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This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

## Doctor of Nursing Practice

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Abilene Christian University

School of Nursing

A Systematic Review of Acuity-Based Staffing in Acute Healthcare Environments

A doctoral project submitted in partial satisfaction  
of the requirements for the degree of  
Doctor of Nursing Practice

by

Demitria Idella Stafford

March 2021

## **Dedication**

I would like to thank God for keeping me positive, inspired, and giving me the strength to overcome all challenges. Doing school, work, and having a family were all competing sacrifices in my life, which caused some stressful circumstances at times. I want to dedicate this project to my husband, who spent countless hours supporting me and believing in my ability to achieve any goal or dream I have attempted. His continued love and encouragement kept me motivated and striving to complete this project. There were times when I felt defeated and it was his voice and comfort that got me back up and pushing for success. This project is dedicated to my three children, who inspired me to pursue my dreams, and gave up their time to allow me to complete this project. I also dedicate this project to my family and friends. They encouraged me by checking on my progress, providing time for me to work on my project during their visits or vacations, offering advice, or taking me away from the project to relax. I am grateful and truly blessed to have individuals in my life that care so much and want to see me succeed. Thank you.

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I am thankful to my husband, who motivated me, sat up with me countless nights to keep me awake and focused, and assisted with daily life expectations, which provided the time necessary for my success. I am thankful for my children, who remained patient and supportive, and my mom, who believes in me and checks on my progress.

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## Abstract

Nursing leadership is responsible for considering the equity of patient care assignments when providing nursing care. Nursing leadership is responsible for assuring the delivery of patient care assignments with the intent to offer nurses an unbiased, evenly distributed patient load. Effective distribution of patient care assignments ensures patients receive the safest, most efficient, and highest quality of care. The purpose of this project was to provide nursing leadership with an executive summary of a systematic review of evidence-based research on the structure and process of making patient care assignments, and it provided evidence on how those patient care assignments affect the quality of care provided to patients. The researcher conducted a systematic review of the literature to inform stakeholders about best practices used for acuity-based staffing. The systematic review of the literature involved using the PRISMA model as a structured assessment to screen and eliminate articles during the article search. All data from the systematic review were synthesized to collectively determine each acuity-based tool's effects on patient care assignments within the acute care settings. The review of articles found that the implementation of acuity-based staffing tools in an acute care setting is associated with outcomes that included self-efficacy or retention, patient and nurse satisfaction, quality of care, and other additional findings. This systematic review of literature provided information to healthcare professionals about literature and the influence of implementing acuity-based staffing tools for patient care assignments in acute care settings. The project also included an implication of analysis for leaders and recommendations for change and future research.

*Keywords:* acuity, acuity-based staffing, patient care assignments, self-efficacy

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## **Chapter 1: Introduction**

Nursing leadership is responsible for considering the equity of patient care assignments when providing nursing care. Acute care nursing involves caring for patients and taking on tasks within an eight- to twelve-hour shift. The nurse in charge of each shift often makes patient care assignments by separating patients into close geographical locations and by dividing the number of nurses to patients evenly. The process often fails to consider the acuity of each patient's condition, where one patient's care can take substantially more time than another. An acuity-based staffing tool that promotes safety and equity in patient care assignments could be the intervention that improves patient and nurse satisfaction and the quality of patient care. This evidence-driven infrastructure can facilitate the challenge of managing practical patient care assignments in a practical and ethical way (Szumlas, 2013). A staffing tool that analyzes patient situations and the healthcare environment may create safer and more efficient patient care and improved health outcomes.

### **Statement of the Problem**

The relationship between nurse staffing and patient health outcomes is a significant issue in acute care facilities (Milstein & Schreyoegg, 2020). The literature cites inadequate staffing as a contributing factor to nurse turnover, burnout, and fatigue (Milstein & Schreyoegg, 2020). Nurses are not capable of being proficient in every skill throughout nursing environments. A new graduate nurse does not come with experience to care for all patients, nor should an experienced nurse be expected to care for all patients because they have a certain nursing degree. For example, geriatric nurses cannot be placed with pediatric or maternal patients and be expected to provide the same level of care as an experienced nurse in that specialty.

