & Plano-Clark, 2011). Questions focused on the potential sources harmful stressors, what activities decreased harmful stressors, and participant insight to gaining satisfaction from work. Each participant of the intervention group was asked to describe the interaction with the PARO, what barriers there were to the interaction, and how they felt after the interaction.

Positive distraction. The intervention group participants felt the SAR (referred to as Tex or Rosie) provided a fun positive distraction during the shift. For example, when asked to describe the interaction with Tex, one participant stated, "I picked him up and just started to giggle. I laughed the entire time and he kept just making those sweet sounds, made me forget I had all the work to do admit the next patient". This same participant encouraged others to interact with Tex telling them "come on, it's fun" and stated, "they all just laughed but it gave us a fun break for the day".

Two participants explained that interacting with the seal in a closed office helped to "escape for a bit" and stated, "the relaxation was a good break from the daily tasks and helped me to forget work for a few minutes." When prompted further about the closed office, both stated they had never taken time off the unit to go sit in an office. Even though both felt time alone in the office was a positive experience, neither felt they would do it again without a purpose. Additional discussion provided consensus that participants in the intervention found the

SAR to be a welcomed break from the work-unit routine. When prompted to expand on "a good break" both the control and the intervention group discussed that the interaction forced them to stop and think about something else, to sit down, and relax for a while. Comments centered around feeling guilty just sitting and taking a break, but the study gave the break a purpose.

The other participants either interacted with Tex or Rosie in the conference room on the unit, in the break room, or at the main nurse's station. The location of interaction varied from shift to shift. When prompted, participants stated the decision about interaction location depended on the work-unit census and the other nurses working that shift. Further discussions revealed higher census led to interaction in the conference room or break room to not distract others from their tasks. Some of the non-participants working on the unit found the seals to be distracting and preferred that they not be at the central nurses' station.

Added task. The second theme noted was added tasks due to the requirements of interacting with the SAR. Several participants from the intervention group felt the pressure of spending time with the seal had to be scheduled and added to the "tasks" of the shift. An added requirement of a dedicated 15 minutes per shift with the SAR added a task to the participants task list. Others stated the awkwardness of interacting with a robot was fun at first but soon wore faded and simply became just something to do. When prompted to explain further when the fun "wore off", the participants stated the first 12-hour shift was fun, but the next two felt forced. One participant stated, "the sounds he makes are too loud and after the first time playing with Tex, it was just another thing on my to-do list". Follow up on the "too loud" statement revealed that during a council meeting in the unit conference room the nurse was interacting with Tex and "the door was open, and these strange sounds were coming out…some families were annoyed". Another participant indicated that Rosie was loud, but it was the "night shift so most things out

of the ordinary are loud".

Adding an additional task influenced participant CS. Spending time with patients and families was extremely important to each participant. For example, one participant in the intervention group described a situation with a surgery patient. The desire to engage with the patient, who was an artist, the participant had the time to sit with the patient pre-operatively to discuss procedures pre-operative and post-operative and talk about the patient's work as an artist. The participant chose to spend time with the patient and not spend time with the SAR, stating she did not have time for both that shift, and that the patient interaction was more fulfilling.

Each participant in FG or individual interview was asked the four work unit perception questions prior to other structured questions. Although the quantitative data did not change significantly when the questions were controlled for, the questions might address the statistically significant decrease in CS or the significant increase in burnout. Approximately half of the participants indicated that they perceived their leaders were positive and listened to them most of the time. Those who did not, experienced leader turnover during the study and reported the former leader listened and was not often positive or "happy". Participants in that work-unit also stated the former leader was rarely present and usually "off campus". All participants reported support systems outside of work.

Concept awareness and CS. Although the participants were aware of burnout and compassion fatigue, the concept of CS was new. Each participant was asked to describe what made work satisfying. Participant reported caring for the patient was the center of their work. Almost all participants described their conception of satisfaction as "making a difference". One participant in the control group stated,

> "If I can make a difference with my patients, I have had an incredibly great day. But

most of the time, if I can make a difference in just one patient's experience, then I know I have done a good job and that is very satisfying".

Addressing the decrease in CS subscale scores, the question was asked how often do you leave work satisfied? Some of the participants stated it was getting more difficult. Other comments regarding burnout, compassion fatigue, CS demonstrated increased awareness of the problem. Comments included, "I didn't think I was burned out until I started answering the questions on the survey", "hearing about this study, I googled compassion fatigue and I think I have it", and "several nurses on my unit should take these surveys, I know they are burned out!".

Seeking to explain the increase in burnout and compassion fatigue scores, the next questions centered around stressors on the work unit. Four of the participants referred to interaction with PARO as not stressful but relaxing and calming. For example, one participant stated, "I really loved brushing Rosie, it made me a lot calmer and I could actually focus better". When prompted, the participant explained the calming effect helped to focus on the rest of the shift's work. Others stated Rosie or Tex may have felt relaxing during the interaction but as soon as the time was concluded, the stress of work was back. Again, prompting the group participants to expound on stress, stress was related to "tasks". Participants identified tasks as medical record documentation, deadlines, meetings and patient care. Further clarification revealed that although patient care was viewed as a task, it was the one satisfying task. The participants described stressful tasks that take up their time to be charting to satisfy report building, such as hourly rounding and safety briefings, stating care for the patient is what is missing in the day. The major stressor identified was the change in staffing and patient population.

The final question regarded strategies to cope with work stressors. Each participant was asked what strategies are used to decrease stress during work. Finding time away from the unit

was the common theme. “I like to go outside and walk around the hospital when I can, the sunshine helps.” Other discussion included, “I go to the cafeteria”, “X and I meet and walk around the atrium”, and “we buddy up to have lunch in the courtyard when it’s nice outside”. When asked what types of resources would assist with decreasing stressors on the unit, one participant stated, “essential oils”, and another stated “massage chair (laughing)”. One participant stated there was nothing that would relieve stress during the work shift, “it is just a fact of life”.

Control group. The control group were not aware of the responses Tex or Rosie provided and therefore had no bias toward the inanimate seal. The control FG was asked the same questions as the intervention FGs and had the same themes revealed; positive distraction, added tasks, and concept awareness. This group reported the same feeling of awkwardness while petting a stuffed seal, but they also provided information that the inanimate seal (referred to as Lucy or Ricky) was a fun distraction. One participant stated, “I just set Lucy on my lap when I was charting, but I guess that wasn’t really interaction.” One stated, “I felt a little silly walking around with a stuffed seal named Ricky, but I got used to it”, while another said, “I walked around the unit and introduced everyone to Lucy, told them they couldn’t touch without using gel first”.

The control group participants reported the experience as positive and something that distracted from daily work. One control group member stated,

> “I was rubbing Ricky’s fur when I was called to a code blue…..I came back to finish and it really helped. We lost that patient and just having something to hold on to after was soothing, just rubbing the firm and then squeezing it helped me to refocus, soft fur, so calming. I faced the rest of the shift better than I would have if I

hadn't taken that break…...now I don't know if it was the seal or just something…" Consistent responses were that spending time with the seal was an additional task. The inanimate seal was slightly smaller than Tex or Rosie so it could sit on the lap of the nurse that was charting lending to the seal being with the nurse, but not true interaction. Again, the barrier to interaction was not enough time. "There is so much to do…..so much documentation……but really our patients are more demanding than before too", said one participant.

Discussions around leaving work satisfied led to comments regarding too much work and not enough staff. One control group participant stated, "It seems every shift I go home thinking, dang, I wish I had the time to do this or that, it really is very rare I leave feeling like I accomplished everything I want to do for all of my patients".

The unit whose leader left during the study was one of the control groups. The participants in the focus group from this unit reported little to no teamwork during the discussion. One participant stated, "he didn't listen at all. He was always in his office hiding out." Along with the lack of leadership, these focus group participants reported little to no teamwork.

Explaining the Quantitative Evidence

The posttest scores for NSS and ProQOL5 did not show a statistically significant improvement in CS or nurse stress following the intervention as hypothesized. NSS question scores are added together and the higher the score the greater the level of nurse stress. Means on the NSS post-intervention increased slightly (M=78.50, SD = 6.36, SD=6.36 and M=81.27, SD= 11.30) for the intervention group and had no change for the control group. Based on the themes from the focus groups, coping strategies for stress in the work environment need to be more than a positive distraction. The seals were entertaining but did not serve to as a stress relief to major

stressors such as staffing ratios and nursing tasks. Time away from the unit such as taking a walk, eating with a co-worker, or going outside were discussed as the best way to decrease stress during the shift.

A significant decrease in means for the CS scores, pre- (M=39.27, SD= 5.40) and post-intervention (M=30.38, SD=7.60) occurred in the intervention group. Unforeseen changes occurred in staffing ratios during the study timeframe occurred on the intervention units. Each unit adjusted the nurse to patient ratio to the 25th percentile from the 50th percentile based on a national benchmark. Participants in the focus groups discussed the increased workload due to staffing changes. Budget adjustments necessitating a reduction in force was another uncontrollable variation in the norm that occurred during the study timeline. While this reduction in force did not directly impact the units in the study, the changes in organizational structure altered the availability of their resource staff, i.e. monitor techs, nurse directors, and patient care facilitators. Patient acuity changed during the study timeframe for the progressive care unit in the intervention group because of the opening of a new service line. These changes along with the focus groups explanation of nurse stress influenced the increase in burnout, and decreased CS. Participants view nursing tasks as nurse stress which supports the stress scores. Recognizing that the tasks are the stressors assists with understanding why PARO interaction did not reduce nurse stress and in some cases added to it leading to the decrease in CS.

