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Use of the CAMEO II Acuity Tool to Decrease Burnout for Nurses Working in a Pediatric Intensive Care Unit

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by

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An eternity of thanks is required to our Heavenly Father and His sacrifice of offering His son, Jesus Christ, so we have an opportunity for eternal life. His patience and steadfast offering of the “still small voice” guided me through this important study. My earthly parents provided the means, although very meek, and sacrificed greatly so a proper education was always available. My husband pushed me continuously to fulfill my potential up until the final moments of my DNP journey. My son, Ethan Liam, has been in the Philippines with my parents for the past four years. Missing him and knowing this DNP will help secure a positive future for him drives my daily routine. Additional acknowledgments are required to the University, the research facility where my study was completed, to my research committee, and in particular, Dr. Tonya Sawyer-McGee, whose easy and simple approach to my study will be part of my future methods of leadership. Thank you so very much to everyone for your love and support.

Abstract

The World Health Organization (WHO) reported registered nurse burnout is an occupational hazard resulting in serious consequences for patients, healthcare organizations, and individual registered nurses (Woo et al., 2020). The purpose of this project was to see if the Complexity Assessment and Monitoring to Ensure Optimal Outcomes II (CAMEO II) Acuity Tool, used as an intervention for staffing and scheduling, would have a positive effect against nurse burnout in a pediatric critical care setting in a pediatric medical center. Maslach's Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSSMP) was used as a pre- and postsurvey to measure the emotional exhaustion, reduced personal accomplishment, and depersonalization of registered nurses before and after the use of the CAMEO II Acuity Tool. The initial results from the MBI-HSSMP presurvey were alarming, showing evidence of chronic nurse burnout. While the CAMEO II Acuity Tool was exhausting to use, the results of its implementation into the scheduling of registered nurses had a positive outcome following the results of the MBI-HSSMP postsurvey. Key recommendations for the organization and its leaders were the continued use of a modified acuity tool for its departments and continued research on other factors affecting registered nurse burnout.

Keywords: acuity, burnout, cognitive workload, complexity, exhaustion, intervention, optimal outcome, patient acuity, retention, and turnover

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Chapter 1: Introduction

Burnout among nurses is a major issue impacting nurse staffing and patient healthcare. *The National Healthcare Retention & Registered Nurse (RN) Staffing Report* (2018) found a significant increase in nurse turnover in the United States by 0.8% per year since 2013 maxing out to 17.2% in 2018. The study further reported that 43% of newly licensed nurses who work in hospitals seek new employment outside the industry within the first three years. Where does this problem originate? What policies or procedures can be put into place to make effective change? How can healthcare organizations stop losing an estimated $5 million to $8 million annually to nurse turnover (Eubanks, 2015)?

Zangarao and Soeken (2007) concluded in a meta-analysis of studies, nurses' job satisfaction was higher when job stress was decreased. With decreasing patient satisfaction scores paralleled with low registered nurse (RN) retention rates; there are many who feel the lack of leadership awareness of nurse burnout is a potential cause (Pearce, 2018). Decreasing nurse burnout can positively change patient care outcomes, increase nurse retention, and positively impact healthcare organizations financially. Thus, nurse leaders must integrate new and effective methods to reduce nurse burnout.

Problem Statement

Quality patient care is affected by nurse burnout and directly affects RN retention (Poghosyan et al., 2010). Burnout is a syndrome that is associated with emotional exhaustion, a tendency to depersonalize client encounters, and causes a decreased sense of personal accomplishment (Poghosyan et al., 2010). Poghosyan et al. (2010) reported burnout as a common phenomenon worldwide among nurses. Ericson-Lidman and Standberg (2007) concluded burnout is associated with serious health issues including myocardial infarction,

hypertension, depression, cardiovascular disease, type II diabetes, insomnia and other problems among RNs. Studies support the link of burnout of nurses to decreased quality care and increased risk of infection to patients (Cimiotti et al., 2012). Excessive nurse burnout causes more nurses to leave their jobs, leaving healthcare organizations to examine retention programs more closely (Flynn et al., 2009). The Council of International Neonatal Nurses (2016) reported the global nursing shortage is critical and adversely escalating the decline of health outcomes. The World Health Organization (2018) predicted over 300,000 RN shortages by 2020 up to 500,000 by 2025. Creating methods to counter burnout can help in this global emergency.

Background

Nurse turnover is an undesirable trend for healthcare organizations threatening patient quality care and safety (Kovner et al., 2014). Kovner et al. (2014) further stated nurses' leave their nursing job for various reasons but the top two reasons are for nurse burnout due to high workloads and poor leadership awareness to burnout causing job dissatisfaction. Many detrimental effects including moral distress and higher than usual stress results in severe burnout in nurses (Rushton et al., 2015). Burnout levels are considerably higher with acute care nurses but greatly affect nonacute nurses as well (Oehler & Davidson, 1992).

Kerfoot (2013) stated healthcare organizations are stressed to the limits to ensure patient satisfaction, and nurses, who have the closest interaction with patients, greatly affect satisfaction…satisfied nurses make satisfied patients. When nurses and his or her relationship with patients or other nurses are strained by excessive stress due to burnout, the nurse creates an environment of self-conflict and this tension affects patient care (Kerfoot, 2013). Rushton et al. (2015) reported burnout of nurses' leads to depression, substance abuse, anxiety, reduced loyalty to the organization, and increased initiative to leave nursing completely.

Many nurses are not equipped to handle the gravity of a patient's illness. Dealing with death and dying and having limited or zero ability to address the emotional needs of patients and their families creates undue anxiety and stress on nurses (Rushton et al., 2015). Rushton et al. (2015) also concluded the highest stress and episodes of burnout occur in pediatrics, critical care, and oncology because of patients' needs, uncertainty of outcomes, the context of the nurses' workload, and nurses dealing with excessive suffering and death.

Purpose

The purpose of this project was to utilize the Complexity Assessment & Monitoring to Ensure Optimal Outcomes (CAMEO II) Acuity Tool to assign nurses in pediatric intensive care units in a children's hospital based on patient acuity and a nurses' capability to decrease nurse burnout, thus positively impacting RN retention, enhancing patient quality care and safety, and positively impacting organizational financial gains:

- Is there an understanding of the factors contributing to nurse burnout?
- Are there specific nurse leadership awareness policies that directly deal with nurse burnout?
- What are the current situations affecting nurse shortages?
- Would the implementation of a workload tool gauging patient acuity and an individual nurse's capability positively affect the current situation?

Significance

Globally, nurse leaders must take responsibility for their individual leadership competencies and help reduce the amount of nurse shortages that currently exist and will exist in the near future (Savich, 2008). The current and future global nursing landscape requires nurse leaders to analyze situations quickly, adapt to unknowns, make crucial decisions, and solve

difficult problems. If global nurse leaders are caught up with the daily drama of unhappy nurses, he or she is ineffective, patients are not receiving excellent care, and global organizations will continue to bleed money with higher than average turnover. A cautious global nurse leader understands the impact of his or her decisions and holds him or herself accountable for every result.

Individual healthcare organizations must allow nurse leaders the latitude to aggressively combat RN retention through better awareness of nurse burnout occurring continuously. Budget constraints are important yet are also a contributing factor (Sherman & Bishop, 2012). Nurse to patient ratios are increasing and because of the existing RN shortages of experienced nurses, newly graduated nurses are arriving not capable of large workloads nor can they handle the emotional stress that comes with suffering and death. Healthcare leaders must include all stakeholders to find solutions to reduce RN burnout. While patient care is the goal, healthcare organizations, who focus on nurse retention problems due to nurse burnout, can see a reduction of losses from $45,000 to $64,000 per nurse that turns-over (Sherman & Bishop, 2012).

Doctor of Nursing Practice (DNP) professionals must understand principles of practice management, impact practice policies and procedures, and improve strategies creating and sustaining positive organizational change (AACN, 2006). A DNP graduate in a leadership role can be the most effective “on the ground” working all the angles to combat nurse burnout simultaneously enhancing patient quality care and safety, as well as, become a great asset to their healthcare organization.

Not all nurses are equipped the same. Not every nurse can cope the same. This project will help individual nurses benefit from nursing as a rewarding career. In some cases, it might be ability, but in many cases, it might take more time. Finding a solution to gradually increase a

nurses' capability by first understanding their ability in conjunction with the gravity of a patient's illness may be the formula needed to decrease nurse burnout.

Nature of the Project

A quantitative study using the Maslach Burnout Inventory Human Services Survey for Medical Personnel (MBI-HSSMP) and the Complexity Assessment & Monitoring to Ensure Optimal Outcomes (CAMEO) II Acuity Tool was conducted. The project utilized the results from the Maslach Burnout Inventory Human Services for Medical Personnel (MBI-HSSMP) to determine burnout among the nurses who participate in the study before and after the CAMEO II Acuity Tool was integrated. The MBI-HSSMP is a very commonly used and cited measure of burnout. The MBI-HSSMP is firmly grounded in the theory of burnout from which a model was developed comprising of personal accomplishment. The CAMEO II Acuity Tool is a newer pediatric intensive care staffing tool used to measure acuity in an effort to reduce nurse burnout. The data acquired were used as a presentation to the healthcare system to enhance an existing tool that measures patient acuity and nurse capability for effective scheduling reducing nurse burnout thus enhancing patient safety, quality care, and improved patient satisfaction numbers (Maslach & Leiter, 2000).

Question Guiding the Inquiry

Properly designed research begins with the development of a well-developed question of inquiry. Evidence-based research often utilizes a PICOT framework to help facilitate the literature review and guide the project implementation (Schardt et al., 2007). The PICOT acronym stands for Patient or problem, Intervention, Comparison, and Outcome (Schardt et al., 2007). The following question was formulated to direct the project: Will the implementation of

the CAMEO II Acuity Tool reduce burnout in a pediatric intensive care unit? The description of each PICOT component is as follows:

- P - Population: Registered nurses working in a pediatric intensive care unit in a children's hospital;
- I - Intervention: CAMEO II Acuity Tool assigning nurses according to patient acuity and nurse capability;
- C - Comparison: Burnout percentages before and after implementation of the study;
- O - Outcome: Reduction of nurse burnout; and
- T - Timeliness: Over a one-month period.

Theoretical Framework

There are many nurse processes that are used across the United States dealing with the stressors involved in the field of nursing (Turner & Kaylor, 2015). If nurses are not resilient, an essential trait for the nursing profession, those nurses are prone to nurse burnout. The complexity of patients, families, and their surrounding environment has changed bedside care considerably resulting in the need for more resilience and steadfastness in nurses (Connor et al., 2019). Burnout, job fatigue, and career exhaustion can easily set in creating an ineffective environment for quality patient care if resilience is lost. Nurses experience constant twists and turns taking a normal day on the job to one full of traumatic challenges to more events with a significant lasting impact like the death of a patient. Every nurse is affected differently by these events generating strong emotions, a flood of thoughts, even uncertainty (APA, 2020). Through resilience, nurses can adapt well over time to stressful traumatic experiences. APA (2020) stated being resilient does not defend a nurse from experiencing difficult or stressful times but allows that nurse to

recover more quickly because they have learned new behaviors and actions dealing with the stressors of the job.

The Neuman systems model (NSM) was developed by Betty Neuman initially in 1972 to evaluate a nurses' relationship to stress, how they respond to that stress, and about other factors that create a progressive nature in stress (Turner & Kaylor, 2015). The NSM guides nursing studies as well as nursing practices through a systems-based conceptual framework (Fawcett, 2001). The NSM is an ideal system that acts as a boundary for a single nurse or a group of nurses and provides a unifying focus on a plethora of concerns (Melton et al., 2001). The NSM focuses on specific stressors harmful to the wellbeing and health of the nurse. Fawcett (2001) stated the NSM focuses on that of the wellness of a nurse in relation to the stressors experienced in the nursing environment. Neuman (1995) stated the model was facilitated through her own perceptions, diverse observations, and clinical experiences when dealing with resilience and the stress factors associated with resilience. Alligood and Tomey (2010) stated the NSM is well positioned to deal with nursing processes and is highly relevant in today's settings. The NSM provides an opportunity for nurses to attack issues before or while they occur making them aware of stress in patients and how to intervene using an assessment or intervention tool (Alligood & Tomey, 2010). According to Neuman, there are three levels of prevention for the nurse:

1. Primary prevention protecting the normal line of defense and strengthening the flexible line of defense (Alligood & Tomey, 2010).
2. Secondary prevention where the internal lines of resistance are strengthened that reduces reaction and subsequently enhances resistance factors (Alligood & Tomey, 2010).

3. Tertiary prevention where stabilization and reconstitution for the return to wellness Continues (Alligood & Tomey, 2010).

The three levels of prevention are needed to create (Neuman, 1995):

- Health – Equated with wellness and all variables are in harmony with the other,
- Balance – Leveling of every context of health and wellness,
- Harmony – Generated feelings of levelness,
- Stability – State of balance while attaining optimal levels of health, and
- Wellness – All systems are in harmony.

Fawcett (2001) reported the NSM uses specified lines of defense to direct the caregiver against stressors providing time to initiate coping methods against damaging stressors that could result in burnout. These three lines provide protection to the caregiver's basic structure. This study provides two separate scenarios with a healthy and coping nurse (See Figure 1) and a nurse who is experiencing burnout (See Figure 2).