Nursing leadership is responsible for distributing patient care assignments with the intent to offer nurses an unbiased, evenly distributed patient load. Effective distribution of patient care assignments ensures patients are receiving the safest, most efficient, and highest quality of care. The local leadership issue is the high level of nurse turnover, burnout, and complaints related to nurse staffing and the complexity of patient care assignments. Charge nurses rely on alerts from nurses throughout the shift or their discretion to make the patient care assignments. Nurses complain about the equity and complexity of assignments, and the frequent redistribution of assignments is a result of the increase in acuity due to multiple co-morbidities on the medical and surgical units.

Acuity is defined as the amount of time spent caring for a patient. When looking to separate acuity from productivity, acuity is a measure of the severity of illness of the patient and the intensity of nursing care the patient requires (Johnston et al., 2019). Patients with the same or similar diagnosis may require different levels of nursing care based upon acuity. The patient could remain at risk for harm and continue to receive a lower quality of care unless acuity is factored into determining patient care assignments. At present, this acute care hospital does not utilize an acuity-based assignment system. Nursing leadership has identified this gap in practice and has asked for a systematic review of the current evidence-based literature.

## **Background**

Nurses leave their current jobs because of safety concerns, performing complex job responsibilities such as medication administration, navigating documentation systems, working in an inefficient environment, and musculoskeletal injuries (Sir et al., 2015). A survey showed that 74% of nurses highlighted stress and overwork as the primary concern, while 62% emphasized musculoskeletal injuries (Sir et al., 2015). Inadequate patient details and knowledge

of healthcare environments could leave nurses unprepared, requiring extra time to complete tasks or using shortcuts that can lead to employee injuries. Nurses are provided patient care assignments with only the patient's name, age, and diagnosis. Diagnosis or age does not describe the needs or acuity of patients. A patient care assignment developed from that data alone could trigger a serious patient and nurse safety event. One patient with the same diagnosis as another could need five times the assistance or care and the patient's physical limitations could demand more strenuous activities (Sir et al., 2015).

Patient care assignments can include a diverse range of patient problems that could place nurses in situations that require fewer or higher number of hours with an individual patient (Acar & Butt, 2016). Providing an acuity-based staffing tool may assist with equity among patient care assignments. The use of acuity-based staffing tools may assist with the management and formation of patient care assignments which better supports a healthcare organization's goals of optimal patient care and optimal nurse satisfaction.

Patient care assignments are made every day on hospital units. Nurses face the responsibility of caring for patients and assisting with their needs throughout their work shift. Not all patients have the same diagnosis or symptoms when they arrive at the facility, and their reactions to illness or situations outside the facility can vary, posing possible challenges with the care they receive. Additionally, nursing units within hospitals are not placed in the same geographical location, and even though nurses would like their patient care assignments to be close enough for the nurse to keep a close eye on their patients, the acuity amongst the group may not allow the assignment to be distributed safely (O'Keeffe, 2016). Nurse-to-patient assignments are often made by dividing the available nursing hours by the number of patients and assigning a nurse to beds within a geographic area (O'Keeffe, 2016). Making

assignments in this fashion ignores the number of hours spent caring for an individual patient, whether the nurse is capable of caring for the patient or if the hospital unit is an acceptable place to take care of the patient needs (O’Keeffe, 2016).

The charge nurse is usually the individual responsible for making patient care assignments which can sometimes be challenging when the acuity of each patient is uncertain. A study found that nurses felt patient care assignments were unfair and charge nurses gave their friends the best assignments (Marine et al., 2013). Unfairness in patient care assignments could leave nurses feeling unhappy, overworked, and willing to leave their place of employment (Marine et al., 2013). The results of the research confirmed that perceived inequity in patient care assignments was true (Marine et al., 2013). Manually creating patients care assignments may cloud judgments because of personal feelings which could lead to unhealthy work environments that decrease nurse satisfaction and the quality of patient care (Allen, 2019).