The control group experienced the issues with a leader viewed as negative resulting in a lack of teamwork, and yet the changes in burnout and CS were significant in the intervention group not the control, leading to the possibility that staffing has a greater influence on the significant increase in burnout and decrease in compassion fatigue.

Greater awareness of the concepts of CS and compassion fatigue could possibly have

influenced the posttest scores. The use of the seals, control and intervention, was a positive distraction but work stressors continued to exist. Interaction with the seal, while calming for a short time, did not provide stress relief throughout the shift according to the focus group participants. Although PARO has been reported to decrease anxiety in dementia patients, this study does not support the use for nurse stress in acute care settings.

Table 4.14

Explanation of Quantitative Evidence

Quantitative Evidence	Qualitative Evidence
Insignificant changes in nurse stress	➢ Socially Assistive Robot was positive distraction but was just another task ➢ Stressors included nurse tasks,
Significant increase in burnout	➢ Changes in staffing ratio ➢ Increasing nurse tasks ➢ Decreased resources ➢ Documentation burden
Insignificant changes in secondary traumatic stress	➢ Decreased mortality due to rapid response teams ➢ Debriefing implemented
Insignificant changes in compassion fatigue	➢ Changes to staffing does not take away compassion
Significant decrease in compassion satisfaction	➢ No time to develop relationships with patient/family ➢ Need to make a difference

Discussion

This mixed methods study was guided by the Professional Quality of Life model, which attributes nurse stress to decreasing CS and increasing CF (Stamm, 2010). The model posits there are two ends to the spectrum of professional quality of life with CS at one end and CF at

the other (Stamm, 2010). The level of burnout and secondary traumatic stress reported determines compassion fatigue.

The null hypothesis was accepted for all three hypotheses in this study, and in fact, the trend appeared to be opposite of what was expected. Instead of the SAR having a positive effect on CS, the participants reported a decrease in CS and an increase in burnout. Additionally, the SAR had no effect on nurse stress. The focus groups explained the quantitative results through descriptions of feelings derived from their interactions with the seals, identification of stressors, and challenges. According to the participants, the decrease in CS and increase in burnout was due to an increase in nurse tasks and the inability to leave work completely satisfied with performance.

The higher the score on the CS subscale, the more satisfied the nurse is with their job. Participant CS subscale scores in this study were greater than 23 for both groups, intervention and control, on the pre-test and post-test despite the statistically significant decrease in CS for the intervention group. The lowest score reported on the CS subscale was a 24, which is just slightly above the average (Stamm, 2010). The decrease in CS subscale scores remains confusing. Participants maintained they experienced great teamwork, describing teams that provided encouragement and support. Teamwork enhanced job satisfaction and the feeling of accomplishment despite the decrease in CS. Caring for patients, spending time with them, and receiving accolades for that care from the patient and family appear to be the key to CS in this study.

The decrease in CS following the intervention supports other research that states CS is not related to nurse stress (Kelly et al., 2015). Nurse stress however, can be increased by changes in workload. The possible scores of the NSS range from 40-160, with the higher number

representing high stress. Participants in both control and intervention groups reported an average stress level between 80 and 90. Interestingly, nurse stress scores did not reflect an increase although the participants discussed experiencing increased stress. Nurses may not always recognize or report feeling stressed until it accumulates, which could result in burnout or CF. The increase in burnout and CF scores place the nurses in this study closer to the CF end of the professional quality of life model, increasing the risk for CF. Stress scores did not move the CF or CS scores as was anticipated in the model, but burnout did. The model shows the relationship between increased burnout and decreased CS and is evident in the results of this study. In this case, burnout and the risk for CF increased due to participants experiencing patients with increased acuity and a change in staffing ratios. These nurses believed these changes to be the instigators of increased stress that was reflected as burnout instead of stress. Other findings have supported higher workloads, increased demands from patients and families, and decreased control over role associated with increased stress (Aronsson et al., 2017).

Evidence suggests that nurses with supportive work environments and meaningful recognition report higher compassion satisfaction (Kelly, Baker, & Horton, 2017). The American Association of Critical-Care Nurses (2016) Standards for Establishing and Sustaining a Healthy Work Environment includes meaningful recognition and authentic leadership as integral to the nurse's satisfaction at work. Shingler-Nace, Gonzalez, and Hueston (2018) explored the connection between nurse leaders and CS and found insignificant results, as did this study. Positive leaders and leaders who listen did not influence the CS scores for the participants in this study.

Evidence continues to support the prevention of CF is key to the well-being of the nursing workforce (Clifford, 2014; Kelly et al., 2017). Nurses can report satisfaction with the job and

still be at risk for compassion fatigue (Shingler-Nace et al., 2018). According to Stamm (2010) nurses with burnout and STS scores above 23 are at risk for CF. The possible scores of the NSS range from 40-160, with the higher number representing high stress. The participants in both control and intervention groups reported an average stress level between 80 and 90. Participants in this study reported increased acuity and staffing ratios as the instigators of increased stress. Other findings have supported higher work-loads, increased demands from patients and families, and decreased control over role associated with increased stress (Aronsson et al., 2017).

The participants in this study expressed that job demands were the major reason for stress and burnout. Aronsson et al. (2017) identified themes of patient demands, emotional demands, and job demands as contributors to the development of burnout in nursing. Although discussed as nurse tasks, these tasks, according to the participants, were the demands of the job. While teamwork was influential on changes in burnout in this study, teamwork or co-worker support continue to be reported in the evidence as playing a role in increased burnout (Aronsson et al., 2017).

The type of intervention used to increase CS and to prevent burnout or compassion fatigue is essential. Pet therapy has been used as emotional support and robotic pets like the SAR have been found to be an alternative for patients with dementia (Petersen et al., 2017). The SAR was fun and a positive distraction, but not successful in affecting CS, CF, burnout, or nurse stress. Nurse researchers must look at other interventions to address CS, CF, and burnout. A compassion cart that can be transported between units has been shown to be successful in sustaining CS in bedside caregivers (Kelly et al., 2017). According to Kelly et al. (2017), the cart included healthy snacks, aromatherapy, massagers, and other stress relieving activities. Participants in this study discussed similar support such as food, aromatherapy, and massage

chairs as preferred methods of decreasing stress during work. Evidence also supports meaningful recognition, mindfulness, and debriefing after traumatic events as methods to increase CS and decrease burnout and CF (Kelly et al., 2015; Steinberg, Klatt, & Duchemin, 2017; Todaro-Franceschi, 2013). Recognition from patients and families was a satisfier for the participants in this study. Awards provided by colleagues were also considered meaningful. Organizations implementing interventions to decrease or prevent burnout or CF allow nurses to feel important and that the job they do matters, that they do have some control.

Although in this study nurse stress scores did not influence CS, the discussion revealed the nurses experienced stress in the work environment, and they attributed this stress to the increase in burnout. The increase in burnout then led to a decrease in CS. Attention to the work-load of the acute care nurse can influence the professional quality of life of the nurse. Evidence suggests awareness of the concepts CS, CF, and burnout are effective in combating CF and burnout (Saechao, Anderson, & Connor, 2017), just as the nurses in this study considered increased knowledge of the concepts might have influenced scores.

Strength and Limitations

The strengths of this study included the mixing of research methodologies. Using a mixed methods approach combines the value and perspectives of qualitative and quantitative research, which ultimately continues the advancement of mixed methods research (Creswell & Plano-Clark, 2011). The explanatory mixed method approach allows a broader understanding of the concepts of nurse stress, CS, and compassion fatigue by providing data that are more detailed and in depth (Creswell & Plano-Clark, 2011). Sample was randomized by like units which along with the focus group sample being derived from the original sampling helped create a homogenous subset (Portney & Watkins, 2015).

Addressing a gap in the literature was another strength of this study. Numerous studies exist on nurse stress, CS, and compassion fatigue in nurses, but very few include statistically significant interventions. Multiple studies regarding the use of SARs with elder patients experiencing dementia have shown statistical changes in behavior due to the SAR interaction, but only anecdotal information exists concerning the nurses use of the SAR with patients. Compassion satisfaction and compassion fatigue are timely issues. Nurses are facing some of the most stressful situations of in workplace (NIOSH, 2018). Facing performance targets and increased workloads (Paterson et al., 2013) nurses are also managing increasingly complex patients, long shifts, and technology changes (McCloskey & Taggart, 2010).

The more concerning limitations of this study included attrition, uncontrollable extraneous variables, and heterogeneity between groups. The explanatory sequential design particularly is at risk to attrition due to the two phases of data collection (Portney & Watkins, 2015). The primary investigator on site assisted with the participation rate, however the sample size remained small. Data collection was limited to one hospital in one geographic level, which limited the generalizability of the conclusions (Portney & Watkins, 2015).