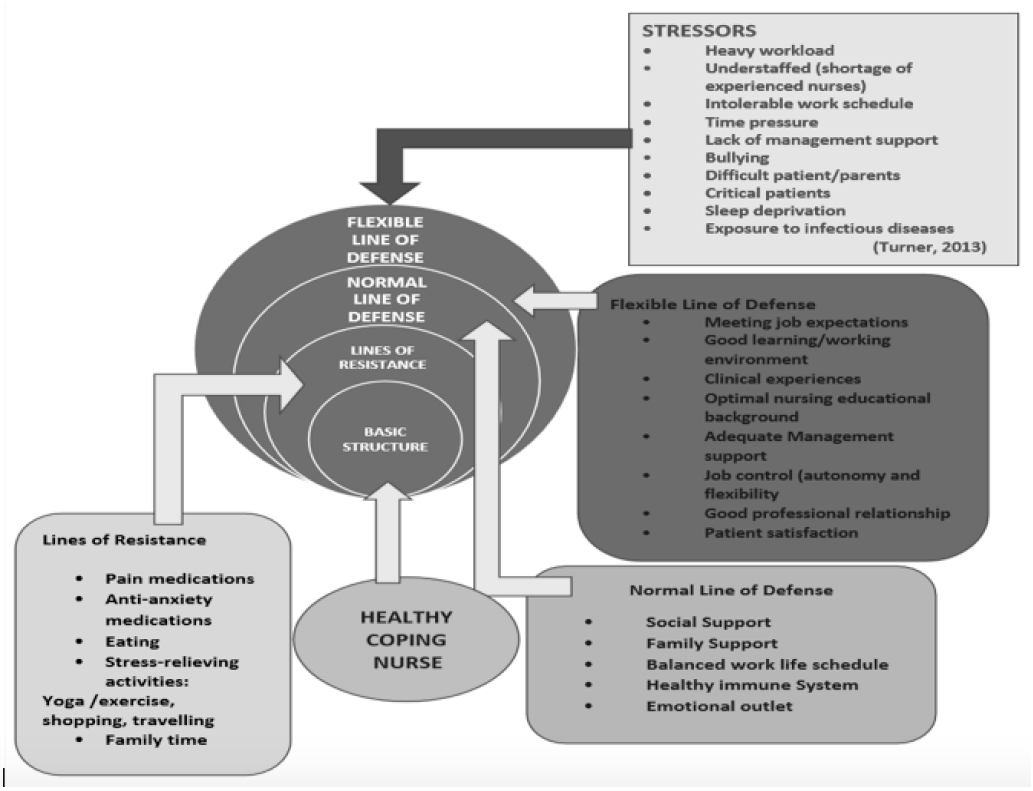
Flexible Line of Defense

The flexible line of defense is the outer most boundary of the model and serves as a situational buffer for the normal state of the nurse (Fawcett, 2001). The function of this line of defense acts like an accordion expanding to the limit providing protection. If the stressors are too strong or the coping is weak, entrance to the second line of defense occurs (Fawcett, 2001). For instance, in Figure 1, if the nurse has a healthy lifestyle and is able to cope effectively, the nurse's flexible line of defense expands and even though stressors exists, this line of defense is strong and protects the nurse from stressors. In Figure 2, if the nurse has a compromised line of defense which could include poor job satisfaction, limited nurse experience, or a hostile work

environment, the buffer is weakened and allows for lower levels of protection allowing entrance into the normal line of defense (Fawcett, 2001).

Figure 1

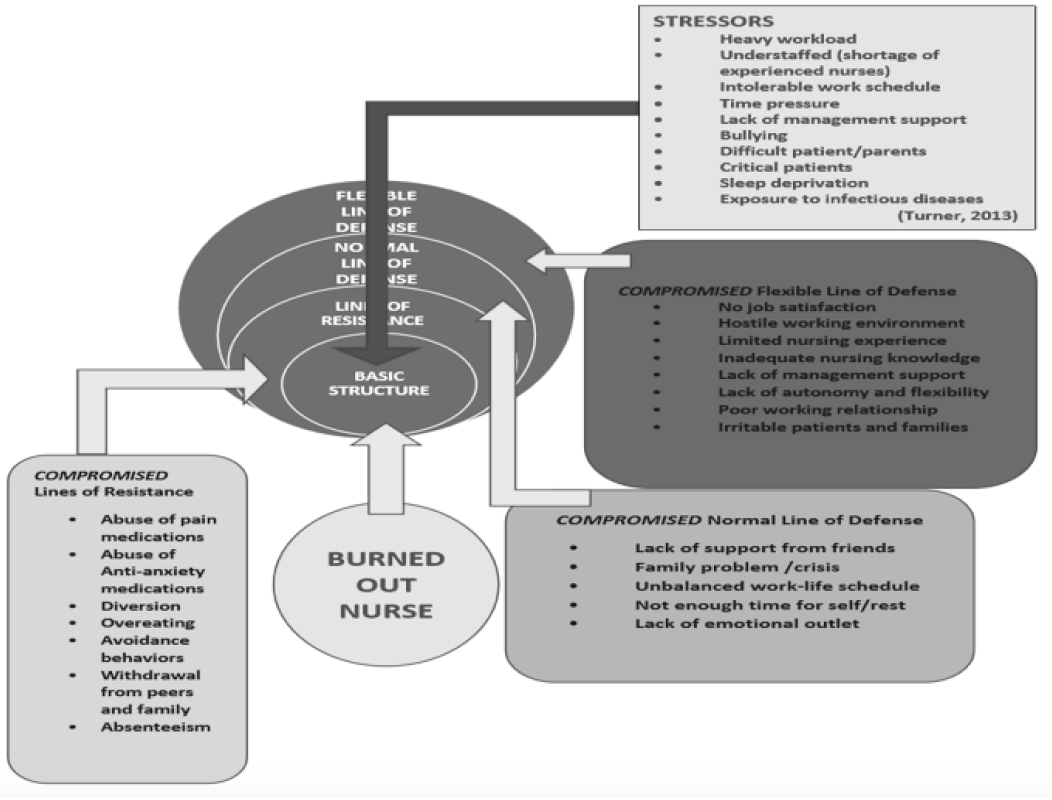
Neuman's Systems Model (Healthy and Coping Nurse, Personal Rendering)



Note. Adapted from *The Neuman system model* (3rd ed.) by B. Neuman, 1995. Copyright by Appleton & Lange.

Figure 2

Neuman's Systems Model (Burned-Out Nurse, Personal Rendering)



Note. Adapted from *The Neuman system model* (3rd ed.) by B. Neuman, 1995. Copyright by Appleton & Lange.

Normal Line of Defense

Alligood and Tomey (2006) reported this line of defense is the normal or usual state of the nurse with a defined continuity of balance. The normal line of defense is a dynamic result of the nurse's coping methods, their lifestyle, even the phase of professional development or behavior (Fawcett, 2001). A healthy nurse in this defense line has a strong social and personal support system, a well-balanced lifestyle, even a healthy immune system (Alligood & Tomey, 2006). A nurse experiencing burnout has no balance, a weak supporting cast, and no emotional outlet. In this line of defense ineffective coping methods can lead to chronic stress even burnout.

Lines of Resistance

Once the normal lines of defense are penetrated, it alerts and activates the lines of resistance (Fawcett, 2001). The responsibility of this line of defense is protecting the basic structure and provides a path or support to return to wellness. The coping methods in the line of resistance have been learned over time. If the nurse is able to cope effectively, their basic structure may not be affected, however under burn out situations, the nurse is not able to effectively cope, thus resilience is lost (Alligood & Tomey, 2006).

DeWan and Ume-Nwagbo (2006) defined nursing as an action that facilitates with individuals, families and communities in maintaining the highest level of wellness possible while reducing and calculating interventions to reduce the stressors presented using different degrees to stressors with the use of primary, secondary, and tertiary interventions. The NSM provides a new holistic and systems passed approach for nursing focusing on the nurse and how they react to environmental stressors (Melton et al., 2001). Neuman (1995) stressed a nurse must be able to evaluate the effects of internal and external stressors. Alligood and Tomey (2006) stated when stressors are suspected; intervention must be initiated against the reaction as well as the reconstruction phases before the line of defense is penetrated and a negative outcome to the basic structure occurs.

Operational Definitions

Various definitions and variables were noted in this project's development. The following definitions provide the foundation and background for this project's implementation:

Acuity. Complexity of the issues associated with a patient's status (Conner, 2016).

Burnout. Defined as a corrosion of engagement with ones' job happening gradually over time (Schaufeli et al., 2009).

Cognitive workload. Conscience resource level needed to achieve objective and subjective criteria mediated by experiences, external support, and the demand of tasks at hand (Guastello et al., 2015).

Complexity. Complicated process or situation (Koopmans, 2017).

Exhaustion. An inhibition or implosion caused by external pressures on internal dispositional factors (Castro et al., 2017).

Intervention. Medical interventions seek to modify an outcome through a treatment or a cure of a condition or problem (McCarthy, 2010).

Optimal outcome. Measured consistent act of convincing and lasting results (Hillary, 2015).

Patient acuity. A measurement of the intensity of nursing care required (Dzaher, 2017).

Retention. Defined as the continued possession, use, or controlling someone or something while retaining someone or something (Sawatzky et al., 2015).

Turn-over. Coming and going of employees as a measurement in their replacement (Jones & Gates, 2007).

Scope and Limitations

The scope of this project was to use the Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSSMP), a validated extensive research tool that is recognized as the leading tool in measuring nurse burnout and the Complexity Assessment and Monitoring to Ensure Optimal Outcome II (CAMEO II) Acuity Tool to assign nurses in a critical care unit in a children's hospital to effectively reduce nurse burnout in a pediatric critical care setting. An example of the MBI-HSSMP survey is provided in Appendix A. An example of the CAMEO II acuity tool is provided in Appendix B.

The project took place in a children's hospital measuring the burnout inventory of staff nurses affected by nurse to patient ratios, limited exposure to severe cases or high stress environments, and/or burnout as a direct result of nurse shortages. The data collection was conducted on pediatric registered nurses with Associates, Bachelors, and Masters Degrees and without any prejudice to sex, race, or time in service. The desired result of the study was the positive percentages in reduced amounts of burnout. The estimated time frame of this study was a one-month window from implementation through the posttest. Limitations included the amount of time allotted for the study and if the targeted population was enough representation to adequately allow a significant result. The study also did not include the cardiac intensive care unit. All efforts were put in place to ensure privacy allowing participants a feeling of ease during participation.

Chapter Summary

Pediatric hospitals in every study researched, were reported to have the highest amounts of workplace stress as emotions were heightened working with sick or dying children. Nurses need time to develop specialized skills in coping, compassion, and professional commitment in handling stressful situations. Kim and Sekol (2014) reported new pediatric nurses experienced stressful events within the first three months of operating solo on the floor with one-fifth of them displaying posttraumatic stress disorder (PTSD). Caring for sick and dying children takes its toll on those responsible for a child's bedside care. There is significant literature that collaborates the need for further research on nurse burnout, and those studies both support and deny the existence of burnout in nurses.

Chapter 2: Literature Review

The National Healthcare Retention & RN Staffing Report (2018) reported 17.5% of new RNs leave or intend to leave their first nursing position before the end of the first year. The report also indicated over 33% of the remaining, leave within the first two years. The costs to organizations are overwhelming at the expense of the RN retention crisis. Millions of dollars are lost to a healthcare system for costly turnover and studies have concluded turnover of RNs has increased declining quality care of patients producing gross neglect and alarming patient fails. RN turnover measurement is widely used to analyze the health care workforce (Eubanks, 2015). The measurements almost always provide indicators of an organization's work environment and patient satisfaction scores (Flynn et al., 2009). Healthcare organizations have heard "the call" and are examining their own policies and procedures, attempting to find alternatives to their culture in order to retain solid performing nurses. To clearly understand the symptoms and significance of declining patient care because of RN turnover, the following literature provided will explore nurse burnout, the impact on patient quality care, and the impact on healthcare systems, and more specifically, the impact on pediatric nurses.

Method of Conducting Literature Search

The Neuman systems model (NSM) was developed by Betty Neuman initially in 1972 to evaluate a nurses' relationship to stress, how they respond to that stress, and about other factors that create a progressive nature in stress (Turner & Kaylor, 2015). The NSM guides nursing studies as well as nursing practices through a systems-based conceptual framework (Fawcett, 2001). The NSM is an ideal system that acts as a boundary for a single nurse or a group of nurses and provides a unifying focus on a plethora of concerns (Melton et al., 2001). The NSM focuses on specific stressors harmful to the wellbeing and health of the nurse. Fawcett (2001) stated the

NSM focuses on that of the wellness of a nurse in relation to the stressors experienced in the nursing environment. Neuman (1995) stated the model was facilitated through her own perceptions, diverse observations, and clinical experiences when dealing with resilience and the stress factors associated with resilience.

Nurse Burnout

Burnout, and its development in nurses, has received extensive study but remains an international problem (Rushton et al., 2015). Nurses are highly vulnerable to developing burnout after being exposed to high levels of responsibility, extended hours due to nurse shortages, after being involved with morally distressing cases such as prolonging life and dealing with the emotions of very sick and dying patients (Schaufeli et al., 2009). The Council of International Neonatal Nurses (2016) reported health-care professionals, nurses, with a mission to care and interact directly with humans, are directly prone to experience burnout. Schaufeli et al. (2009) described nurse burnout as a psychological disorder resulting from physical and emotional overload where patient care was involved - they are emotionally exhausted, create tension exhibiting negative or cynical reactions to patients and towards other nurses, while demonstrating depersonalization and work environment negativity against nurse leaders and the establishment. Zangaro and Soeken, (2007) reported nursing was very demanding, physically and emotionally. The physical toll is obviously more visible than the underlying emotional distress. It is not as recognizable and unaddressed, dire consequences for the patient, the nurse, and the organization will occur. The AACN (2017) concluded high-stakes decision-making with an absolute minimal room for error policy coupled with an ever-expanding workload, enhances nurse burnout. The report continued nurse leadership relationships, staffing and scheduling, nurse to patient ratios, and the inability to cope causes dissatisfaction thus burnout. Lombardo

(2011) stated burnout does not look the same in every circumstance but provided the following indicators:

- Numerous reasons calling in sick, arriving late for shift change, even leaving early,
- Highly negative disposition,
- Extreme irritability with patients, peers, and leaders,
- Drastic change in personality transposing from an extrovert into being withdrawn,
- Opposition to change or new endeavors, and
- Visible physical exhaustion.

While these indicators are important to know, it is as important for nurse leaders to recognize and find solutions to alter the physical and emotional state of his or her direct and indirect reports. As leaders, every nurse should bear the responsibility of recognizing these indicators in his or her peers. In many cases, peer intervention is as strong a tool as a leader's intervention. Healthcare organizations too must recognize nurse burnout and remedy the causes. Failure to find executable solutions will directly affect all stakeholders. Freudenberger (1989) renowned psychologists, provided a complete diagnosis of the stages of burnout, called the "burnout cycle," and divided the cycle into 12 stages (See Table 1):

Table 1

Twelve Stages of Burnout

Stage 1	Person is obsessed to prove themselves to themselves and others. This leads to determination and compulsion, which is followed by unhappiness.
Stage 2	Works firmer to meet elevated personal opportunities. The only reason to work hard is for these personal expectations and being obsessed with controlling everything.
Stage 3	Starts ignoring and being indifferent about basic needs such as sleeping and eating. Social interactions begin to deteriorate with family, friends, and peers.
Stage 4	First physical signs of burnout appear. The person is aware of the increased level of stress but does not recognize the cause.
Stage 5	Personal values are revised. This will cause the individual to become emotionally drained.
Stage 6	Aggressiveness and negativity increases. Negativity blames peers as lazy, stupid, and undisciplined. Person begins to blame time pressure and work volume increasing the pressure and problems.
Stage 7	Social ability is at a minimum. Hopeless, can turn to drugs and/or alcohol.
Stage 8	Peers and family recognize problem, but individual denies. Becomes more indifferent, fearful and a feeling of worthlessness.
Stage 9	Loses contact with themselves and others. Nothing is valuable. No care for personal needs. Life is a mechanical process.
Stage 10	Feels empty, seeks activities like overeating, sex, alcohol and drugs.
Stage 11	Life has no meaning. Heightened depression, feels lost, exhausted, sad, no hope for future.
Stage 12	"Burnout syndrome!" All stages lead to this stage. Suicidal thoughts, total mental and physical collapse.

Note. From "Rates of Medication Errors Among Depressed and Burnt Out Residents: Prospective Cohort Study," by A. M. Fahrenkopf, T. C. Sectish, L. K. Barger, P. J. Sharek, D. Lewin, V. W. Chiang, S. Edwards, B. L. Wiedermann, and C. P. Landrigan, 2008, *BMJ*, *336*(7642), 488–491 (https://doi.org/10.1136/bmj.39469.763218.BE).

It is important to understand that an individual does not have to follow each step as listed. Freudenberger (1989) determined numerous victims skip certain stages, while others find themselves in several at the same time and it is very important when Stage 12 is reached, intervention is considered critical and thorough professional care and treatment is provided.

Aiken et al. (2002) conducted a study using 200 general hospitals on the east coast with over 50% responses to the survey. The study concluded 65% of the nurses' surveyed experienced

extreme burnout with an average 6:1 patient to nurse ratio. The study reported a drastic decline in patient satisfaction, declining quality care, and greater intention of nurses seeking new employment outside the healthcare industry.

Hall et al. (2016) determined 21 out of 30 studies examined, measured considerably, that nurse burnout had a significant association with patient safety and patient care. McHugh et al. (2011) determined nurse job dissatisfaction and burnout occurred greater for those working bedsides in assisted living facilities and hospitals versus other nurse settings. The report further indicated patient satisfaction levels were lower in hospitals where turnover and nurse burnout percentages were high. Hunt et al. (2017) concluded burnout challenges a nurses' ability to provide compassionate care and directly impacts quality patient care.

Rios-Risquez and Garcia-Izquierdo (2016) conducted their study internationally and found no significant association between burnout and the satisfaction of care from their patients. The results explained, the professional and organizational characteristics of the organization nullified the burnout levels with normal patient satisfaction scores. Sawatzky et al. (2015) reported 24% of their study's respondents indicated they were actively seeking new career opportunities because of the stress and burnout affecting their health and transparent health and safety effect on patients. LeVeck (2018) conducted a study in a large healthcare system and listed seven risks to nurse burnout:

- Female nurses are at a higher risk of burnout than male nurses,
- The nurses' surveyed exhibited higher levels of anxiety when there are additional stress related problems at home,
- ICU, ER, PICU, NICU and other high-stress positions were subject to longer hours and other emotional factors such as death,

- Being single or divorced,
- The lack of a spiritual essence of any kind,
- Holding an associate degree versus a bachelor's degree, and
- Working full-time as a bedside nurse.

LeVeck (2018) concluded nurses, especially new graduate nurses, are at higher risk than any other position in healthcare. Stressed-out nurses are at a higher risk to make poor inaccurate decisions. These decisions could lead to missed diagnosis, infection, even death (Beecroft et al., 2008).

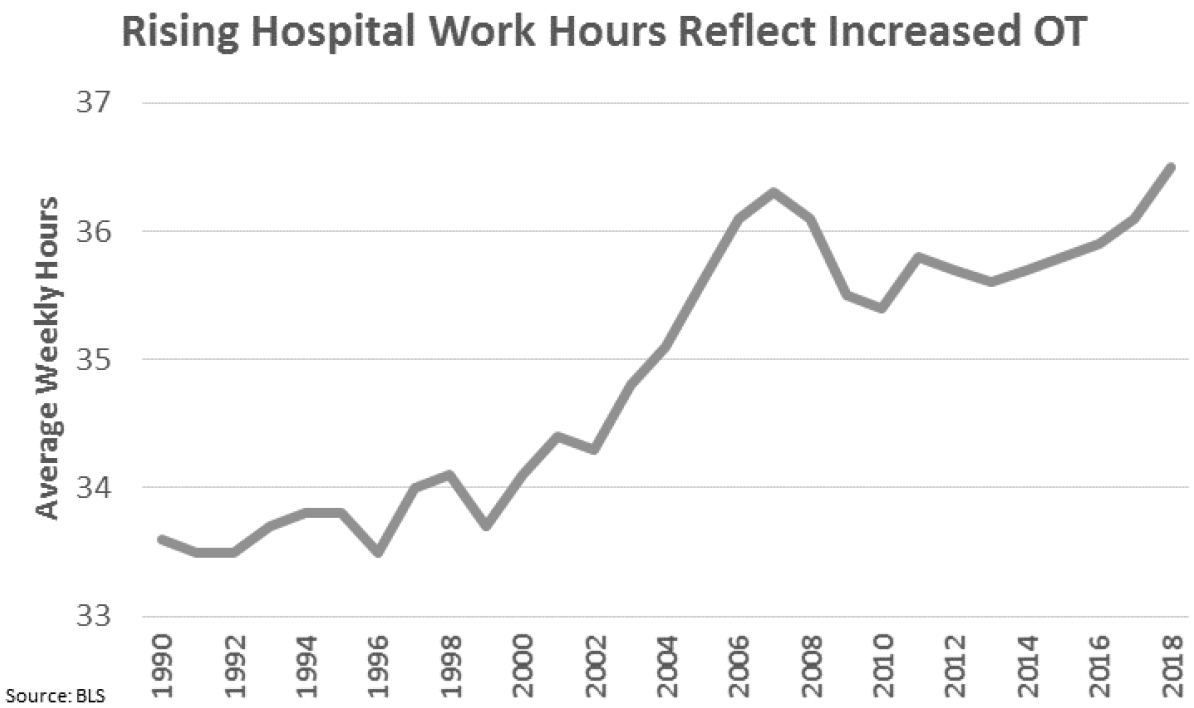
Impact on Patient Quality Care

Kerfoot (2013) stated ineffective adherence to staffing and concentration on nurse burnout are the unseen factors that destroy even the well-designed safety and patient care programs. The World Health Organization (2018) linked fatigue and nurse burnout to the patient care environment drawing attention to nurse overtime (See Figure 3). Severe shortages, high turnover, overtime, and additional hours worked by those nurses left behind creates additional issues: A decline in short term and working memory, negative impact on critical thinking, increased risk-taking behavior, and increased risk of patient-care errors endangering patient safety. The Council of International Neonatal Nurses (CINN; 2016) stated healthcare organizations must intervene with nurse burnout, as there is an increasing risk to patient safety. Increasing a nurse's weekly hours, increases risk. The Agency for Healthcare Research and Quality (AHRQ), (2018) described nurse burnout as the new enemy of healthcare as patient quality cares declines alongside the staggering RN turnover percentages. Heath (2018) stated nurse burnout has reached unbelievable levels. Healthcare professionals globally are constantly engaging the negative effects nurse burnout is generating on quality patient care (Heath, 2018).

Confidence levels in the very best healthcare organizations are damaged once patients and families stop believing they are being cared for effectively (Twibell & St. Pierre, 2012). Hall et al. (2016) reported for every 10% of nurses reporting burnout, patient satisfaction for those systems drops over 3%.

Figure 3

Reflection of Increased Overtime



Note. From "Rise in Healthcare Overtime Threatens Patient Safety and Nurse Turnover," by AMN Healthcare, n.d., (https://www.amnhealthcare.com/rise-in-healthcare-overtime/). Copyright by AMN.

Nurses face occupational stressors, new technology, shifting workloads, and change after change, and program after program making burnout more common and more detrimental (Heath, 2018). CINN (2018) reported 83% of healthcare systems have significant burnout issues. The report stated 78% of registered nurses exhibit burnout and 64% of all advanced practice

registered nurses experience burnout both directly affecting quality care and increasing the chance for higher patient mortality rates from neglected care. Kerfoot (2013) published an article claiming nurse burnout doubles the chances of an adverse safety event for patients and when depression of nurses' numbers was combined, patient safety risks were considered extensively profound. Sherman and Bishop (2012) reported findings concurring nurse burnout affects patient safety subsequently lowering satisfaction scores. Poghosyan et al. (2010) reported nurses experiencing burnout have impaired attention, decreased recall and attention to detail placing patients in a higher risk category for errors to include death. Nurses at this point are almost clinically detached and become agitated and more aggressive around a patient, which harms patient satisfaction and quality healthcare.

Vahay et al. (2004) published a study searching for the relationship between patient satisfaction and care with nurse burnout and stated patients cared for in units where nurse staffing was adequate, there was evidence of strong charge nurse level leadership, and there existed a strong sense of rapport between physicians and nurses, were likely to score the unit higher in-patient satisfaction and the unit showed limited nurse retention issues and minimal nurse burnout. Gillespie and Melby (2003) claimed patient safety is at risk due to emotional exhaustion of nurses.

Potera (2012) reported substantial evidence of high surgical site infection in systems with high burnout rates. Accordingly, systems where burnout was reduced by 20% claimed over 3,000 fewer infections saving the organizations up to $30 million. Healthcare systems must continue to find positive solutions to this nurse burnout crisis. Losing seasoned nurses and not properly integrating new nurses, compromises quality care and solid, already educated nurses are lost to another industry.

Impact on Healthcare Systems

Healthcare systems will always have some type of staffing dilemma to overcome. The systems that find solutions to reduce symptoms of staffing issues will see a tremendous increase in staff retention (Finkler et al., 2007). Nurse burnout leads the way in many organizations costing millions of dollars in an already tightly budgeted system (Everhart et al., 2015). Everhart et al. (2015) claimed healthcare systems are facing uncertainty, financially, looking for profitability by reducing nurses. Nurses by far are the largest part of a system's workforce therefore vulnerable to budget cuts. Long-term advantages versus a short-sided approach, correcting nurse staffing, provides a competitive advantage to a healthcare system producing better financial performance. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS; 2017) concluded two percent of all reimbursement funds are lost due to nurse burnout causing patient dissatisfaction. John Hopkins released a 2018 study claiming 25,000 people lost their lives annually in the United States due to nurse burnout and the medical errors burnout creates. Is there a price tag for a life due to neglect? The World Health Organization (2018) reported recruiting, hiring, and training new nurses to replace nurses lost from burnout will costs in excess of 200% of an average nurse's salary per nurse.

There is considerable evidence proving the cost of nurse burnout being connected to bottom-line performance. Jones and Gates (2007) conducted a study comparing the concerns of nurse burnout from a noneconomic and economic outlook. The noneconomic concerns considered factors relating to safe care for patients, and the exposure allotted to overworked nurses in a shortage of nurses' situation (Jones & Gates, 2007). The economic side considered the monetary costs to turnover, hiring, training, retaining, and then turnover again. The study concluded substantial evidence existed, healthcare systems know the issue exists, but those same

organizations must weigh the moral obligations between satisfying shareholder interests with the health and well-fair of burnt-out nurses and the safety and quality care to patients. Jones and Gates (2007) stated continued study is imperative, will not be easy, and will require discipline and knowledge of all the factors associated with turnover and retention (See Table 2).

Table 2

Cost and Benefits of Turnover and Retention

Nurse Turnover Cost	Nurse Turnover Benefits	Nurse Retention Benefits	Nurse Retention Costs
Continual advertising and recruitment	Reduction in salaries hiring new nurses and new Grads	Reduction in advertisement and recruitment costs	Costs for residency and mentoring programs
Vacancy costs	Not having to pay indemnity bonuses to departing nurses	Fewer vacancies and a reduction in vacancy costs	Salary increases and benefit improvements
Hiring Time and effort	New nurses bring new ideas, freshness, and energy	Fewer new hires and costs associated with the process	Continuing education, tuition assistance, career advancement opportunities
Orientation and training	Poor performers self-eliminated	Fewer orientations and training costs	Bonus programs, stock options
Decreased productivity	Energy provides higher productivity	Productivity is increased	Promotions and longevity increases
Increased patient errors	New nurses are more careful	Decreased Errors, higher satisfaction scores	Complex staffing programs costs
Negative Culture, Dissatisfaction, and Distrust	Uplifted Culture	Trust and continuity prevail	Continued struggles in staffing and costs

Note. From "The Costs and Benefits of Nurse Turnover: A Business Case for Nurse Retention," by C. B. Jones and M. Gates, 2007, *Online Journal of Issues in Nursing: A Scholarly Journal of the American Nurses Association*, *12*(3), 221–223 (https://doi.org/10.3912/OJIN.Vol12No03Man04).

A 2016 John Hopkins study reported the third-leading cause of death in America was preventable medical errors as a result of nurse burnout costing nationwide over $29 billion. Pearce (2018) concluded a strong, positive connection between employees to patient

engagements. If the work life balance of nurses is agitated, they will burn out, they will leave the industry, and healthcare systems will continue to lose millions of dollars for a fixable problem. While there are many nursing departments in a healthcare system, some are more prone to burnout than others. Pediatric nursing, with its many internal departments, is subject to high turnover due to nurse burnout (Adwan, 2014). Caring for sick, terminally ill, and witnessing the death of a child continues to take its toll on healthcare systems and individual pediatric nurses. Neonatal Nurses (2016) reported one in five nurses would leave his or her job each of the next five years and will continue to increase to one in every three if nurse burnout is not controlled.