Although data analysis controlled for identified covariates, there was possibility of unknown variables during the study that could influence the findings (Munro, 2011). Two budgetary changes and one change in acuity were unknown variables that could not be controlled. Contextual factors, such as taking the pre-test and post-test under different circumstances could have influenced responses (Portney & Watkins, 2015).

The researcher led the focus groups with a neutral rapport and used prepared prompts to address questions to avoid interjecting feelings (Patton, 2015). It is possible the participants answered questions in the focus group based on the perception of what responses they thought

the researcher expected, known as the Hawthorne effect (Portney & Watkins, 2015).

Recommendations

According to Stamm (2010), the PQoL of the nurse is negatively affected by stress, trauma, depression, and frustration in the practice environment resulting in compassion fatigue. Nurses experiencing compassion fatigue can place themselves and their patients at risk for injury and error. The findings in this study demonstrated the statistically significant increase in nurse burnout and a decrease in CS over a short time period. A better understanding of the effects and prevention of burnout and the connection to decreased CS are still needed. Larger sample sizes and more diverse settings are recommended to provide more generalizable evidence (Portney & Watkins, 2015). Assessing biometric measures of participants during the study could also provide a deeper understanding of the effect of the SAR on stress.

Compassion satisfaction is another concept that needs further exploration. Interventions focused on increasing CS might improve the overall job satisfaction and the PQoL for the nursing workforce. Exploring what types of interventions are more successful in increasing CS may encourage hospitals to develop and implement. According to Clifford (2014), the prevention of compassion fatigue is more important than intervening therefore; healthy practice environments need to be the focus. Development of coping strategies that diminish work and lifestyle stress along with the promotion of rest, relaxation, and social support can lead to prevention of compassion fatigue (Clifford, 2014; Hinderer et al., 2014; Whitebird et al., 2013).

Self-awareness and support systems are also important to the recognition of compassion fatigue (Lachman, 2016). Providing nurses with the opportunity to learn self-awareness and offering education on coping strategies for stress could sustain or improve CS. Another recommendation would be to make resources available for support outside of work to increase

the level of CS.

Nurse tasks and the stressors attached are not decreasing, therefore, attention should be paid to coping strategies for work stress. Allow nurses the opportunity to spend time with patients building that nurse-patient relationship that leads to CS (Todaro-Franceschi, 2013). Replenishing the compassion being given during every shift by meaningful recognition or through attention to burnout symptoms should be explored. Training nurse leaders to actively listen and create positive environments for nurses could improve CS. Exercises in teamwork to create positive work environments would be another step to promote CS. Further studies to discover statistically significant interventions for harmful stress, burnout, and decreased CS are needed. A loss of CS leads to compassion fatigue decreasing the PQoL; therefore, attention to maintaining or increasing CS in nurses could be the answer to improving the PQoL of acute care nurses.

Summary

The American Nurses Association (ANA) Code of Ethics emphasizes the centrality of caring and compassion for patients, for colleagues, and for self (ANA, 2015, p.1). The first provision in the ANA Code of Ethics states" the nurse practices with compassion and respect for the inherent dignity, worth, and uniqueness of every individual" (ANA, 2015). Nurses are expected to provide compassionate care. Todaro-Franceschi (2013) states, "actualizing our potential as nurses is contingent upon feeling compassion for others, it is a requisite characteristic for our happiness…purposeful actions that foster and enhance our connectedness are the essence of nursing" (p.42). Nursing is more than a science; it is also founded on the art of compassion. Regrettably, CF is on the rise in the nursing profession (Perregrini, 2019).

Nurses with higher education and more experience were found to have the greater risk for burnout and CF (Kelly et al., 2015). Protecting nurses that are experiencing decreasing CS warrants further exploration. A nursing shortage is imminent and protecting nurses from losing compassion effects the physical and emotional health of the nurse improving retention (Wijdenes, Badger, & Sheppard, 2019). Focusing on sustaining CS to prevent CF could foster retention of nurses. The workforce demands are exceeding the supply of nurses urging organizations to create supportive environments and professional support systems (Wahl, Hultquist, Struwe, & Moore, 2018).

Positive leadership, teamwork, and support systems are important pieces of a healthy professional quality of life. Nurses with depleted compassion can place themselves and patients at risk (Wijdenes, Badger, & Sheppard, 2019). To continue to place patients and families at the center of nursing care, burnout, CF, and CS warrants attention.

References

Academy of Medical-Surgical Nurses. (2018). Healthy practice environment advocacy guide. Retrieved from amsn.org/practice-resources/healthy-practice-environment

Adriaenssens, J., Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies, 52,* 649–661.

Aiken, L.H., Sloan, D.M., Bruyneel, L., Van den Heede, K., & Sermeus, W. (2013). Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. *International Journal of Nursing Studies, 50*(2), 143-153. doi: 10.1016/j.jinurtu.2012.11.009

American Nurses Association. (2015). *Code of ethics for nurses with interpretive statements*. Retrieved from nursingworld.org/MainMenuCategories/EthicsStandards/CodeofEthicsforNurses

American Association of Critical-Care Nurses.2016). AACN standards for establishing and sustaining healthy work environments. Retrieved from aacn.org/nursing-excellence/standards/aacn-standards-for-establishing-and-sustaining-healthy-work-environments.

American Psychological Association. (n.d.) Understanding chronic stress. Retrieved from http://www.apa.org/helpcenter/understanding-chronic-stress.aspx

Aronsson, G., Theorell, T., Grape, T., Hammarström, A., Hogstedt,C., Marteinsdottir, I., … & Hall, C. (2017). A systematic review including meta-analysis of work environment and burnout symptoms. *BMC Public Health 17*:264 doi 10.1186/s12889-017-4153-7

Bao, S., & Taliaferro, D. (2015). Compassion fatigue and psychological capital of nurses working in acute care settings. *International Journal for Human Caring, 19*(2), 35-40.

Berg, G.M., Harshbarger, J.L., Ahlers-Schmidt, C.R., & Lippoldt, D. (2016). Exposing compassion fatigue and burnout syndrome in a trauma team: A qualitative study. *Journal of Trauma Nursing, 16*(31), 3-10.

Broekens, J., Heerink, M., Rosendal, H. (2009). Assistive social robots in elderly care: A review. *Gerontechnology*, 8, 94-103.

Burtson, P.L., & Strichler, J.F. (2010). Nursing work environment and nurse caring: Relationship among motivational factors. *Journal of Advanced Nursing*, *66*(8), 1819-1831. doi: 10.1111/j.1365-2648.2010.05336x

Broekens, J., Heerink, M., & Rosendal, H. (2009). Assistive social robots in elderly care: A review. *Gerontechnology*, *8*(2):94-103; doi: 10.4017/gt.2009.08.02.002.00

Canady, K.E., & Allen, D. (2015). Stressors in the working environment of registered nurses. *International Journal of Nursing & Clinical Practices, 2,* 157-162. doi.org/10.15344/2394-4978/2015/157

Chen, M.C., Fang, S.H., Fang, L. (2015). The effects of aromatherapy in relieving symptoms related to job stress among nurses. *International Journal of Nursing Practice, 21*(11), 87-93. doi: 10.1111/ijn.12229

Clifford, K. (2014). Who care for the carers? Literature review of compassion fatigue and burnout in military health professionals. *Journal of Military and Veterans' Health. 22*(3), 53-63.

Coetzee, S. K., & Klopper, H.C. (2010). Compassion fatigue within nursing practice: A concept analysis. *Nursing and Health Sciences, 12,* 235-243. doi:10.1111/j.1442-2018.2010.00526.x

Creedy, D.K., Sidebotham, M., Gamble, J., Pallant J., & Fenwick, J. (2017). Prevalence of burnout, depression, anxiety, and stress in Austyralian midwives: A cross-sectional survey. *BMC Pregnancy and Childbirth 17*(13), 1-8. doi.10.1186/s12884-016-1212-5

Creswell, J.W., & Plano-Clark, V.L. (2011). *Designing and conducting mixed methods research.* 2nd edition. Thousand Oaks, CA. SAGE Publications, Inc.

Crossman, M.K., Kazdin, A.E., & Kitt, E. (2018). The influence of a socially assistive robot on mood, anxiety, and arousal in children. *Professional Psychology: Research and Practice, 49*(1). 48-56. http://dx.doi.org/10.1037/pro0000177

Currid, T. (2009). Experiences of stress among nurses in acute mental health settings. *Nursing Standard, 23*(44), 40-46. doi: 10.7748/ns2009.07.23.44.40.c7108

Cutshall, S.M., Wentworth, L.J., Wahner-Roedler, D.L., Vincent, A., Schmidt, J.E., Loehrer, L.L., Cha, S.S., & Bauer, B.A. (2011). Evaluation of a biofeedback-assisted meditation program as a stress management tool for hospital nurses: A pilot study. *EXPLORE 7*(2), 110-112.

Dautenhahn, K., & Werry, I. (2004). Towards interactive robots in autism therapy: Background, motivation, and challenges. *Pragmatics & Cognition, 12*(1), 1-35.

Doyle, L., Brady, A.M., & Byer, G. (2016) An overview of mixed methods research-revisited. *Journal of Research in Nursing, 21*(8), 623-635. doi: 2048/10.11771174498711667425 7

Edney, A.T.B. (1995). Companion animals and human health: An overview. *Journal of the Royal Society of Medicine,* 88, 704–708.