Impact on Pediatric Nurses

Adwan (2014) reported pediatric nurses demonstrate significantly higher emotional exhaustion if the nurse is caring for a terminally ill child or a child dies, with a considerable amount of increased grief absorbed the younger the child is at expiration. The study showed the grief at times turns into guilt causing burnout thus decreasing job satisfaction increasing the desire to leave the unit if not the industry all-together. Pradas-Hernandez et al. (2018) concluded out of 1600 pediatric nurses surveyed, over 75% were found to have moderate to high levels of burnout.

Kim and Sekol (2014) reported pediatric hospitals exhibit the highest amounts of stress with the emotional impact intensifying caring for sick and dying children. Pediatric nursing can be rewarding but when nurses are subject to constant exposure to serious illness and suffering there begins a decline in the nurses' ability to cope and to operate fluidly…pediatric nurses then begin looking for alternatives to relieve stress. Killien (2004) reported pediatric nurses, unable to balance responsibilities at home and the effects of nurse burnout, can lead to mild to serious levels of depression, even suicide.

Flynn et al. (2009) confirmed with enhanced training and increased awareness of nurse leaders of the negative effects of nurse burnout provided positive results for nurses, healthcare systems and patients. Beercroft et al. (2008) determined that new nurses needed more exposure and longer inclusion during their training. New nurses are not equipped to handle the pressures of unknown stress but when given the appropriate tools and training, retention at the next level increased. Continued research in nurse burnout and nurse retention will solidify the industry making it stronger and more reliable. Parrey (2013) stated not every problem can be resolved. However, the negative impact of not solving this problem could be more catastrophic. Schaufeli et al. (2009) explained stress influences decision-making and is directly linked to higher rates of hospital-acquired infections to patients and to the health and welfare of pediatric nurses.

Conclusion

Healthcare systems continue to find ways to satisfy shareholder financial responsibilities. DNP graduates, with the correct game plan, can contribute to achieving shareholders' financial goals increasing the bottom-line of the system and help enhance quality care and patient satisfaction. New policies should focus on reducing nurse burnout, lower hospital infection rates, while increasing RN retention (Cimiotti et al., 2012). A small system in Pennsylvania conducted an internal study showing an increase in savings by lowering infections in patients through effective staffing. The hospital reduced Infections by over 4100 cases for a savings of $3.6 million and reduced Surgical Site Infections by 2500 cases for a savings of $52 million. The system also measured nurse burnout and found they reduced burnout by 30% through effective staffing contributing an additional $20 million for a combined total of $75.6 million back into the system. "Patient safety and quality care" are words in most healthcare systems mission statements. However, where nurse burnout is highest, there exists the lowest patient satisfaction

scores, the overwhelming number of gross neglect incidents to patients, and the highest burnout of nurses creating a nightmare in escalating nurse retention issues. Organizations are not doing what they need to do to retain nurses. Burnt-out nurses are seeking new employment. In most cases, as documented, nurses are seeking employment outside the nursing industry.

The literature confirms a link between nurse burn out and quality patient care Kovner et al. (2014). The literature demonstrates the higher the burn out percentage the higher the consequences for preventable errors. The literature is documented case after case the higher and more stressful the work load or case load, the greater opportunity for a complete system failure including the death of patients or even to one of their own nurses. All nurses in general are affected by burnout. The purpose of this study is to find a solution to assist a large pediatric hospital find solutions to burnout within its own ranks. While there will be some limitations in the study, plausible evidence will be presented to reduce nurse burnout thus, drastically improving the quality of patient care.

Strengths and Weaknesses of the Related Literature Review

Within the literature, adequate information was brought together without significant repetition filling gaps and offering adequate argument to the acknowledgement there exists a global nurse burnout crisis. However, even with the enormous amount of studies, considering the topic, not all information pertaining to burnout was included in the study. Information included was limited to impacts of burnout on patient quality care, on pediatric nurses and healthcare systems.

Chapter Summary

Existing nurse shortages, extended hours due to overtime, high patient to nurse ratios, problems at home, problems in the unit, lack of leadership support and knowledge or ways to

reduce nurse burnout, and caring for sick and dying children are more than enough reasons solidifying a crisis. In industries outside healthcare, leaders are finding solutions to combat if not eliminate the obstacles crippling the organization disallowing the system to achieve its promises, its moral obligations, and its financial responsibility to shareholders. The literature reviewed, demonstrated the healthcare industry is responsible for life, the greatest gift given to humanity. Nurses and other healthcare professionals need to provide solutions for decreasing nurse burnout. These solutions can preserve the health and welfare of those providing care and those receiving care.

Chapter 3: Research Method

Burnout among nurses is a key problem impacting nurse staffing and patient healthcare. Burnout is a syndrome that is associated with emotional exhaustion, a propensity to depersonalize client encounters and causes a decreased sense of personal achievement, and a phenomenon worldwide among nurses (Poghosyan et al., 2010). A quantitative study using the Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HSSMP) and the Complexity Assessment and Monitoring to Ensure Optimal Outcome II (CAMEO II) Acuity Tool directed the research for this project. This chapter will address data management while disclosing the feasibility and appropriateness of the study. The IRB approval process will be explained, interprofessional collaboration discussed, the practice setting disclosed, the target population identified, and the risks and benefits of the study exposed. The DNP project timeline used to track this research will also be presented.

Research Question

Kerfoot (2013) reported happy nurses make happy and healthier patients, healthier bottom-lines to healthcare system's profit and loss (P&L) statements and increases a nurses' ability to do their job more effectively. New nurses, who are beginning with an organization, already coupled with high turnover and low patient satisfaction scores, are being introduced to difficult situations not taught in a classroom or clinical setting. The "shock and awe" can be overwhelming identifying the young nurses' as potential retention issues early in their careers (Rushton et al., 2015). Evidence from this project was presented to a pediatric healthcare organization's leaders showing incidence of nurse burnout. The question explored existing data and literature to verify or deny there is a connection between nurse burnout and patient acuity.

The research question posed was: Will the implementation of the CAMEO II Acuity Tool reduce burnout among nurses working on a pediatric intensive care unit after one month of use?

Project Design

This project was conducted as a quantitative study and used a nonparametric test, specifically the Wilcoxon signed rank test based on the ordinal data collected. No demographic data of participants were used and data collected was measured using measures of central tendency such as using mean, median, and mode (Gleichmann, 2020).

Data Analysis

The Wilcoxon signed-rank test was used with two nominal variables and one measurement variable in the study. The nominal variable had only two values, the before and after, with the other nominal variable representing individuals. The use of Wilcoxon was represented as a nonparametric analogue to the paired *t* test, and it was used in the distribution of differences between pairs. In this study, the MBI-HSSMP was used and measured before and after the implementation of the CAMEO II Acuity Tool providing a paired *t*-test statistical outcome. A determination was made whether there is statistical evidence that the mean difference between nurse burnout before and after the CAMEO II Acuity Tool intervention is significantly different from zero.

A Priori power analysis was used to calculate an adequate number of participants using the "G-power App" (http://www.gpower.hhu.de/; Faul et al., 2007). Using the G-power App requires the input of the numbers of tails (2), the value of the chosen alpha level (0.05), the desired power (0.8), and the effect size (0.5). The effect size (0.5) is considered the average effect size based on a meta-analysis of 302 meta-analysis' of over 10,000 studies conducted since 1993 supporting the recommendation that the effect size of 0.5 is a safe choice (Bausell &

Li, 2002). Based on the power analysis result, 34 participants were needed to provide an effective result of the study.

Research Study Activities

Prior to collecting consent, an initial email was sent to the department heads of the pediatric critical care units with initial instructions. Potential participants working in the pediatric units were solicited for participation and were provided the appropriate instructions for the acuity tool implementation. I provided education and instruction for one week during the unit's two daily shift change safety huddles. Prior to the implementation of the CAMEO II Acuity Tool, and after consents from participants were obtained, the MBI-HSSMP presurvey was administered to assess the level of nurse burnout prior to the implementation of the tool. An example of the consent form is provided in Appendix C.

All unit department heads, and charge nurses received the actual CAMEO II Acuity Tool with instructions. Each charge nurse and nurse participant used the acuity tool on his or her shift for one month. After each shift, the acuity tool was returned to the charge nurse to be used for nurse assignments based on patient acuity and the incoming shifts nurse's capability. After the completion of the one-month test all participants completed the MBI-HSSMP postsurvey. The pre- and postsurveys were then analyzed and measured into a statistical format.

Participants were given the right to withdraw their consent and participation at any time during the process without any penalty or adverse action. All data obtained are protected as mandated by federal regulations (Human Research Protection Office, 2019).

Instruments/Measurement Tools

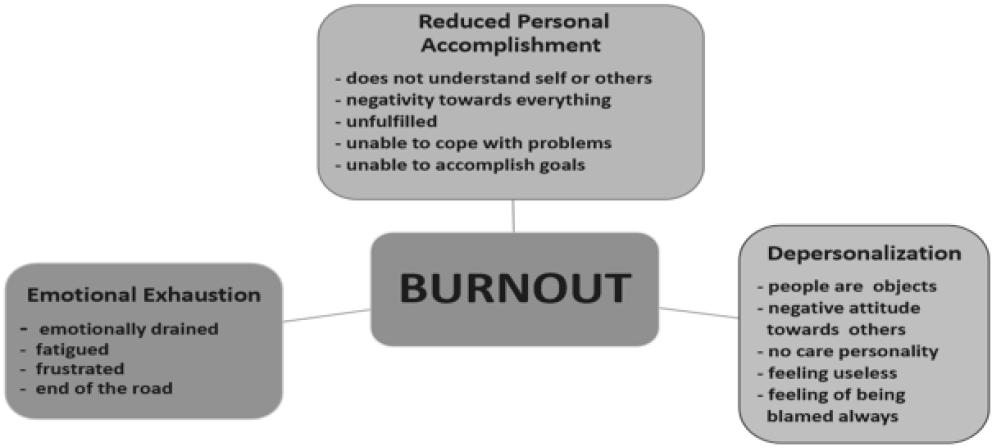
Maslach Burnout Inventory-Human Services Survey for Medical Personnel (MBI-HHSMP)

The Maslach's Burnout Inventory-Human Services Survey for Medical Personnel (MBI-

HSSMP) helped guide this project (See Figure 4). The MBI-HSSMP is widely used to assess burnout in healthcare. Studies using the MBI-HSSMP have reported rates of 25% to 75% of healthcare workers experiencing burnout (e.g., Fahrenkopf et al., 2008, Linzer et al., 2001; Shanafelt et al., 2002).

Figure 4

Maslach's Three Dimensions of Burnout (Personal Rendering)



Note. From "Understanding the Burnout Experience: Recent Research and its Implications for Psychiatry," by C. Maslach and M. P. Leiter, 2016, *World Psychiatry*, *15*(2), 103–111 (https://doi.org/10.1002/wps.20311).

One of the most studied occupational settings is health care (Maslach & Leiter, 2016). The nature of healthcare occupations and the context of everyday duties are changing continually in technology, organizational systems, constant new-care delivery methods, and the way patients perceive care and impacts the way medical personnel provide care resulting in higher levels of burnout (Maslach & Leiter, 2016).

Burnout among medical personnel puts patients and organizations at risk. Adverse events experienced by patients due to burnout accounts for a large majority of patient fails and can

result in death and costly unwanted expenses to the organization including enormous amounts of revenue lost in years of litigation (Fahrenkopf et al., 2008).

Hall et al. (2016) conducted a meta-analytic review to determine whether burnout directly impacts patient safety with the overwhelming majority of the 24 studies using the MBI survey. Evidence in the majority of the studies concluded patient safety is negatively impacted by burnout (Hall et al., 2016). Doulougeri et al. (2016) stated using the MBI-HSSMP offers validity to the findings and will facilitate the implementation of a tool that will reduce nurse burnout.

Complexity Assessment and Monitoring to Ensure Optimal Outcome II (CAMEO II)

Nursing productivity over time was only measured in adult nursing settings and based solely on resource allocation and time (Conner et al., 2019). A group of expert pediatric nurse leaders determined there was a need for a separate acuity tool for staffing in pediatric intensive care facilities, as the type of care is instrumentally different than that of adults (Conner et al., 2019). The CAMEO II pediatric acuity tool is used to assign nurses working in pediatric intensive care units based on patient acuity (See Figure 5). The tool will be used in this research as a mechanism to measure acuity against nurse capabilities in staffing to attempt the reduction of nurse burnout.

Conner et al. (2019) reported the complexity of a cognitive workload should be quantifiable within the nursing process. Pediatric nursing similarly needs an advanced knowledge tool to provide an optimal outcome for critical pediatric patients (Conner et al., 2019). For example, if a doctor creates an order for a child for an intermittent intravenous furosemide, the attending nurse includes an assessment in the critical thinking process needed for issuing the medication, also, the nurse had to determine the correct dosage, if the patient's vital signs were at the required standard, and if the child's electrolyte and fluid balance values were

acceptable for administration of the medication (Conner et al., 2019). By identifying these factors, a firm depiction of the cognitive processes involved in nursing assessment, intervention, and evaluation is understood (Conner et al., 2019).