Emergency Nurses Association. (2014). Topic brief: Compassion fatigue. Retrieved from https://www.ena.org/docs/default-source-library/practice-resources/topic-briefs/compassion-fatigue.pdf

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs-principles & practice. *Health Services Research, 48*(6pt1), 2134-2156. doi: 10.1111/1475-6773.12117

Field, A. (2013). *Discovering Statistics Using SPSS*, 4th edition: Sage Publications.

Firth-Cozens, J., & Cornwell, J. (2008). The point of care: Enabling compassionate care in acute hospital settings. Retrieved from https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/poc-enabling-compassionate-care-hospital-settings-apr09.pdf

Frels, R.K., & Onwuegbuzie, A.J. (2012). Administering quantitative instruments with qualitative interviews: A mixed research approach. *Journal of Counseling & Development*, 91, 184-194. doi: 10.1002/j.1556-6676.2013.00085.x

Foith, L. (2017). Therapy dogs and the impact on employees in the pediatric medical setting. (Dissertation). Retrieved from https://digitalcommons.acu.edu/cgi/viewcontent.cgi?article=1067&context=etd

Fong, T., Nourbakhsh, I.R., Dautenhahn, K. (2003). A survey of socially interactive robots. Robotics and Autonomous Systems, 42, 143-166.

Gabriel, A. S., Erickson, R. J., Moran, C. M., Diefendorff, J. M., & Bromley, G. E. (2013). A multilevel analysis of the effects of the practice environment scale of the nursing work index on nurse outcomes. *Research in Nursing & Health,* 36, 567-581. doi: 10.1002/nur.21562

Gray-Toft, P., & Anderson, J.G. (1981). The nursing stress scale: Development of an instrument. *Journal of Behavioral Assessment, 3*(1), 11-23.

Greene, J.C., Caracelli, V.J., & Graham, W.F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis 11*(3), 255-274.

Health and Safety Executive. (2018). Retrieved July 22,2018, from http://www.hse.gov.uk/stress/what-to-do.htm

Hegney, D.G., Craigie, M., Hemsworth, D. Osseiran-Moisson, R. Aoun, S. Francis, K., & Drury, V. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression and stress in registered nurses in Austrailia: study 1 results. *Journal of Nursing Management,* 22, 506-518. doi: 10.1111/jonm.12160

Hediger, K., & Hund-Georgiadis, M. (2017). Animal assisted therapy in the view of staff members before and after implementation in a rehabilitation clinic. *Human-Animal Interaction Bulletin,5*(22), 61-73.

Hevezi, J.A. (2015). Evaluation of a meditation intervention to reduce the effects of stressors associated with compassion fatigue among nurses. *Journal of Holistic Nursing 34*(4), 343-350. doi:10.1177/0898010115615981

Hinderer, K.A., VonRueden, K.T., Friedmann, E., McQuillan, K.A., Gilmore, R. Kramer,B., & Murray, M.(2014). Burnout, compassion fatigue, compassion satisfaction, and secondary

traumatic stress in trauma nurses. *Journal of Trauma Nursing, 21*(4), 160-169. doi:10.1097/JTN.0000000000000055

Hooper, C., Craig, J. Janvrin, D.R., Wetsel, M.A., & Reimels, E. (2010). Compassion satisfaction, burnout, and compassion fatigue among emergency nurses compared with nurses in other selected inpatient specialties. *Journal of Emergency Nursing ,36*(5), 420-427. doi:10.1016/j.jen.2009.11.027

Hunsaker, S., Chen, JH., Maughan, D., & Heaston, S. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *Journal of Nursing Scholarship, 47*(2), 186-194. doi:10.1111/jnu.12122

IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.

Joinson, C. (1992). Coping with compassion fatigue. *Nursing, 22*(4), 116-121.

Kelly, L., Baker, M., & Horton, K. (2017) Code compassion: A caring fatigue reduction intervention. *Nursing Management, 38*(5), 18-22. doi:10.1097/01.NUMA.0000515800.02592.d4

Kelly, L., & Lefton, C. (2017). Effect of meaningful recognition on critical care nurse' compassion fatigue. *American Journal of Cortical Care, 26*(6), 438-444. doi: 10.4037/ajcc2017471

Kelly, L., Runge, J., & Spencer, C. (2015). Predictors of compassion fatigue and compassion satisfaction in acute care nurses. *Journal of Nursing Scholarship, 47*(6), 522-528. doi: 10.1111/jnu.12162

Khamisa, N., Peltzer, K., & Oldenburg, B. (2013). Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review. *International Journal of Environmental Research and Public Health*, 10, 2214-2240. doi: 10.3390/ijerph10062214

Kovjanic, S., Schuh, S., & Jonas, K. (2013). Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology*, 86, 543-555. doi:10.1111/joop.12022

Lachman, V.D. (2016). Compassion fatigue as a threat to ethical practice: identification, person, and workplace prevention/management strategies. *MEDSURG Nursing 25*(4), 275-279.

Lambrou, P., Papastavrou, E., Merkouris, A., Middleton, N. (2015). Professional environment and patient safety in emergency departments. *International Emergency Nurse, 23*(2), 150-155.

Lazarus, R.S. (1993). Coping theory and research: past, present, and future. *Psychosomatic Medicine, 55*, 234-247.

Lin, S., Huang, C., Shiu, S., & Yeh, S. (15). Effects of yoga on stress, stress adaption, and heart rate variability among mental health professionals-a randomized controlled trial. *Worldviews on Evidence-Based Nursing 12*(4), 236-245.

Marine, A., Ruotsalainen, J.H., Serra, C., & Verbeek, J.H. (2009). Preventing occupational stress in healthcare workers. Cochrane Database of Systematic Reviews. doi:10.1002/14651858. CD002892.pub2

Mazzotta, C.P. (2015). Paying attention to compassion fatigue in emergency nurses. *Journal of Clinical Nursing, 115*, 454-479.

McCloskey, S., & Taggart, L. (2010). How much compassion do I have left? An exploration of occupational stress among children's palliative care nurses. *International Journal of Palliative Care, 16*(5), 233-243.

McHugh, M.D., Kutney-Lee, A., Cimiotti, J.P., Sloane, D.M., & Aiken, L.H. (2011). Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Affairs, (30)*2, 202-210.

McVicar, A. (2003). Workplace stress in nursing: a literature review. *Journal of Advanced Nursing, 44*(6), 633-642.

Mealer, M., Jones, J., & Moss, M. (2012). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine, 38*(9), 1445-1451. doi:10.1007/s00134-012-2600-6

Medland, J., Howard-Ruben, J., & Whitaker, E. (2004). Fostering psychosocial wellness in oncology nurses: Addressing burnout and social support in the workplace. *Oncology Nursing Forum 31*(1), 47-54. doi:10.1188/04.0NF.47-54

Melville, C. (2012). Professional compassion fatigue: What is the true cost of nurses caring for the dying? *International Journal of Palliative Nursing, 18*(22), 606-611.

Merriam-Webster online. (n.d.). Retrieved on May 17, 2018 from //www.merriam-webster.com/dictionary/robot.

Munro, B.H. (2001). *Statistical methods for health care research*. 4th edition. Philadelphia, PA: Lippincott.

National Institute for Occupational Safety and Health. (2012). Retrieved from: https://www.cdc.gov/niosh/nioshtic-2/20042107.html

Ostlund, U., Kidd, L., Wengstrom, Y., & Rowa-Dewar,N. (2011). Combining qualitative and quantitative research within mixed method research designs: A methodological review. International Journal of Nursing Studies, 48, 369-383.

Oxford Dictionary Online. (n.d.). Retrieved from https://en.oxforddictionaries.com/definition/stress

PARO. (n.d.). PARO therapeutic robot. Retrieved from http://parorobots.com/index.asp.

Paterson, T.A., Luthans, F.,& Wonho, J. (2013). Thriving at work: Impact of psychological capital and supervisor support. *Journal of Organization Behavior, 35*(3),434-446. doi.org/10.1002/job.1907

Patton, M.Q. (2015). *Qualitative Research & Evaluation Methods.* 4th edition. Thousand Oaks, CA: SAGE.

Petersen, S., Houston, S., Qin, H., Tague, C., & Studley, J. (2017). The utilization of robotic pets in dementia care. *Journal Alzheimer's Disease, 55*(2), 569-574.

Phelps, A., Lloyd, D., Creamer, M., & Forbes, D. (2009). Caring for carers in the aftermath of trauma. *Journal of Aggression, Maltreatment & Trauma*, 18, 313-330.

Pollack, M.E. (2005). Intelligent technology for an aging population: The use of AI to assist elders with cognitive impairment. *AI Magazine 26*(2), 9-24.

Portney, L. G., & Watkins, M. P. (2015). *Foundations of clinical research: Application to practice*. 3rd edition. Philadelphia, PA: F. A. Davis Company.

Portnoy, D. (2011). Burnout and compassion fatigue: Watch for the signs. *Health Progress, 92*(4), 46-50.

Potter, P., Deshields, T., Berger, J.A., Clarke, M., Olsen, S., & Ling, C. (2013). Evaluation of a compassion fatigue resiliency program for oncology nurses. *Oncology Nursing Forum,*

40(2), 180-187.

Raingruber, B., & Robinson, C. (2007). The effectiveness of Tai Chi, Yoga, meditation, and Reiki healing sessions in promoting health and enhancing problem solving abilities of registered nurses. *Issues in Mental Health Nursing, 28,* 1141-1155. doi:10.1080/01612840701581255

Ray, S.L., Wong, C., White, D., & Heaslip, K. (2013). Compassion satisfaction, compassion fatigue, work life conditions, and burnout among frontline mental health care professionals. *Traumatology, 19*(4), 255-267. doi: 10.1177/153476561247114

Robinson, H., & Broadbent, E. (2016). Group sessions with PARO in a nursing home: Structure, observations, and interviews. *Australia Journal of Aging, 35*(2), 106-112. doi: 10.1111/ajag.12199

Robinson, H., MacDonald, B., Kerse, N., & Broadbent, E. (2013). The psychosocial effects of a companion robot: A randomized controlled trial. *Journal of American Medical Directors Association, 14*(9), 661-667. doi.org/10.1016/j.jamda.2013.02.007

Rushton, C.H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high intensity settings. *American Journal of Critical Care, 24*(5), 412-420. doi:org/10.4037/ajcc2015291

Saber, D.A. (2014). Frontline registered nurse job satisfaction and predictors over three decades: A meta-analysis from 1980 to 2009. Nursing Outlook, 62, 402-414. doi:.org/10.1016/j.outlook.2014.05.004

Sabo, B. (2011). Reflecting on the concept of compassion fatigue. *The Online Journal of Issues in Nursing, 16*(1).

Sacco, T., Ciurzynski, S.M., Harvey, M.E., Ingersoll, G.L., (2015). Compassion satisfaction and

compassion fatigue among critical care nurses. *Critical Care Now, 35*(4), 32-43.

Saechao, N., Anderson, A., & Connor, B. (2017). In or unit: ICU interventions for moral distress and compassion fatigue. *Nursing2017CriticalCare 12*(1), 5-8.

Sanso, N., Galiana, L., Oliver, A., Pascual, A., Sinclair, S., & Benito, E. (2015). Palliative care professionals' inner life: Exploring the relationships among awareness, self-care, and compassion satisfaction and fatigue, burnout, and coping with death. *Journal of Pain and Symptom Management, 50*(2), 200-207. doi:10.1016/j.painsymman.2015.02.013

Senyuva, E.S., Kaya, H., & Bodur, G. (2014). Relationship between self-compassion and emotional intelligence in nursing students. *International Journal of Nursing Practice, 20,* 588-596.

Schmidt, M., & Haglund, K. (2017). Debrief in emergency departments to improve compassion fatigue and promote resiliency. *Journal of Trauma Nursing, 24*(5), 317-322. doi:10.1097/JTN.0000000000000315

Shingler-Nace, A., Gonzalez, J. ,& Heuston, M. (2018). Conquering compassion fatigue: Lessons learned from the nurse manager. *Nursing Management, 49*(12), 38-45.

Slocum-Gori, S., Hemsworth, D., Chan, W.W., & Carson, A. (2011). Understanding compassion satisfaction, compassion fatigue, and burnout: A survey of the hospice palliative care workforce. *Palliative Medicine, 27*(2), 172-178. doi: 10.1177/0269216311431311

Smart, D., English, A., James, J., Wilson, M., Daratha, K.B., Childers, B., & Magera, C. (2014). Compassion fatigue and satisfaction: A cross-sectional survey among US healthcare workers. *Nursing and Health Sciences, 16,* 3-10. doi: 10.1111/nhs.12068

Sorenson, C., Bolick, B., Wright, K., & Hamilton, R. (2017). An evolutionary concept analysis of compassion fatigue. *Journal of Nursing Scholarship. 49*(5), 557-563.

Stamm, B.H. (2010). *The Concise ProQOL Manual*, 2nd Ed. Pocatello, ID. Retrieved from http://proqol.org

Stamm, B.H., & Figley, C.R. (2009). *Advances in the theory of compassion satisfaction and fatigue and its measurement with the ProQOL5. International Society for Traumatic Stress Studies.* Atlanta, GA.

Stanford University. (n.d.). Professor John McCarthy. Retrieved from http://jmc.stanford.edu/

Steinberg, B.A., Klatt, M., & Duchemin, A. (2017). Feasibility of a mindfulness-based intervention for surgical intensive care unit personnel. *American Journal of Critical Care, 26*(1), 10-18. doi: https://doi.org/10.4037/ajcc2017444

Sung, K., Seo, Y, & Kim, J.H. (2012). Relationships between compassion fatigue, burnout, and turnover intention in Korean hospital nurses. *Journal of Korean Academic Nursing, 42*(7), 1087-1094. doi:org/10.4040/jkan.2012.42.7.1087

Tapus, A., Maja, M., & Scassellatti, B. (2007). The grand challenges in socially assistive robotics. *IEEE Robotics and Automation Magazine, Institute of Electrical and Electronics Engineers, 14*(1).

Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage Publications.

Todaro-Franceschi, V. (2013). *Compassion Fatigue and Burnout in Nursing: Enhancing Professional Quality of Life.* New York, NY: Springer.

Tremblay, M.S., & Messervey, D. (2011). The job demands-resources model: Further evidence for the buffering effect of person resources, *Journal of Individual Psychology*, 37, 10-19.

van Mol, M.C., Kompanje, E.J.O., Benoit, D.D.M., Bakker, J., & Nijkamp, D. (2015). The prevalence of compassion fatigue and burnout among health care professional in intensive care units: A systematic review. *PLoS ONE, 10*(8), 1-22. doi:10.1371/journal.pone.0136955

Wagaman, M.A., Geiger, J.M., Shockley, C.,& Seagal, E.A. (2015). The role of empathy in burnout, compassion satisfaction, and secondary traumatic stress among social workers. *Social Work, 60*(3), 201-209. doi.org/10.1093/sw/sw014

Wahl, C., Hultquist, T.B., Struwe, L., & Moore, J. (2018). Implementing a peer support network to promote compassion without fatigue. *The Journal of Nursing Administration, 48*(12), 615-621. doi.10.1097/NNA.0000000000000691

Waltz, C., Strickland, O.L., & Lenz, E.R. (2017). *Measurement in nursing and health research.* 5th edition. New York, NY: Springer Publishing Co.

Wentzel, D., & Brysiewicz, P. (2017). Integrative review of facility interventions to manage compassion fatigue in oncology nurses. *Oncology Nursing Forum, 44*(3), 124-140. doi: 10.1188/17.ONF.e124-E140

White, J. (2016). Animal therapy can help doctors & nurses, too. Retrieved from www.healthcarebuisnesstech.com/animal-therapy-staff/

Whitebird, R.R., Asche, S.E., Thompson, G.L., Rossom, R., & Heinrich, R. (2013). Stress, burnout, compassion fatigue, and mental health in hospice workers in Minnesota. *Journal of Palliative Medicine (16)*12, 1534-1539. doi:10.1089/jpm.2013.0202

Wijdenes, K.L., Badger, T.A., & Sheppard, K.G. (2019). Assessing compassion fatigue risk among nurses in a large urban trauma center. *The Journal of Nursing Administration, 49*(1), 19-23. doi:10.1097/NNA.0000000000000702

Wiskow, C., Albreht, T., & de Pietro, C. (2010). How to create an attractive and supportive working environment for health professionals. *Health Systems and Policy Analysis,* 15, 1-48.

World Health Organization. (n.d.). Five keys to healthy workplaces. Retrieved from http://www.who.int/occupational_health//healthy_workplaces/en/

Yoder, E.A. (2010). Compassion fatigue in nurses. *Applied Nursing Research, 23,* 191-197. doi: 10.1016/j.apnr.2008.09.003

Chapter 5

Summary and Conclusions

Compassion is central to the practice of nursing (ANA, 2015). Compassion can be defined as a basic kindness with a deep awareness of the suffering of oneself and other living things, coupled with the wish and effort to relieve it (vocabulary.com, n.d.). Nurses in all settings want to provide compassionate care to patients and families. In order to provide compassion, relationships must be built between the nurse and the patient (Todaro-Franceschi, 2015). Unfortunately, CF is increasing in nurses today (Perrigrini, 2019). The impact of decreasing compassion levels on the physical, emotional, and mental well-being of the nurse can be devastating (Wijdenes, Badger, & Sheppard, 2019). Hospitals must focus on sustaining CS for acute care nurses. Leadership and positive work environments are needed to maintain CS (Kelly et al., 2015).

This study examined the effectiveness of a SAR on CS in acute care nurses. To begin the process a current state of the science was needed to gain insight into CF and CS. Chapter 2, "When Compassion is Lost" (Henson, 2017), discussed evidence of CF; it's signs and symptoms, influencers, and possible interventions. Stamm (2010) defines CF as a state of exhaustion and dysfunction due to continued contact with suffering and stress (Stamm, 2010). Multiple studies reported CF in the critical care areas and those dealing with end of life, but acute care nurses also struggle with stress and suffering. Nurses in this study discussed continual demands on their time for tasks that remove them from patient care. Unforeseen challenges frequently occur in nursing practice varying from budget to patient populations leading to stress. Significant findings in burnout ($p<0.01$) following the intervention supported the nurses account of too many tasks and not enough time to build relationships with patients. Patients in acute care settings are suffering,

if only from being separated from their natural environment, and the nurse being able to provide the needed care is essential to nurse satisfaction.