The use of the CAMEO II was used to validate the current complexities of pediatric critical care nursing in a children's hospital (Conner et al., 2019). The CAMEO II Acuity Tool measures 14 Domains of Care in assessing patients during a shift measured against five levels (1 to 5) of cognitive complexity of that cognitive workload: The 14 domains include:

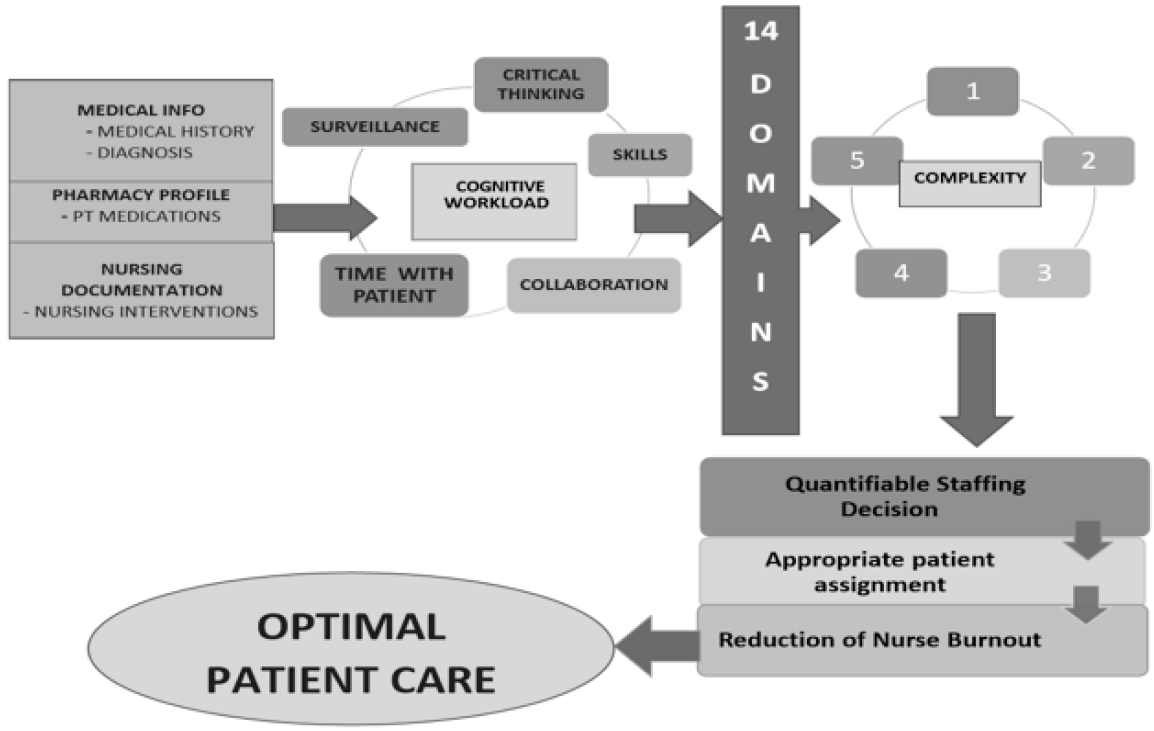
- Monitoring;
- Intermittent medications;
- Vasoactive IV medications;
- Continuous IV medications;
- Respiratory;
- Resuscitation;
- Infection control;
- Nursing assessment, monitoring & intervention;
- Procedures and Testing within the intensive care unit;
- Activities of daily living /self / assisted care;
- Transfers / admissions / transport;
- Assessment of anxiety / coping / mood / family adjustment;
- Inpatient coordination of care / teaching / anticipatory guidance to patient & family; and
- Professional / environmental management (Conner et al, 2019)

The tool included the logical processing of the assessment, critical thinking, and the clinical decision-making a nurse must adhere to while caring for a patient whose status changes

frequently during a shift (Conner et al., 2019). Nursing practice is defined by measuring the cognitive workload the nurse can capture in their intellectual processing of data and the decision-making needed to provide optimal care to pediatric patients.

Figure 5

CAMEO II Acuity Tool (Personal Rendering)



Note. From "Validation of the Complexity Assessment and Monitoring to Ensure Optimal Outcomes (CAMEO II) Acuity Tool for Pediatric Critical Care Nursing," by J. A. Connor, C. LaGrasta, K. Gauvreau, C. Porter, and P. A. Hichey, 2019, *Dimensions in Critical Care Nursing*, *38*(3), 153–159 (https://doi.org/10.1097/DCC.0000000000000355).

The CAMEO II Acuity Tool enables description and quantification of the cognitive workload in pediatric intensive care units (Connor et al., 2019). Dr. Jean Connor is the Director of Nursing Research of Cardiovascular and Critical Care Patient Services at Boston Children's Hospital in

Boston, Massachusetts. Dr. Conner led the development and implementation of the CAMEO II Acuity Tool taking a very broad construct of provider-related acuity for optimal patient care focusing on:

1. Measured *cognitive* workload – Intellectual processing of patient information that drives the performance and decision-making (Conner et al., 2019).
2. Quantifying the *complexity* of pediatric nursing care – Skill, concentration, and level of surveillance required of nurses to provide care to a patient or group of patients (Conner et al., 2019).

The CAMEO II Acuity Tool offers a description of the overall workload, but then quantifies it into one of five levels of complexity of that cognitive workload while performing 14 domains of direct or indirect care (Connor et al., 2019).

Staffing decisions and staffing assignments are quantifiably important especially with newer or less experienced nurses. The CAMEO II helps reduce burnout of nurses as it allows charge nurses a quantifiable tool to help in patient assignments in providing optimal patient care (Connor et al., 2019).

Data Collection, Management, and Analysis

Once permission to move forward was granted from the project committee and institutional review board (IRB), written permissions were sought after to use the MBI-HSSMP and the CAMEO II Acuity Tool. Next, permission from the healthcare facility being used in the research was requested as part of the IRB process. IRB approval form provided in Appendix D. Approval to use the MBI-HSSMP provided in Appendix E. Approval email to use the CAMEO II acuity tool provided in Appendix F.

The unit department heads, charge nurses, and nurse participants were informed the HSSMP takes 10 to 15 minutes to complete. The participants were highly encouraged to provide honest answers and assured that the results will be highly confidential. Proper coding was provided in a letter number combination to label the survey paper as a form of identification to protect the participant's identity. Sufficient information was provided to the participants to ensure they are aware of the potential risks and benefits in participating. I answered all questions and clarifications were provided.

After all consents were obtained from the participants, consent forms were collected, scanned, and stored in accordance with IRB protection measures mandated by federal regulations (Human Research Protection Office, 2019). I provided clear instruction on how the survey form should be filled-out and then distribute the questionnaire. Paper formats were used in the study to ensure I did not expose the unit's intranet site to external links and thus reducing the potential for phishing activities.

Following the MBI-HSSMP presurvey, the charge nurses and the nurse participants utilized the CAMEO II Acuity tool. I provided extensive instructions during the twice-daily safety huddles for one week to ensure proper use of the tool. After one month of the implementation of the CAMEO II Acuity tool, the MBI-HSSMP post survey was administered to compare burnout results before and after the implementation of the tool. Pre- and post-MBI-HSSMP results were analyzed using the Mind Garden scoring service as a part of purchasing their tool. Data gathered was analyzed and measured into a visual statistical format. Every controllable measure was put in place to protect proprietorship of the MBI-HSSMP, the CAMEO II Acuity Tool, the privacy of the participants and the integrity of the healthcare facility, the university, and the Doctor of Nursing Practice program.

Methodology Appropriateness

The main assumption of this study was that nurse burnout is the key source of many problems in a healthcare system including nurse turn over, nonprofitability of systems, diminished quality care of patients and increased patient fails including death. Poghosyan et al. (2010) concluded nurse burnout as the main cause of an escalating global dilemma in healthcare.

To test the hypothesis that the implementation of the CAMEO II Acuity Tool will reduce burnout in registered nurses working in a pediatric cardiac critical care unit, a correlational study was used for this project. No control group was utilized. Data analysis was performed using the Wilcoxon Signed-Rank Test utilizing SPSS version 26.0. The sampling method used was a conventional sampling and the number of participants needed for the study was determined using the G-power app.

Feasibility Appropriateness

A pediatric registered nurse implemented this project. Consents were obtained to utilize the CAMEO II Acuity tool and approval to use the tool was granted by email by the tool creator, Dr. Jean Connor, the author of the tool. The MBI-HSSMP tool was purchased for use in the study and written permission granted. The project implementer handled all cost for the duration of the study.

Institutional Review Board (IRB) Approval Process

The IRB process is a necessary factor when conducting research. The USFDA (2016) stated all research involving a human, must comply with federal, institutional, and guidelines driven by the ethical process protecting the rights and privacy of others. As part of the DNP program and federal requirements for conducting research, an IRB graded research ethics course was completed, and certificate of completion granted. When the DNP project chair and

committee granted final approval of the project, an application for IRB approval to the university IRB committee was generated and granted. Additionally, an application for IRB approval to the healthcare facility was processed and granted. An initial support letter from the facility CNO is provided in Appendix G.

Interprofessional Collaboration

Collaboration is a desired aspect of research and a desired result of this project. Solid communication amongst all stakeholders involved in this project was sought-after and utilized to the fullest for project success. The health system assigned, as part of their effort, a project coordinator who helped facilitate the study from the needs of the organization. Executive nurses such as the Chief Nursing Officer (CNO), and other nurse managers and charge nurses were intently involved in the assigning of nurses based upon the results of the acuity tool as the results of this study could determine a probable positive outcome to a crisis in nurses; burnout. Registered nurses working the day-to-day shifts were the desired beneficiaries of this project as the desired result was to lessen or eliminate burnout in themselves or other nurse companions, thus collaboration with each of them was crucial for project success. Additional collaboration was conducted with the DNP project chair, two DNP committee members, the DNP program director, and the university's IRB committee to ensure compliance and overall success of the project. Further collaboration with the MBI-HSSMP's coordinator and the CAMEO II Acuity Tool's author was crucial before, during, and after each phase of the study.

Practice Setting

The research was conducted within a pediatric intensive care unit of a children's hospital located in the mid-west area of the United States. The rationale for choosing this facility was the availability of participants working in different critical care contexts of a pediatric facility. The

previously mentioned consent letter was forwarded to the desired participants identifying me, research initiatives, and request for participation in the use of the MBI-HSSMP and the CAMEO II Acuity Tool. The consent letters, the MBI-HSSMP pre- and postsurveys and the CAMEO II Acuity Tool, with instructions, were provided to each participant who expressed a desire to participate.

Target Population

The target population included English-speaking full-time registered nurses from a pediatric intensive care unit of the children's hospital. Registered nurses, from all academic levels, who were novice, mid-term, or experienced were sought for participation. Unit charge nurses were used as the CAMEO II Acuity Tool was completed on each shift for nurse assignments on subsequent shifts. The surveys and the acuity tool were provided and evaluated in English.

Analysis Plan

Consent and Parent Completion of Questionnaires

There were no minors involved in this study therefore no parental consent was needed.

Data Collection

The surveys were administered in a paper format questionnaire in English. The surveys were submitted to the researcher of the MBI-HSSMP pre- and postsurvey tool for statistical analysis. The participants were identified using a number/letter (i.e., 1a, 1b, 2a, 2b, 3a, 3b, etc) to identify the analysis of the same participant, but with different surveys (i.e. pre- and postsurvey of same participant). No personal identification was solicited.

Management of Data

Consent letters included all appropriate required information explaining the study, the purpose of the study, and methods of use and dissemination. Only relevant information was used remaining completely confidential. Based on IRB guidelines, all information and data collected has been secured in a database I maintained and will be made readily available to the appropriate authorities upon request.

Quantitative Data

Quantitative data to analyze results using the *IntellectusStatistics* program was used. *IntellectusStatistics* is a web-based statistical analysis software program that allows nonstatisticians the ability to analyze multiple types of research data (IntellectusStatistics, 2020). The program facilitated the organization and analysis of the project and assisted in the translation of the quantitative data into a proper *American Psychological Association's* (7th ed.) narrative (IntellectusStatistics, 2020). The *IntellectusStatistical* program is solid assistance to secure statistical results and reviewed for use by the university (T. Sawyer-McGee, personal correspondence, April 23, 2020).

Data Security

All surveys were maintained in an electronic folder and were stored on a single laptop computer that is password protected. No personal identifying information was stored on participants. The data were maintained in this manner until the end of the data collection timeframe. After which, all data were archived in the university's data storage system with password protection maintained by me.

Risks and Benefits

There was minimal risk identified with the conduct of this study. Loss of confidentiality is possible since human subjects are involved. Psychological risks were also considered since the participant is at risk of anxiety or depression related to burnout. Social risks could also potentially alter the subject's relationship to peers or supervisors. I minimized the risks by recording data and using other identifiers (i.e., number and letter combination) other than the subject's name. Benefit of this research include improvement in work environment of nurses as well as reduction in work related burnout, thereby increasing retention, decreased turn over and increased quality in patient care.

Timeline

Table 3 shows the timeline associated with this DNP project.

Table 3

DNP Project Timeline

Task Date: Month/Yr. Completed	Project Task
January 2018	DNP program began
January 2018	PICOT statement identified
February 2018	Identified potential project chair and committee members
March 2018	Completed Chapter 1
March 2018	Began forming research citations log for Chapter 2
May - Dec 2018	Continued building literature review and relevant materials
December 2018	Chapters 2 and 3 finalized
January 2019	Secured committee chair and committee members
February 2019	Submitted Chapters 1, 2, and 3 for review by committee
March 2019	Power Point slides completed in preparation for initial defense
June - Dec 2019	Continued research
January 2020	Re-submitted Chapters 1, 2, and 3 for review
March 2020	Re-submitted Chapters 1, 2, and 3 for review
April - May 2020	Re-submitted Chapters 1, 2, and 3 for review
May 2020	Proposal Defense for project approval (granted)
June 2020	IRB application submitted for project implementation approval (granted)
July - Aug 2020	Collected data and analyzed data
August 2020	Completed Chapters 4 and 5
August 2020	Submitted study to Committee Chair for feedback
August 2020	Submitted DNP paper to NURS754
October 2020	Final Defense conducted and confirmation granted

Chapter Summary

Worldwide healthcare organizations are in a critical moment with the nursing industry. With the changing climate in patient acuity and the level of capability of the individual nurse, more organizations are feeling the effects of nurse burnout. To lessen burnout in registered nurses, the MBI-HSSMP provided a pre- and postsurvey of a specific group of registered nurses to measure their level of nurse burnout. Between the surveys, the CAMEO II Acuity tool was used as an intervention tool to assist nurse leaders in projecting patient acuity measured against an individual nurses' current capability in shift assignments. The study sought to determine if a proper acuity tool would indeed lower nurse burnout.