To advocate for programs to assist with sustaining CS, clarity regarding concepts such as burnout, CS, and CF are needed. Improving the understanding of the concepts could lead to prevention strategies or interventions that fit the need of the nurse. Chapter 3, "Burnout or Compassion Fatigue: A Comparison of Concepts", set for publication November/December 2019, compares burnout and CF to differentiate between the two concepts. Hospital leaders should be mindful of the gradual onset of burnout compared to the rapid flash of CF to assist with designing programs and aligning resources to combat these issues (Aronsson et al., 2017). Those with burnout tend to be frustrated, angry, and tend to isolate making it difficult to provide help (Baier et al., 2018). Those with CF tend to become completely desensitized to patients and demonstrate apathy to all (Aronsson et al., 2017). Understanding these characteristics allows for early detection of burnout or CF. Early recognition of CF or burnout can benefit the professional quality of life of nurses.

This study proposed a possible solution to decreasing stress and increasing CS. Instead, CS significantly decreased ($p<0.01$) following the intervention which combined with the comments from the focus groups could be contributed to changes in the work environment with budget and staffing. The use of the robotic seal did not provide stress relief and therefore did not provide help in improving CS. Although nurse stress did decrease slightly, burnout increased significantly ($p<0.01$) warranting further explanation of why this occurred. Although Petersen et al. (2017), found the SAR to work for distracting dementia patients, the acute care nurses continued to view interaction with the SAR as another task rather than a calming distraction. The

SAR was considered a fun, short term distraction. Other methods of contending with those unexpected challenges faced by nurses need to be explored.

The final recommendation is to focus on CS. The current study identified a relationship between CS and burnout, as CS decreases burnout increases. Focus groups reported perceived support from leaders as beneficial in decreasing stress for the acute care nurses. Concentrating on maintaining or increasing CS can help prevent the development of CF and strengthen the well-being of the nursing workforce (Perregrini, 2019). Nurse leaders need to gain insight into what CS looks like in their teams in order to prevent CF. Implementation of leader listening rounds, open door policies, and positive leadership are important to provide support to nurses.

Leaders should also be aware of signs and symptoms of CF and burnout to assist with identification of nurses that are at risk. Hospital leaders should promote opportunities to debrief following traumatic events, encourage mindfulness, and teach self-care to nurses (Perregrini, 2019). Healthy work environments support excellence while striving to protect the overall well-being of nurses (WHO, 2018). Maintaining CS is more essential than intervening in CF (Clifford, 2014). Nurse tasks or job demands are not going to decrease, therefore helping nurses to explore coping strategies for stress during the work shift and to identify methods to increase self-awareness would be substantial interventions toward improving the professional quality of life for nurses.

References

American Nurses Association (ANA). (2015). Code of ethics for nurses with interpretive statements. Retrieved from http://www.nursingworld.org/MainMenuCategories/EthicsStandards/CodeofEthicsforNurses

Aronsson, G., Theorell, T., Grape, T., Hammarström, A., Hogstedt,C., Marteinsdottir, I., … & Hall, C. (2017). A systematic review including meta-analysis of work environment and burnout symptoms. *BMC Public Health 17*:264 doi 10.1186/s12889-017-4153-7

Baier, N., Roth, K., Felgner, S., & Henschke, C. (2018). Burnout and safety outcomes-a cross-sectional nationwide survey of EMS-workers in Germany. *BMC Emergency Medicine* 18(1), 24. doi: 10.1186/s12873-018-0177-2

Clifford, K. (2014). Who cares for the carers? Literature review of compassion fatigue and burnout in military health professionals. *Journal of Military and Veterans' Health, 22*(3), 53-63.

Kelly, L., Runge, J., & Spencer, C. (2015). Predictors of compassion fatigue and compassion satisfaction in acute care nurses. *Journal of Nursing Scholarship, 47*(6), 522-528. doi: 10.1111/jnu.12162

Perrigrini, M. (2019). Combatting compassion fatigue. *Nursing, 49*(2):50-54. doi:10.1097/01.NURSE.0000552704.58125.fa.

Petersen, S., Houston, S., Qin, H., Tague, C., & Studley, J. (2017). The utilization of robotic pets in dementia care. *Journal Alzheimer's Disease, 55*(2), 569-574.

Stamm, B.H. (2010). *The Concise ProQOL Manual*, 2nd Ed. Pocatello, ID. Retrieved from http://proqol.org

Todaro-Franceschi, V. (2013). *Compassion Fatigue and Burnout in Nursing: Enhancing PQoL*. New York, NY: Springer.

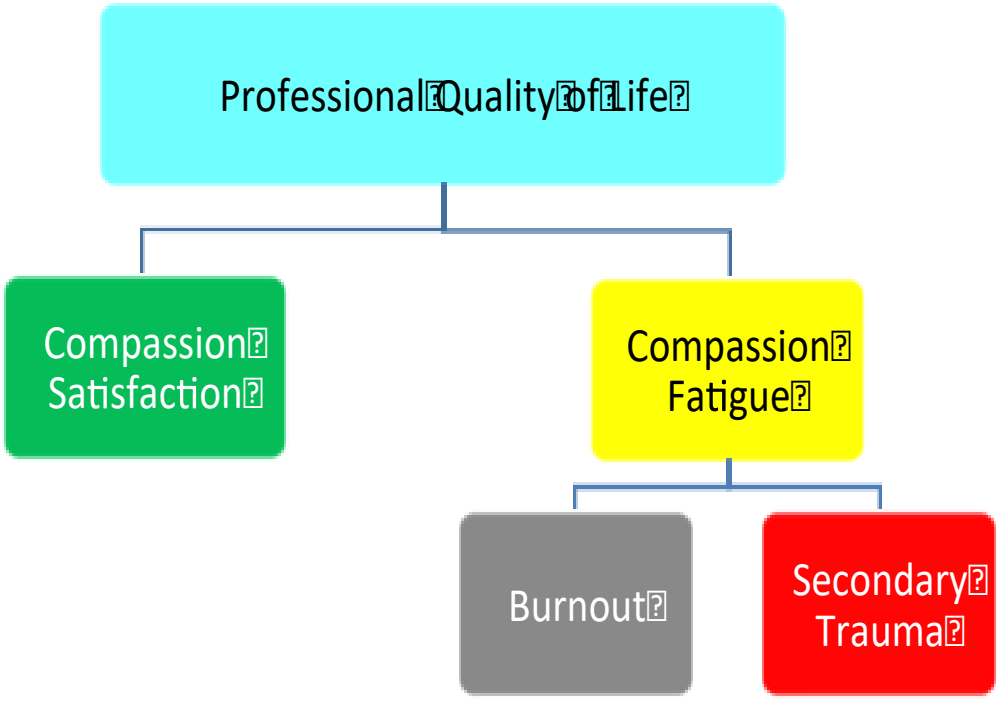
Vocabulary.com. (n.d.). Retrieved from https://www.vocabulary.com/dictionary/compassion

Wijdenes, K.L., Badger, T.A., & Sheppard, K.G. (2019). Assessing compassion fatigue risk among nurses in a large urban trauma center. *The Journal of Nursing Administration, 49*(1), 19-23. doi:10.1097/NNA.0000000000000702

World Health Organization. (n.d.). Five keys to healthy workplaces. Retrieved from http://www.who.int/occupational_health//healthy_workplaces/en/

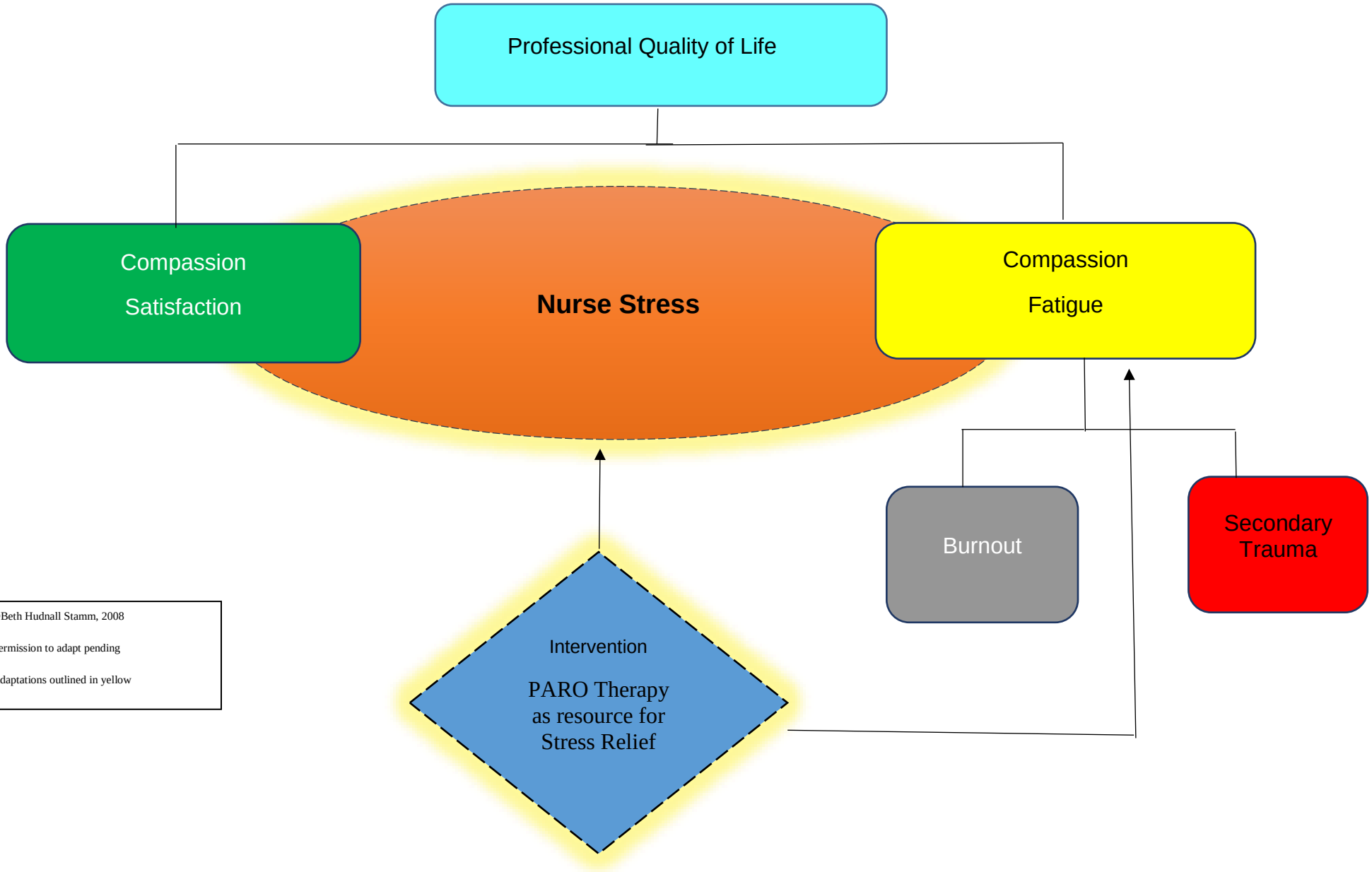
Appendix A

Professional Quality of Life Model



Appendix B

Adapted Professional Quality of Life Model



Appendix C

Recruitment Email

Greetings RNs

You are invited to participate in a study evaluating the effectiveness of an interactive intervention in reducing stress and decreasing compassion fatigue. The study involves 15 minutes per shift and approximately 20 minutes to complete surveys before and after the intervention.

Eligibility requirements:
RN with 6 or more months experience
Spend 50% or more of time in direct patient care.
Full or part-time.

Exclusion: Managers, Emergency Department Nurses, and Labor and Delivery Nurses

For more information please contact shereehenson@texashealth.org or call 817-433-6270.

This study has been approved by the UT Tyler and THR institutional review boards.

Compassion fatigue and nurse stress are important issues facing nurses today. Compassion satisfaction is the feeling of well-being the nurse gets from caring for patients. We want this to increase. Management of workplace stress might be a strategy to decrease compassion fatigue and increase compassion satisfaction.

Thank you for considering participating in this study.

Appendix D

Informed Consent to Participate in Research

Study Title: The Effectiveness of a Robotic Seal on Compassion Satisfaction in Acute Care Nurses: A Mixed Methods Approach

Principal Investigator: J. Sheree Henson, MSN, RN-BC, NEA-BC

This research study involves compassion satisfaction, compassion fatigue, and nurse stress. The study will provide information regarding interventions to improve compassion satisfaction therefore having a potential effect on compassion fatigue. Your participation is completely voluntary, and you may withdraw your consent at any time. You will be asked to participate in focus groups following the intervention time. There are 2 surveys and short demographic form that DOES NOT include your name and will take approximately 15 minutes to complete. The survey will be open for 2 weeks from the date of this email. In addition to this email, I will send you a reminder email in a week.

This is a minimal risk study. There are no physical risks, legal risks, social risks, or economic harms if you participate in this study. A potential benefit to you may be that you are providing needed information about the RQI program. There will be no costs to you for participating in this study.

Confidentiality of your personal information is assured. No identifying personal information will be collected about you. There will be no name or number collected to link you with your survey data.

All electronic data needed for statistical analysis will be stored in a password-protected computer located in the locked office of the principal investigator.

Presentations at healthcare meetings and publications in healthcare journals are anticipated following study completion. All data will be reported as aggregate data. No connection to THR or you will be contained in any presentation or publication.

Thank you for your consideration of participation in the study. If you think of any questions, please do not hesitate to contact the principal investigator:

jhenson10@patriots.uttyler.edu

1. I have read the consent form and understand participation is voluntary and you may withdraw my consent at any time.
2. The risks and benefits have been explained.
3. I understand who to contact if I have questions.

Print Name: Date

_____ _____

Signature of Participant:

_____

Appendix E

Demographic Data Questionnaire

1. Gender: Male_____ Female_____
2. Race: American Indian _____

   Asian _____

   Black or African American _____

   Native Hawaiian or other Pacific Islander _____

   White _____
3. Ethnicity: Hispanic or Latino _____

   Not Hispanic or Latino _____
4. Age: 23-33_____ 34-45_____ 46-58_____ 59-70_____
5. Unit: Telemetry 4 _____ Med/Surg/Telemetry _____

   PCU 3 _____ PCU 4 _____
6. Years of Experience: 2-5____ 6-10 ____ 11-19 ____ 20 or more _____
7. Do you perceive your unit leader is positive?

   Never___ Sometimes___ Most of the time___ All of the time___
8. Does your leader listen to you?

   Never___ Sometimes___ Most of the time___ All of the time___
9. Do you perceive your unit works as a team?

   Never___ Sometimes___ Most of the time___ All of the time___

10. Do you have a support system outside of work? Never___

Sometimes___ Most of the time___ All of the time___

PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)

COMPASSION SATISFACTION AND COMPASSION FATIGUE
(PROQOL) VERSION 5 (2009)

When you *[help]* people you have direct contact with their lives. As you may have found, your compassion for those you *[help]* can affect you in positive and negative ways. Below are some-questions about your experiences, both positive and negative, as a *[helper]*. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days*.

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

_____ 1. I am happy.
_____ 2. I am preoccupied with more than one person I *[help]*.
_____ 3. I get satisfaction from being able to *[help]* people.
_____ 4. I feel connected to others.
_____ 5. I jump or am startled by unexpected sounds.
_____ 6. I feel invigorated after working with those I *[help]*.
_____ 7. I find it difficult to separate my personal life from my life as a *[helper]*.
_____ 8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I *[help]*.
_____ 9. I think that I might have been affected by the traumatic stress of those I *[help]*.
_____ 10. I feel trapped by my job as a *[helper]*.
_____ 11. Because of my *[helping]*, I have felt "on edge" about various things.
_____ 12. I like my work as a *[helper]*.
_____ 13. I feel depressed because of the traumatic experiences of the people I *[help]*.
_____ 14. I feel as though I am experiencing the trauma of someone I have *[helped]*.
_____ 15. I have beliefs that sustain me.
_____ 16. I am pleased with how I am able to keep up with *[helping]* techniques and protocols.
_____ 17. I am the person I always wanted to be.
_____ 18. My work makes me feel satisfied.
_____ 19. I feel worn out because of my work as a *[helper]*.
_____ 20. I have happy thoughts and feelings about those I *[help]* and how I could help them.
_____ 21. I feel overwhelmed because my case [work] load seems endless.
_____ 22. I believe I can make a difference through my work.
_____ 23. I avoid certain activities or situations because they remind me of frightening experiences of the people I *[help]*.
_____ 24. I am proud of what I can do to *[help]*.
_____ 25. As a result of my *[helping]*, I have intrusive, frightening thoughts.
_____ 26. I feel "bogged down" by the system.
_____ 27. I have thoughts that I am a "success" as a *[helper]*.
_____ 28. I can't recall important parts of my work with trauma victims.
_____ 29. I am a very caring person.
_____ 30. I am happy that I chose to do this work.

YOUR SCORES ON THE PROQOL: PROFESSIONAL QUALITY OF LIFE SCREENING

Based on your responses, place your personal scores below. If you have any concerns, you should discuss them with a physical or mental health care professional.

Compassion Satisfaction _____

Compassion satisfaction is about the pleasure you derive from being able to do your work well. For example, you may feel like it is a pleasure to help others through your work. You may feel positively about your colleagues or your ability to contribute to the work setting or even the greater good of society. Higher scores on this scale represent a greater satisfaction related to your ability to be an effective caregiver in your job.

The average score is 50 (SD 10; alpha scale reliability .88). About 25% of people score higher than 57 and about 25% of people score below 43. If you are in the higher range, you probably derive a good deal of professional satisfaction from your position. If your scores are below 40, you may either find problems with your job, or there may be some other reason—for example, you might derive your satisfaction from activities other than your job.

Burnout_____

Most people have an intuitive idea of what burnout is. From the research perspective, burnout is one of the elements of Compassion Fatigue (CF). It is associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively. These negative feelings usually have a gradual onset. They can reflect the feeling that your efforts make no difference, or they can be associated with a very high workload or a non-supportive work environment. Higher scores on this scale mean that you are at higher risk for burnout.