Chapter 4: Results

Burnout among nurses is a chronic challenge—impacting nurse staffing and retention globally. Nurse turnover is a continuing undesirable trend for healthcare organizations and methods to counter burnout are needed to combat that trend. The health and welfare of nurses must be addressed as burnout creates significant personal issues which in-turn directly affects quality patient care and safety.

The CAMEO II Acuity Tool, which was utilized in this study, is a pediatric acuity tool developed to measure patient acuity. Nurse leaders, for effective staffing and scheduling to help reduce nurse burnout, then used the results of the acuity tool. Before and after the intervention of the acuity tool, a pre- and postsurvey using the MBI-HSSMP was conducted to determine the level of burnout before and after the one-month use of the CAMEO II Acuity Tool. This chapter seeks to explain the significance of the level of burnout of the pediatric intensive care unit (PICU) nurses.

Purpose of the Project

The purpose of the project was to utilize the CAMEO II Acuity Tool to assess patient acuity and use it for staffing based on a nurse's capability and level of experience in a pediatric critical care unit in children's hospital. The number of participants was determined using the G-power app. The level of burnout of 34 full time PICU nurses was assessed using the MBI-HSSMP through a presurvey. After one month, a postsurvey was conducted using the same tool to assess if the acuity tool helped in decreasing burnout levels in the same participants participating in the study.

Question Guiding the Inquiry

The PICOT framework utilized in this study facilitated a way to identify the components of the clinical issue being addressed, burnout, and to address the question: Will the implementation of the CAMEO II Acuity Tool reduce burnout in a pediatric intensive care unit?

- P - Population: Registered nurses working in a pediatric intensive care unit in a children's hospital;
- I - Intervention: CAMEO II Acuity Tool assigning nurses according to patient acuity and nurse capability;
- C - Comparison: Burnout percentages before and after implementation of the study;
- O - Outcome: Reduction of nurse burnout; and
- T - Timeliness: Over a one-month period.

Demographic Data

The target population included in this study were English-speaking full-time registered nurses from the pediatric intensive care unit of a children's hospital. Registered nurses from all academic levels who were novice, mid-term, and experienced were invited to participate. The pediatric intensive care unit only has 45 full time registered nurses including charge nurses and supervisors. Only 34 nurses signed the consent and participated in the study, which is 75% of the pediatric intensive care unit nurse population. Because of the low number of participants and varying levels of experience and ages, it was advised not to collect specific demographic information outside the secured consent forms to protect confidentiality rights of the participants.

Data Analysis

This quantitative study aimed to compare two sets of scores from the same participant after a one-month of intervention to answer the question: Will the implementation of the

CAMEO II Acuity Tool reduce burnout among nurses working on a pediatric intensive care unit after one-month of use?

Given the nature of the study, which is the comparison of the pre- and postsurvey of the MBI-HSSMP after the CAMEO II Acuity Tool implementation, and the type of dependent and independent variables used, the Wilcoxon Signed Ranks test was used for data analysis. Wilcoxon Signed Ranks test is the nonparametric test equivalent to the paired *t* test. The dependent variable data used is an ordinal data, specifically a Likert scale, to assess the level of burnout and the independent variable of the 34 participants who participated in the MBI-HSSMP pre- and postsurveys.

Three domains of burnout measured using the survey were:

- Emotional exhaustion (SUM) = Items 1+2+3+6+8+13+14+16+20 (Note: Higher scores indicate higher degrees of burnout,
- Depersonalization (SUM) = Items 5+10+11+15+22 (Note: Higher scores indicate higher degrees of burnout, and
- Personal Accomplishment (SUM) = Items 4+7+9+12+17+18+19+21 (Note: Lower scores indicate higher degrees of burnout.

Emotional exhaustion, represented by nine questions on the survey, measured feelings of being emotionally drained and exhausted at work. Depersonalization, with five questions on the survey, measured an unsympathetic and unemotional response toward patients and their families. For both of these domains, a higher score correlates to a higher burnout score. Personal Accomplishment, represented by eight questions, measures one's feelings of proficiency and accomplishment towards one's job. In comparison to the other first two domains, lower scores in this domain correlates to a higher burnout. The scores for each domain were computed separately

for each respondent and were not combined with other domains. With the use of SPSS, the following data were obtained.

Table 4

Descriptive Statistics

Statistics	*N*	*M*	*Mdn*	*SD*	Minimum	Maximum
	34	3.26	3.17	0.628	2	3

Table 5

Ranks

Emotional Exhaustion		*N*	*M*	Sum
Posttest - Pretest	Negative ranks	30[a]	15.50	465.00
	Positive ranks	0[b]	0.00	0.00
	Ties	4[c]		
Total		34		
Depersonalization		*N*	Mean	Sum
Posttest - Pretest	Negative ranks	22[a]	11.50	253.00
	Positive Ranks	0[b]	0.00	
	Ties	12[c]		
Total		34		
Personal Accomplishment		*N*	Mean	Sum
Posttest - Pretest	Negative ranks	2[a]	6.50	13.00
	Positive Ranks	14[b]	8.79	123.00
	Ties	18[c]		
Total		34		

Note. a. Posttest < Pretest

b. Posttest > Pretest

c. Posttest = Pretest

Table 6

Test Statistics

Posttest - Pretest			
	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Z	- 4.911 [b]	- 4.310 [b]	- 2.966 [b]
Asymp. Sig. (2-tailed)	0.00	0.00	0.003
	z = .00; p < .05 There is a significant result in the Emotional exhaustion domain between the pretest and posttest after the CAMEO II Acuity tool intervention	z=.00; p < .05 There is a significant result in the Depersonalization domain between the pretest and posttest after the CAMEO II Acuity tool intervention	z=.00; p < .05 There is a significant result in the Personal Accomplishment between the pretest and posttest after the CAMEO II Acuity tool intervention

Note. a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

Based on the results provided in the analysis of the data, The CAMEO II Acuity Tool implementation had a significant result in the reduction of burnout among nurses in the pediatric intensive care unit in a children's hospital after one-month of use.

The Emotional Exhaustion and Depersonalization scores for the presurvey were higher compared to the postsurvey score, which indicated a reduction in burnout in both of these domains. The Personal Accomplishment domain scored lower compared to the postsurvey. A lower score on this domain signifies a positive outcome and one's sense of fulfillment and satisfaction towards the job. By analyzing data separately on these three domains, this researcher was able to provide a comprehensible answer regarding the effectiveness of the intervention tool, the CAMEO II Acuity Tool, used in this study. The implementation of the CAMEO II Acuity Tool can help reduce burnout among nurses working on a pediatric critical care unit after one-month of use.

Reliability/Validity

Reliability coefficients of the MBI-HSSMP have been developed, used, and enhanced since its inception in 1981 (Maslach & Leiter, 2016). Data collected from the original MBI until the current time solidified its reliability in numerous research studies. There have been dozens of subsequent peer-reviewed and published studies providing positive evidence of the MBI and its corresponding areas of interest such as the MBI-HSSMP. There have been less than a few studies that provided lower reliabilities for the Depersonalization scale however over time, longitudinal studies have provided a high reliability and degree of stability and validity to the MBI format (Maslach & Leiter, 2016).

The validity of the MBI has been provided over time in numerous ways including the observations of others with correlating scale scores, job conditions and circumstances, and the personal attitudes and reactions that correspond with burnout (Maslach & Leiter, 2016). Many studies have demonstrated that burnout is a distinct construct, as measured by the MBI, allowing for a discriminant validity relating to many measures of psychological constructs. Therefore, burnout can be distinguished from other psychological factors such as anxiety and depression (Maslach & Leiter, 2016).

Challenges

Initial reactions to participate were highly motivated to somewhat motivated. Consent forms were easily distributed and collected. The MBI-HSSMP presurvey really made people think about their current burnout state as 89% measured high in burnout, possibly an indication of the somewhat motivated participants. The onset of COVID-19 and the redistribution of nurses from floor to floor and unit to unit did not allow 100% participation over the one-month time frame. The desire to use the tool was there, and when present, the participants did use the tool

but when reassigned to different units, the tool was not used. Nurses floated into the PICU used the acuity tool but were not participants of the study subject to the pre- and post-MBI-HSSMP surveys.

Strengths and Weaknesses of the Project

The strength of this project is the applicability and practicality of the tools that were both used during the conduct of the study. The CAMEO II Acuity Tool, being an acuity tool specifically designed for pediatric critical care settings, provided a concise and thorough way to measure patient acuity and it provided a basis for charge nurses for staffing purposes.

The MBI-HSSMP is the commonly used tool in research regarding burnout for medical professionals. It aims to provide quantifiable data to measure burnout specifically in the three-burnout domains.

By determining the likelihood of severe burnout in PICU nurses, the management can help address it by creating tools and interventions to lessen the degree of burnout with its nurses. The majority of the nurses in the unit especially the head nurse manager was very supportive and highly encouraged participation from the full-time registered nurses. I did not encounter difficulty in data collection with the nurse participants since an acuity tool was also utilized in their previous jobs. Most feedback received was the simplicity of the tool and the convenience of its use.

The weaknesses of this project was in the length of time the study was conducted due to COVID-19 restrictions, and the number of participants that did the survey and used the acuity tool. Not all nurses in the unit were able to participate and some charge nurses refused to use the tool since they perceived it was a disruption of the normal routine although highly supported by the CNO and the nurse manager. Due to the limited time of the study there was not sufficient

time to measure the long-term impact of the acuity tool. The question remains, over a longer period of time, would the continued use of the acuity tool lessen burnout, and also, are there further interventions needed to help reduce burnout among PICU nurses? Burnout, as a syndrome, affects everyone but the causes to it are not only limited to the workplace, there are many personal and social factors that contribute to burnout beyond the control of this researcher and this study.

Recommendations for Future Research and Implications for Nursing Practice

Job-related nurse burnout can be observed in all healthcare settings. It is always important to investigate the causes of burnout and to identify potential solutions to address the phenomenon (Poghosyan et al., 2009). Additional research and collaborations within healthcare organizations, led by nurse leaders, with the use of intervention scheduling tools can decrease burnout. Nurse leaders must initiate and follow-thru on continued research and implementation of systems within their organizations. Systems are always great to have as are ideas but if they are not executed or followed-up, the chronic burnout phenomenon will not be defeated.

Conclusion

Nurse burnout is a serious problem characterized by the nurse feeling emotionally exhausted, detached, insensitive, and incompetent. Should burnout continue to plaque registered nurses? Research studies of nurse burnout are highly important with the global shortage of registered nurses and the need to retain qualified nurses (Aiken et al., 2002). Nurse burnout is directly associated with patient dissatisfaction and a deficiency in quality patient care and safety. (Aiken et al., 2002). The MBI-HSSMP survey is a tool that can help organizations measure their nurses' burnout level. Acuity tools, such as the CAMEO II Acuity Tool, can be used as a scheduling intervention tool not only in pediatric critical care units but also in many other

nursing departments. The key to this solution however is a nurse and nurse leaders must buy-in to the acuity tool system and use it relentlessly in scheduling to defeat registered nurse burnout.

Chapter 5: Discussion, Recommendations, and Conclusions

Nurse leaders and other healthcare professionals need to provide solutions for decreasing nurse burnout; solutions, which will preserve the health and welfare of those providing care and those receiving care. The healthcare industry is responsible for the greatest gift given to man, life. In this chapter, a synthesis of the overall findings from this study will be revealed proposing specific actions to decrease registered nurse burnout. An interpretation of the findings will be discussed and recommendations will be made to nurse leaders as well as recommendations for further research specifically targeting nurse burnout.

Interpretation and Inference of the Findings

Initial reactions to the results of the MBI-HSSMP presurvey were alarming. Out of 34 participants, 89%, annotated by the results of their presurvey, were already at the extreme edges of complete burnout. All 34 participants were eager to participate, as was the nurse manager. While the CAMEO II Acuity Tool intervention was unanimously a solid idea up front, 40% found the acuity tool only heightened their work anxiety as their participation was measured at 33% or one out of three shifts per week. Yet 90% of the participants reported the upcoming shift's assignments were a high stress point, and this before the daily nursing duties. The challenge of some nurse shift supervisors not wanting to participate was upsetting but did not affect the outcome of the intervention of the acuity tool.

In the *Test Statistics* under the Emotional Exhaustion Domain there was a significant result between the pretest and the posttest at -4.911. A similar significant result occurred in the Depersonalization Domain between the pretest and the posttest at -4.310, while the significant result of the Personal Accomplishment Domain between the pretest and posttest measured at -2.966. The CAMEO II Acuity tool worked in decreasing nurse burnout.

Implications of Analysis for Leaders

Quality patient care and safety are paramount in almost every healthcare system and the financial health of healthcare systems is at the forefront of every executive's mindset. However, the most essential element of the care and safety of patients and the health of the system's bottom-line, nurses, seem to factor lower when in fact, burnt-out nurses affects both quality care and financial standings. The results of this study's MBI-HSSMP pre- and postsurveys and the CAMEO II Acuity Tool intervention proved that nurses need to be scheduled using quantifiable methods rather than by a list of names for an upcoming shift. Patient acuity and the abilities of each individual nurse must be factored together when assigning shifts. While other elements of burnout still hinder nurses, nurse leaders should fix the anxiety of the 90% before duty commences with a solid acuity tool for scheduling.

Essentials of Doctoral Education for Advanced Practice Nurses

This study's results support the DNP Essentials for Advanced Practice Nurses as outlined by the American Association of Colleges of Nursing (AACN). Each DNP essential was created to guide practice-oriented doctoral education specifying competencies needed to confer the Doctor of Nursing Practice degree.

Essential 1: Scientific Underpinnings

Data collected provided scientific underpinnings for nursing practice as outlined in the AACN's DNP Essential 1 providing scholarship and analytical support for evidence-based intervention corresponding to DNP Essential 3. The CAMEO II Acuity Tool provided an evidence-based intervention supporting the need for a continued intervention tool to combat nurse burnout.

Essential 2: Organizational and Systems Leadership for Quality Improvement

Organizational systems are needed in all contexts of business. This study provided the basis needed by healthcare leaders for the advancement and quality improvement to the individual nurse, the organization, and more importantly the patient. Putting in place a proven acuity tool in conjunction with the known capabilities of a nurse will result in higher quality care.

Essential 3: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Data collected provided future researches a base of information to advance the study of the effects of burnout as it relates to scheduling. Advanced MBI-HSSMP products can help researchers determine additional factors of nurse burnout. The more quantifiable the system is in scheduling, the better chances of lessoning nurse burnout.

Essential 4: Information Systems and Patient Care Technology for the Improvement and Transformation of Health Care

Acuity tools are essential to staffing. Acuity tools created and filled-out using technology will lessen a nurse's anxiety therefore improving and transforming health care. As part of charting, acuity tools can be integrated and fed into a field that populates the acuity of a patient therefore allowing nurse leaders a simplified yet quantifiable method to schedule.

Essential 5: Health Care Policy for Advocacy in Health Care

Nurse burnout is a chronic global problem. Healthcare systems and professional nursing associations must have a loud voice when advocating for nurses and health care policy when it comes to finding solutions to nurse burnout. Quality patient care and the financial stability of healthcare systems are directly affected as is, the individual nurse plagued with uncertainties and

overburdensome shifts. Pressing for legislation to see to the needs of the individual nurse will enhance quality health care.

Essential 6: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

Date collected and after-study conversations with internal organizational leaders in operations, HR, and executive leadership proved alarming but not surprising. To improve patient and population health outcomes all departments, not just the nursing department, required immediate collaboration. Circumstances required immediate attention.

Essential 7: Clinical Prevention and Population Health for Improving the Nation's Health

The research facility is a very large international organization that sees nurse burnout as a severe crisis. The data collected and its analysis will be shared with all critical care department heads. Internal acuity tools, to assist in daily nurse assignments, will be integrated system-wide.

Essential 8: Advancing Nursing Practice

Publishing this study will provide initial data and information for other advanced nursing practice researchers looking to further decrease nurse burnout thus advancing nursing practice through collaboration and evidence.

Recommendation for Future Research

Data and results from this study on nurse burnout seems to prove nurse burnout is more advanced than the average nurse leader wants to or actually realizes. Every nursing department has different levels of patients with a wide arrangement of acuity. Each nursing department has different levels of nurses with different coping abilities. Further research on acuity tools is a proven effective method to combat nurse burnout. However, other factors still remain such as coping with external circumstances even the dreaded topic in staff meetings, bullying.

Conclusion

Nursing is a gratifying career. Nurse graduates do not spend hours of training and studying coupled with individual and family sacrifices to enter a field they are statistically expected to leave in three years, if not sooner. We know all nurses are different in their abilities. We know all patients have different levels of acuity. We know the pressures of patient's families and the pressures to be perfect in providing care are evident in our daily duties as nurses. Why not find a solution to one part of the equation? The implementation of an acuity tool can reduce the level of burnout in nurses.

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Appendix A: MBI-HSSMP Survey (Pre & Post)

Review Copy: MBI-HSS for Medical Personnel

How often:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

How often 0-6	Statements:
1. _____	I feel emotionally drained from my work.
2. _____	I feel used up at the end of the workday.
3. _____	I feel fatigued when I get up in the morning and have to face another day on the job.
4. _____	I can easily understand how my patients feel about things.
5. _____	I feel I treat some patients as if they were impersonal objects.
6. _____	Working with people all day is really a strain for me.
7. _____	I deal very effectively with the problems of my patients.
8. _____	I feel burned out from my work.
9. _____	I feel I'm positively influencing other people's lives through my work.
10. _____	I've become more callous toward people since I took this job.
11. _____	I worry that this job is hardening me emotionally.
12. _____	I feel very energetic.
13. _____	I feel frustrated by my job.
14. _____	I feel I'm working too hard on my job.
15. _____	I don't really care what happens to some patients.
16. _____	Working with people directly puts too much stress on me.
17. _____	I can easily create a relaxed atmosphere with my patients.
18. _____	I feel exhilarated after working closely with my patients.
19. _____	I have accomplished many worthwhile things in this job.
20. _____	I feel like I'm at the end of my rope.
21. _____	In my work, I deal with emotional problems very calmly.
22. _____	I feel patients blame me for some of their problems.

(Administrative use only)

EE Total score: _____ DP Total score: _____ PA Total score: _____

EE Average score:_____ DP Average score:_____ PA Average score:_____

Appendix B: CAMEO II Acuity Tool

(Side A)

Bedspace Number (#) ____ Supplemental Figure 1a: Complexity Assessment and Monitoring to Ensure Optimal Outcomes (CAMEO II©) Total Score: 54+ ____

Unit: _____ Complexity: _____

Date at Start of Shift: _____ Shift: AM / PM Medical Record Number: _____ Patient: Medical/ Surgical/ Off service

# of patients at start of shift: _____ # of transfers/ admissions: _____ # of discharges: _____ # of patients at end of shift: _____

Registered Nurse Years of Experience: 0-2 years 3-5 years 6-10 years 11-15 years 16+ years

Form Instructions: Circle answer items as applicable. Item points are in parentheses.

Nursing Management Trend Throughout Shift (circle all that apply)
Patient (Pt.) Behavioral: Escalation of care (2) Maintenance of care De-escalation of care (2)
Pt. Clinical: Escalation of care (2) Maintenance of care De-escalation of care (2)
Family/Caregiver: Escalation of care (2) Maintenance of care De-escalation of care (2)
Developmental Considerations (circle all that apply)
Patient Age: Premature (<38 weeks) (2) >18 years old (2)
Developmental Age: Age appropriate (1) Delayed (2)
Monitoring (circle all that apply)
Fluid balance (Urine output (UO), Chest tubes (CT), Peritoneal dialysis (PD), Continuous Veno-Venous Hemofiltration (CVVH), drains) **Every 30 minutes (Q 30 min) (1); Every 15 minutes (Q 15 min) (2); Less than every 15 minutes (Q <15 min) (3)**
Noninvasive Ventilation Support (heart rate (HR), respiratory rate (RR), blood pressure (BP), temperature (temp), oxygen saturation (O2 sat), ventilation settings, pupils, level of consciousness (LOC), pain) **Q 30 min (1); Q 15 min (2); Q <15 min (3)**
Invasive (central venous pressure (CVP), Umbilical Artery Pressure (UAP)/Umbilical Venous Pressure (UVP), arterial BP, intracardiac pressures, intracranial pressure (ICP), intra-abdominal pressure (IAP)) **Q 1 hour (1); Q 30 min (2); Q 15 min (3); Q <15 min (4)**
Chest tubes/drains (2) Extracorporeal Membrane Oxygenation (ECMO) (4)
Seizures (4) Open chest (2) Pacer - temporary wires (2)
Assist device (ventricular assist device (VAD), Impella, Quadrox) (5)
Pacer/automated implantable cardioverter defibrillator - permanent (2)
Intermittent Medications (circle all that apply)
Nasogastric (NG)/Nasojejula (NJ)/ Gastric Tube (GT)/Jejunal (JT)/oral (2)
Patient control analgesia (PCA)/nurse controlled analgesia (NCA) (2)
Topical/otic/opthalamic/rectal (1) Fluid bolus (3)
Inhalation: Metered dose inhaler (MDI)/Nebulizer (2) Chemotherapeutic agents (3)
Injection: subcutaneous/intramuscular (2) Blood products (includes 5% albumin) (4)
Standard Intravenous (IV) meds (2) Intravenous Immunoglobulin (IVIG) (4)
Number of Medications Administered (circle the range that applies)
1-10 (1); 11-20 (2); 21-30 (3); 31-40 (4); >41 (5)
Vasoactive Medications (circle total number that applies)
1 drip (1); 2 drips (2); 3 drips (3); 4 drips (4); 5+ drips (5)
Continuous IV Fluids/Medications (circle total number that applies)
1 drip (1); 2 drips (2); 3 drips (3); 4 drips (4); 5+ drips (5)

Respiratory Support (circle all that apply)
Supplemental O2 (nasal cannula (NC), high flow nasal cannula (HFNC), blowby) (1)
Bilevel Positive Airway Pressure/Continuous positive airway pressure (BIPAP/CPAP) (3)
Continuous nebulizer (3) Isoflorene/heliox/inhaled nitric oxide (5)
Conventional ventilator management (4) Lidocaine for suctioning (3)
High frequency oscillatory ventilation (HFOV)/high frequency jet ventilation (JET) (5)
Infection Control (circle if applicable)
Enhanced precautions (contact, droplet, etc.) (1)
Nursing Assessment, Monitoring & Intervention (circle all that apply)
Administer procedural sedation (3)
Neurology/seizure management (3)
Epidural/intrathecal port management (2)
External ventricular device (EVD)/intracranial bolt management (4)
Pain/sedation/narcotic withdrawal management (3)
Airway/ Endotracheal tube (ETT) maintenance (3)
Ventilatory support weaning (4)
Critical airway/fresh tracheostomy management (5)
ETT/tracheostomy suctioning (3)
Oral/nasopharyngeal/nasal suctioning (2)
Tracheostomy care (3)
Spit fistula care (3)
Cough assist vest (2)
Chest physiotherapy (PT) (2)
Arrhythmia management (5)
Pacing wire removal (2)
Blood product rapid infuser management (4)
Post procedural bleeding management (4)
Temperature/fever regulation (3)
Cooling/warming blanket (3)
Gastrointestinal/feeding tube management (2)
Gastrointestinal/feeding tube insertion/removal (2)
Chest tube/blake/Jackson-Pratt (JP)/Peritoneal dialysis (PD) drain management (2)
Gastrointestinal/ostomy tube site care (2)
Bladder scanner (1)
Genitourinary (urinary catheter/ureteral) tube management (2)
Urinary catheter insertion/removal/straight catheterization (2)
Peritoneal dialysis (3)
Sequential compression device (SCDs) (1)

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(Side B)

Supplemental Figure 1b: Complexity Assessment and Monitoring to Ensure Optimal Outcomes (CAMEO II©)

Nursing Assessment, Monitoring & Intervention *continued* (circle all that apply)		
Splints/orthotics (2)	External traction management (3)	
Wound care/dressing change: simple (1); complex (2)		
Vacuum Assisted Wound (VAC) management (3)		
Peripheral intravenous line (PIV) site management (2)	PIV insertion/removal (2)	
Central line insertion/removal (3)		
Central/PIV tubing change/infusion change (5)		
Central venous line (CVL)/arterial/intracardiac line/peripherally inserted central catheter (PICC) line/indwelling port management (3)		
Drug mixture (IV) (2)		
Point-of-care testing (POCT) (2)	POCT > 1 time per shift (3)	
Capillary/heel puncture (2)		
Peripheral stick for lab draw (3)		
Arterial/venous port for lab draw (3)		
Specimen (cultures/labs) management (2)		
Laboratory data interpretation (acid/base balance, electrolytes, hematology) (4)		
End of life care/postmortem care (4)		
Procedures/Testing in the Intensive Care Unit (ICU) (circle all that apply)		
Intubation (3)	X-Ray (chest; kidney, ureter and bladder (KUB)) (2)	
Extubation (3)	US (head, abdomen, etc.) (1)	
Bronchoscopy (3)	EEG (2)	
Cardioversion (4)	Head CT (4)	
CT/drain: placement (3) removal (3)	Lumbar puncture (3)	
Electrocardiogram (EKG) (2)	Plasmapheresis (2)	
Echocardiogram (ECHO) (1)	ECHO requiring hands-on assist (3)	Hemofiltration (4)
ECMO cannulation/decannulation/circuit change (5)		
Continuous Veno-Venous Hemofiltration (CVVH) (5)		
VAD pump head change (5)		
Balloon atrial septostomy (BAS) (4)		
Chest exploration/opening/closure (4)		
Abdominal exploration (4)		
Vacuum Assisted Wound (VAC) dressing: insertion (3) change (3)		
CVL/ intracardiac/art/umbilical/PICC line: insertion (3) removal (3)		
Activities of Daily Living (ADLs)/Self/Assisted Care (circle all that apply)		
Oral (PO) feeding with assistance (1)	Linen changes with patient in bed/crib (1)	
Bottle feeding (1)	Skin care, complex (2)	
NG/NJ/GT/JT feeds (1)	Ambulation with assistance (1)	
Diaper change (1)	Isolette change (2)	
Transfers/Admissions/Transport (circle all that apply)		
Floor (3) Magnetic resonance imaging (MRI) (3)	Interventional radiology (3)	
Home (4) Catheterization lab (3)	Outside facility (4)	
Operating Room (OR) (4)	Emergency Department (ED) (3)	
Radiology (computed tomography (CT) scan, ultrasound, x-ray) (3)		
Nuclear medicine (3)	Other:	
How long did this take you/patient? (circle the highest applicable value)		
Standard (0-30 min) (1); Intermediate (31-60 min) (2); Complex (>60 min) (3)		

Assessment of Anxiety/Coping/Mood/Family Adjustment (circle if applicable)		
Ineffective (1)	Nursing leadership consult (3)	
Parent participation in cares; ineffective (2)	Parent absence in care (2)	
Time to support family: (circle the highest applicable value)		
Standard (0-30 min) (1); Intermediate (31-60 min) (2); Complex (>60 min) (3)		
Coordination of Care/Teaching/Anticipatory Guidance (circle applicable number)		
Case manager consult	Disease process education	
Social work consult	Medication education	Volunteer consult
Child life consult	Procedure/treatment	Medical/Surgical consult
Resource specialist consult	Family presence facilitation	
Psychology consult	Preoperative/Postoperative education	
Physical therapy/occupational therapy consult		Clergy Consult
Lactation/feeding team	Multidisciplinary care meeting/family meeting	
Interpreter services	Organ donation	
Nutritionist	Ethics consult	
Admission/discharge	Pediatric Advanced Care Team (PACT)	
Orientation to the unit/floor	Cardiac Antithrombosis Management Program (CAMP) team consult	
Other:		
1 (1); 2(2); 3(3); 4(4); 5(5); 6(6); 7(7); 8(8); 9(9); 10(10); >10 (15)		
Time to complete coordination of care: (circle the highest applicable value)		
Standard (0-30 min) (1); Intermediate (31-60 min) (2); Complex (>60 min) (3)		
Discharge Planning/Education (circle applicable number)		
Medications/prescription review		Cardiopulmonary resuscitation (CPR) training
Immunizations (scheduled/seasonal)		Car seat challenge
Ventilator or noninvasive ventilation		Eye exam (Retinopathy of prematurity (ROP))
Enteral feeding (formula review/teaching)		Hearing screen
GT, JT, Gastro-Jejunal (GJ) tube, or percutaneous endoscopic gastrostomy (PEG) teaching		
Equipment/supplies	Phenylketonuria (PKU)/state screen	"All Babies Cry"/shaken baby guide
Tracheostomy/suctioning		Other:
1 (1); 2(2); 3(3); 4(4); 5(5); 6(6); 7(7); 8(8); 9(9); 10(10); >10(15)		
Time to complete discharge planning/education: (circle the highest applicable value)		
Standard (0-30 min) (1); Intermediate (31-60 min) (2); Complex (>60 min) (3)		
Professional/Environmental Management (circle all that apply)		
Management plans (2)	Shift report - complex (2)	
Incident reporting (Safety Event Report System (SERS)) (2)		
Precept: employee (4)	Sitter (2)	Staff development (side by sides/resource) (3)
Precept: student (2)	Security (2)	
Research data collection (2)	Unit/institution meetings (2)	
Assisted outside current assignment; In unit (2) Outside unit (3)		

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Until every child is well.