The average score on the burnout scale is 50 (SD 10; alpha scale reliability .75). About 25% of people score above 57 and about 25% of people score below 43. If your score is below 43, this probably reflects positive feelings about your ability to be effective in your work. If you score above 57 you may wish to think about what at work makes you feel like you are not effective in your position. Your score may reflect your mood; perhaps you were having a "bad day" or are in need of some time off. If the high score persists or if it is reflective of other worries, it may be a cause for concern.

Secondary Traumatic Stress_____

The second component of Compassion Fatigue (CF) is secondary traumatic stress (STS). It is about your work related, secondary exposure to extremely or traumatically stressful events. Developing problems due to exposure to other's trauma is somewhat rare but does happen to many people who care for those who have experienced extremely or traumatically stressful events. For example, you may repeatedly hear stories about the traumatic things that happen to other people, commonly called Vicarious Traumatization. If your work puts you directly in the path of danger, for example, field work in a war or area of civil violence, this is not secondary exposure; your exposure is primary. However, if you are exposed to others' traumatic events as a result of your work, for example, as a therapist or an emergency worker, this is secondary exposure. The symptoms of STS are usually rapid in onset and associated with a particular event. They may include being afraid, having difficulty sleeping, having images of the upsetting event pop into your mind, or avoiding things that remind you of the event.

The average score on this scale is 50 (SD 10; alpha scale reliability .81). About 25% of people score below 43 and about 25% of people score above 57. If your score is above 57, you may want to take some time to think about what at work may be frightening to you or if there is some other reason for the elevated score. While higher scores do not mean that you do have a problem, they are an indication that you may want to examine how you feel about your work and your work environment. You may wish to discuss this with your supervisor, a colleague, or a health care professional.

WHAT IS MY SCORE AND WHAT DOES IT MEAN?

In this section, you will score your test so you understand the interpretation for you. To find your score on each section, total the questions listed on the left and then find your score in the table on the right of the section.

Compassion Satisfaction Scale

Copy your rating on each of these questions on to this table and add them up. When you have added then up you can find your score on the table to the right.

3. ____
6. ____
12. ____
16. ____
18. ____
20. ____
22. ____
24. ____
27. ____
30. ____

Total: ____

The sum of my Compassion Satisfaction questions is	So My Score Equals	And my Compassion Satisfaction level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Burnout Scale

On the burnout scale you will need to take an extra step. Starred items are "reverse scored." If you scored the item 1, write a 5 beside it. The reason we ask you to reverse the scores is because scientifically the measure works better when these questions are asked in a positive way though they can tell us more about their negative form. For example, question 1. "I am happy" tells us more about the effects of helping when you are *not* happy so you reverse the score

You Wrote	Change to
	5
2	4
3	3
4	2
5	1

*1. ____ = ____
*4. ____ = ____
8. ____
10. ____
*15. ____ = ____
*17. ____ = ____
19. ____
21. ____
26. ____
*29. ____ = ____

Total: ____

The sum of my Burnout Questions is	So my score equals	And my Burnout level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Secondary Traumatic Stress Scale

Just like you did on Compassion Satisfaction, copy your rating on each of these questions on to this table and add them up. When you have added then up you can find your score on the table to the right.

2. ____
5. ____
7. ____
9. ____
11. ____
13. ____
14. ____
23. ____
25. ____
28. ____

Total: ____

The sum of my Secondary Trauma questions is	So My Score Equals	And my Secondary Traumatic Stress level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Appendix G

Nurse Stress Scale

Directions: *Below is a list of situations that commonly occur in a hospital unit. For each item indicate by means of an X, how often in your present unit you have found the situation to be stressful. Your responses are strictly confidential.*

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 patient's 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. Insufficient opportunities to express my anger and frustration.

_____ (1) Never
_____ (2) Occasionally
_____ (3) Frequently
_____ (4) Very frequently

6. Conflict with a supervisor or manager.

_____ (1) Never
_____ (2) Occasionally
_____ (3) Frequently
_____ (4) Very frequently

7. An emergency situation involving the life of a patient.

_____ (1) Never
_____ (2) Occasionally
_____ (3) Frequently
_____ (4) Very frequently

8. Listening or talking to a patient about his/her approaching death.

_____ (1) Never
_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

9. 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

10. The death of a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

11. Conflict with a physician.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

12. Fear of making a mistake in treating a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

13. Lack of an opportunity to share experiences and feelings with other personnel on the unit.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

14. The death of a patient with whom you developed a close relationship.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

15. Physician not being present when a patient dies.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

16. Disagreement concerning the treatment of a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

17. Feeling inadequately prepared to help with the emotional needs of a patient's family.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

18. 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

19. Inadequate information from a physician regarding the medical condition of a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

20. Inadequate preparation for the job I'm expected to do.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

21. 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

22. Making a decision concerning a patient when the physician is unavailable.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

23. Floating to other units that are short staffed.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

24. Watching a patient suffer.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

25. Difficulty in working with a particular nurse (or nurses) outside the unit.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

26. Difficulty in working with a particularly demanding, angry, or depressed patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

27. Feeling inadequately prepared to help with the emotional needs of a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

28. Criticism by a supervisor or manager.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

29. Unpredictable staffing and scheduling.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

30. A physician ordering what appears to be inappropriate treatment for a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

31. Too many non-nursing tasks required, such as clerical work.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

32. Not enough time to provide emotional support to a patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

33. Difficulty in working with a particular nurse (or nurses) on the unit.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

34. Not enough time to complete all of my nursing tasks.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

35. The discharge of a patient with whom you developed a close relationship.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

36. A physician not being present in a medical emergency.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

37. 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

38. Uncertainty regarding the operation and functioning of specialized equipment.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

39. The death of a young patient.

_____ (1) Never

_____ (2) Occasionally

_____ (3) Frequently

_____ (4) Very frequently

40. Not enough staff to adequately cover the unit.

_____ (1) Never
_____ (2) Occasionally
_____ (3) Frequently
_____ (4) Very frequently

Appendix H

PARO Intervention

Each participant in the Intervention group (IG) will spend 15 minutes per shift interacting with PARO.

Each participant in IG group will interact with PARO during 3 shifts.

A time log will be completed by each participant in the IG group with the date, time interaction began, and conclusion for interaction.

Paro will be delivered by principal investigator to each intervention unit and be available for both am and pm shifts.

Control Group
Each participant in the control group (CG) will interact with a stuffed inanimate seal for 15 minutes per shift during 3 shifts.
A time log will be completed by each participant in the IG group with the date, time interaction began, and conclusion for interaction.
The inanimate seal will be delivered by principal investigator to each control unit and be available for both am and pm shifts.

Appendix I

Interaction Documentation Form

Name	Date	Beginning Time	End Time

Appendix J

Focus Group Questions

1. Do you perceive your leader is positive?
2. Does your leader listen to you?
3. Do you perceive your works as a team?
4. Do you have a support system outside of work?
5. Describe your interaction with the seal.
6. What did you feel while interacting with the seal?
7. What do you perceive as stressors during work?
8. What does the term burnout mean to you?
9. What does the term compassion fatigue mean to you?
10. What does the term compassion satisfaction mean to you?

Focus Group Prompts

1. Tell me more about that
2. Can you clarify?
3. What do others feel about that?

BIOGRAPHICAL SKETCH

NAME: J. Sheree Henson, MSN, RN-BC, NEA-BC

POSITION TITLE: Clinical Excellence Program Manager

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Baylor University Waco, Texas	BSN	1980	General Nursing
Texas Christian University	MSN	2009	Nursing Education
The University of Texas at Tyler	PhD		Nursing Philosophy and Research

A. Personal Statement

Nursing is secondary to my role as a mother and grandmother, but it is extremely important to me. I chose nursing because I loved biology and I love helping others. Cliché, yes, but that is what led me to pursue a nursing degree. While growing up, I always saw myself as a teacher. I loved school and wanted to help others grow. While in my BSN program, I determined teaching nurses was the direction I wanted to go. I love the theory behind nursing and guiding nurses to professional development.

Originally, nursing led me to pediatrics. Every child was more than a patient, it was a family too. My passion for education was directed toward teaching families about diseases and how to care for their loved one. This led to my career change to clinical education. My job became caring for nurses instead of patients. I was privileged to care for the nurses who care for the patients.

As I was tasked with helping nurses grow professionally, my own profession growth continued. First the masters program and now a PhD. With the doctoral preparation my goal is to continue to support the professional development of clinical nurses. As a nurse scientist, I can ignite the desire for bedside research. As an educator, I can join academia in preparing future nurse scientist. My hope is to teach MSN students leadership in order to advance nursing leaders professionally.

B. Positions and Honors

Clinical Excellence Program Manager
Pathway to Excellence Appraiser
Director of Advancing Professional Nursing Practice
Adjunct faculty The University of Texas at Arlington
Sigma Theta Tau International Honor Society of Nursing
DFW Great 100 Nurse

C. Contributions to Science

When Compassion if Lost: Accepted for publication for MEDSURG Nursing
Burnout or Compassion Fatigue: A Comparison of Concepts: Accepted for publication for MEDSURG Nursing

D. Additional Information: Research Support and/or Scholastic Performance