Appendix C: Consent to Participate in Research

Greetings!

You may be able to take part in a research study involving the use of an acuity tool to care for pediatric patients. This form provides important information about that study, including the risks and benefits to you as a potential participant.

Please read this form carefully and ask the researcher any questions that you may have about the study. You can ask about research activities and any risks or benefits you may experience. You may also wish to discuss your participation with other people, such as your family doctor or a family member.

Your participation in this research is entirely voluntary. You may refuse to participate or stop your participation at any time and for any reason without any penalty or loss of benefits to which you are otherwise entitled.

RESEARCH TITLE: *Use of the CAMEO II Acuity Tool to Decrease Burnout for Nurses Working in a Pediatric Critical Care Unit*

RESEARCHER: MA **Frances** Feria-Clement MSN, RN

PURPOSE AND DESCRIPTION:

Quality patient care is affected by nurse burnout and directly affects RN retention. Two critical factors of nurse burnout include high acuity workloads and leadership awareness to a nurses' capability. Pediatric critical care nurses are categorized towards the top of registered nurses who experience burnout more frequently and more rapidly. Not only are patients directly affected, hospital systems are financially burdened and individual nurses are emotionally and physically defeated.

The study consists of a pre-survey (MBI-HSSMP) to assess one's current burnout level before using the CAMEO tool and afterwards. An intervention tool, the CAMEO II Acuity Tool created specifically for pediatric critical care units, will then be used by bedside nurses at the completion of each shift to measure their patient's acuity of care for one-month. At the end of each shift the bedside nurse will submit their worksheet to the nurse manager/charge nurse so he/she can assign the following shift's nurses based on patient acuity and the capability of oncoming nurses. At the end of one-month, the bedside nurse will complete a post-survey. The results will then be statistically evaluated to determine if the intervention tool created positive results.

Participant names will be received when surveys are returned. Numbers/letters (i.e., 1a, 1b, 2a, 2b, etc.) will then be assigned to identify survey comparisons. Demographic information to be collected: nurse experience in years (range) and nurse experience in years (range) working in a pediatric critical care unit.

The pre and post survey (MBI-HSSMP) includes only 22 questions. It will be administered using an online survey campaign and takes approximately 15 minutes to complete.

The CAMEO II worksheet takes approximately 7 -12 minutes to complete for the bedside nurses. If you agree and qualify to participate, you will be instructed on how to use this tool via a Y*ouTube* tutorial.

Ultimately, the intent of this study is to determine if the CAMEO II Acuity Tool decreases burnout thus impacting RN retention, enhancing patient quality care and safety, positively impacting organizational financial gains, and most significantly positively impacting the well-being of the individual nurse.

RISKS & BENEFITS:

The primary risk is breach of confidentiality. This will be discussed further in the next section.

The researcher cannot guarantee that you will experience any personal benefits from participating in this study.

PRIVACY & CONFIDENTIALITY:

Any information you provide will be confidential to the extent allowable by law. Demographic data may have to be shared with individuals outside of the study team, such as members of the Abilene Christian University Institutional Review Board. Otherwise, your confidentiality will be protected and secured in a locked box on a password-protected computer.

As with all studies, the primary risk is breach of confidentiality. However I have taken all required steps to minimize this risk. The Participants name will be collected with the consent letters but will not be affiliated with survey responses. Only years of experience (range), and years of experience in years (range) as a pediatric critical care nurse will be solicited while numbers/letters (i.e., 1a, 1b, 2a, 2b, etc.) will then be assigned to identify survey comparisons while name disclosure will remain anonymous in the final analysis and summary.

CONTACTS: If you have questions about the research study, the lead researcher is Frances Feria and may be contacted at xxxxxxxxxx, xxxxxxxxxx, and/or xxxxxxxxxxxx, xxxxx, xxxxxx, xxxxxx xxxxxx. If you are unable to reach the lead researcher, or wish to speak to someone other than the lead researcher, you may contact Dr. Tonya Sawyer-McGee, ACU DNP Chair @ xxxxxxxx. If you have concerns about this study, believe you may have been injured because of this study, or have general questions about your rights as a research participant, you may contact ACU's Chair of the Institutional Review Board and Executive Director of Research, Megan Roth, Ph.D. Dr. Roth may be reached at

xxx xxxxxxxx
xxxxxxxx@acu.edu
320 Hardin Administration Bldg., ACU Box xxxxxx
Abilene, TX 79699

ADDITIONAL INFORMATION:

There are no unexpected risks associated with your participation in this study. However, you will be notified if any risks are identified throughout the course of the study, which may affect your willingness to participate.

All measures to prevent the spread of COVID-19 have been taken including emailing, video tutorials, etc.

There are no risks or adverse actions to have if early withdrawal from the study occurs.

Your participation may be ended early by yourself, or by the researcher for certain reasons. For example, participation withdrawal may occur if you no longer meet study requirements, yourself or the researcher believes it is no longer in your best interest to continue participating, you do not follow the instructions provided by the researcher, or the study is ended. Any party will provide written communication for withdrawal. There are no financial benefits for the researcher or participants during this study.

Consent Signature Section

IAW hospital and departmental COVID-19 “huddle” and “meeting” protocols (distancing, proper wearing of mask, and washing and sanitizing of hands with each touch encounter), please sign this form if you voluntarily agree to participate in this study. Sign only after you have read all of the information provided and your questions have been answered to your satisfaction. Please sign, scan, and email to the researcher. You should receive a copy of this signed consent form. You do not waive any legal rights by signing this form.

_____	_____	_____
Printed Name of Participant	Signature of Participant	Date
_____	_____	_____
Printed Name of Person Obtaining Consent	Signature of Person Obtaining Consent	Date

Appendix D: University IRB Approval

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

July 2, 2020

Frances Feria
Department of Nursing
Abilene Christian University

Dear Frances,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Use of the CAMEO II Acuity Tool to Decrease Burnout for Nurses Working in a Pediatric Critical Care Unit",

(IRB# 20-090)is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

Appendix E: MBI-HSSMP Permission to Use

mind garden

www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

Maslach Burnout Inventory forms: Human Services Survey, Human Services Survey for Medical Personnel, Educators Survey, General Survey, or General Survey for Students.

The three sample items only from this instrument as specified below may be included in your thesis or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument form may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below.
Sample Items:

MBI - Human Services Survey - MBI-HSS:
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some recipients.

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MBI - Human Services Survey for Medical Personnel - MBI-HSS (MP):
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some patients.

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MBI - Educators Survey - MBI-ES:
I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some students.

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Cont'd on next page

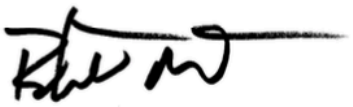
MBI - General Survey - MBI-GS:

I feel emotionally drained from my work.
In my opinion, I am good at my job.
I doubt the significance of my work.

MBI - General Survey for Students - MBI-GS (S):

I feel emotionally drained by my studies.
In my opinion, I am a good student.
I doubt the significance of my studies.

Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

Appendix F: CAMEO II Acuity Tool Permission to Use

Re: Frances Feria Research [EXTERNAL] Inbox ×

Connor, Jean Thu, May 28, 9:28 PM (5 days ago)
to me

Hello Frances,
Congratulations on the proposed project sounds quite interesting.
I am not sure if you are able to incorporate but I suggest adding the AACN Healthy Work Environment Assessment Tool.
We have utilized this tool for a number of our nursing evaluations.

I would be happy to discuss further.

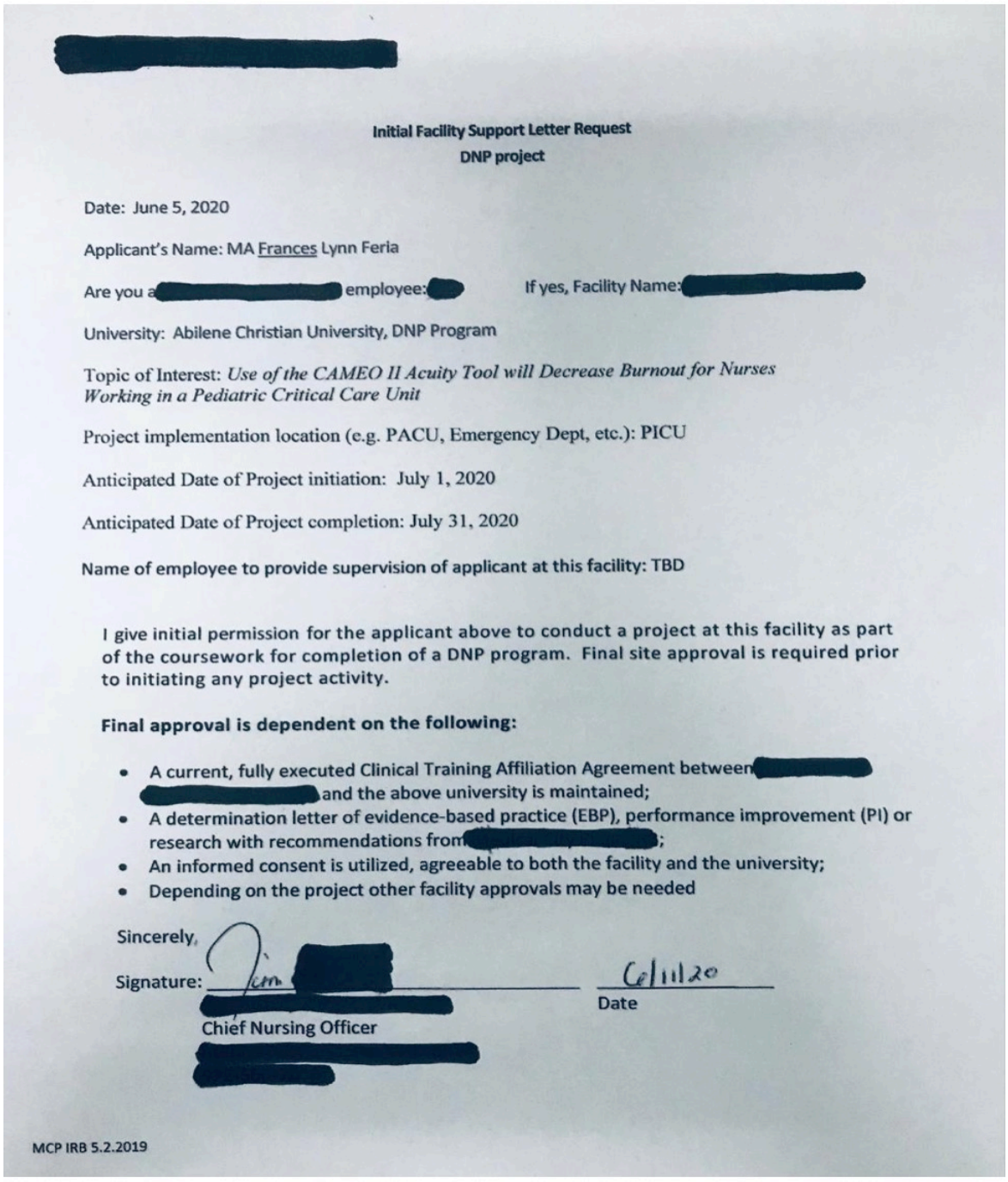
The CAMEO II acuity tool is published in Dimensions of Critical Care you have my permission to use this version.

We have just finished a multi-site study and are writing up the findings of our version III of the tool which is streamlined version.

What is your timeline for data collection?

Jean

Appendix G: Facility CNO Letter of Support



[redacted]

Initial Facility Support Letter Request
DNP project

Date: June 5, 2020

Applicant's Name: MA Frances Lynn Feria

Are you a [redacted] employee: [redacted] If yes, Facility Name: [redacted]

University: Abilene Christian University, DNP Program

Topic of Interest: *Use of the CAMEO II Acuity Tool will Decrease Burnout for Nurses Working in a Pediatric Critical Care Unit*

Project implementation location (e.g. PACU, Emergency Dept, etc.): PICU

Anticipated Date of Project initiation: July 1, 2020

Anticipated Date of Project completion: July 31, 2020

Name of employee to provide supervision of applicant at this facility: TBD

I give initial permission for the applicant above to conduct a project at this facility as part of the coursework for completion of a DNP program. Final site approval is required prior to initiating any project activity.

Final approval is dependent on the following:

- A current, fully executed Clinical Training Affiliation Agreement between [redacted] and the above university is maintained;
- A determination letter of evidence-based practice (EBP), performance improvement (PI) or research with recommendations from [redacted];
- An informed consent is utilized, agreeable to both the facility and the university;
- Depending on the project other facility approvals may be needed

Sincerely,

Signature: [redacted] 6/11/20

Date

[redacted]
Chief Nursing Officer
[redacted]

MCP IRB 5.2.2019