Practical patient care assignments require the merging of clinical information, hospital operations information, interdependencies between units, and real-time information on patients, resources, and workflows (Thomas et al., 2013). By optimizing the distribution of patients to nurses while managing patient care assignments, the efficiency of patient care may not flow smoothly, causing impacts on patient satisfaction, nurse satisfaction, and payment penalties from the Centers for Medicare and Medicaid (CMS) (Thomas et al., 2013). Taking the time to effectively plan the operations of the unit and the facility could influence the outcomes of patient and nurse satisfaction as well as the revenues associated with the quality of care. Quality of care and satisfaction suffers on various levels when patient care assignments are not given the emphasis and dedication necessary. The rising costs of healthcare and the prevalence of medical errors are also serious considerations in the nurse-to-patient ratio (Sir et al., 2015).



## **Purpose of the Study**

The purpose of this doctoral project was to provide nursing leadership with an executive summary of a systematic review of evidence-based research on the structure and process for making patient care assignments and evidence on how those patient care assignments affect the quality of care provided to patients. I conducted a systematic review of the literature to inform stakeholders about best practices used for acuity-based staffing.

According to Liang and Turkcan (2016), the integration of acuity systems, nurse workflow, and patient scheduling can provide better schedules that minimize patient waiting times and staff overtime and balance the workload for nurses. This information may assist leadership in making appropriate patient care assignments through the implementation of a practical acuity-based staffing tool, ultimately resulting in an improvement in the quality of care received by patients.

## **Significance**

In this setting, patient care assignments are often given to nurses without investigating patient needs and whether nurses are equipped with the knowledge to manage patient care. This has resulted in a rising number of complaints regarding staffing, burnout, and turnover. Nurses voice concerns about patient safety and quality of care. It is critical from a cost, patient safety, and nurse satisfaction perspective that nurses be utilized efficiently and effectively (Young et al., 2018). My intention was to build on an existing body of knowledge concerning the effort to improve the quality of patient care through acuity-based staffing. The results may be beneficial to nursing staff, stakeholders, and leaders of other healthcare organizations.

The project addressed nursing leadership concerns regarding the staff issue of patient care assignments. The project could improve nursing satisfaction and retention and decrease

healthcare costs. Results from the scholarly review on acuity-based assignments may be used to implement a more efficient process for making patient care assignments. Using acuity-based assignments throughout the healthcare system will emphasize excellence in the quality of patient care and the satisfaction of patients and nurses. The facility is part of a larger healthcare organization, so the information gleaned from this review could offer insights into this staffing model to other nurse leaders in acute care facilities across this health system.

### **Nature of the Project**

The project included a systematic review of the literature to inform stakeholders about best practices used for acuity-based staffing. The healthcare profession offers a variety of interventions or processes that could potentially provide equity and satisfaction for nurses and patients. Leaders of healthcare facilities want to know they are introducing and implementing the best evidence for their standards of practice (Young et al., 2018). Systematic reviews are one of the top-ranked sources for research and are considered the most valid form of medical evidence (Jahan et al., 2016). The evidence-based information obtained in systematic reviews provides an unbiased and structured format to identify, select, critically appraise, extract, and analyze information to add to gaps that exist in healthcare environments (Jahan et al., 2016).

### **Research Question**

The research question that best reflected the needs and projected outcomes of the evidence-based project was:

**Q1.** What is the current evidence-based literature regarding acuity-based staffing models?

**PICO.** The PICO format used for the research question included:

**P (Population/Problem):** Healthcare facilities have been experiencing turnover, burnout, and complaints related to nurse staffing and the complexity of patient care assignments.

**I (Intervention):** Systematic literature review on implementation of acuity-based staffing tools

**C (Comparison):** Not applicable

**O (Outcome):** An executive summary for nursing leadership

**T (Time):** Peer-reviewed literature focused within the last five years

The projected timeline was six months after Institutional Review Board approval.

### ***Hypothesis***

The underlying hypothesis for this study is that having an acuity-based staffing tool to assess patient needs and factor in the environmental structure and unit specifics could promote a culture of equity and improve the satisfaction of nurses (Valentine, 2018). This hypothesis results from the evidence-based research that nurses feel more committed to the purpose and taking on the duties of their patient care assignments when assignments are equal and unbiased (Valentine, 2018).

### **Theoretical Framework Discussion**

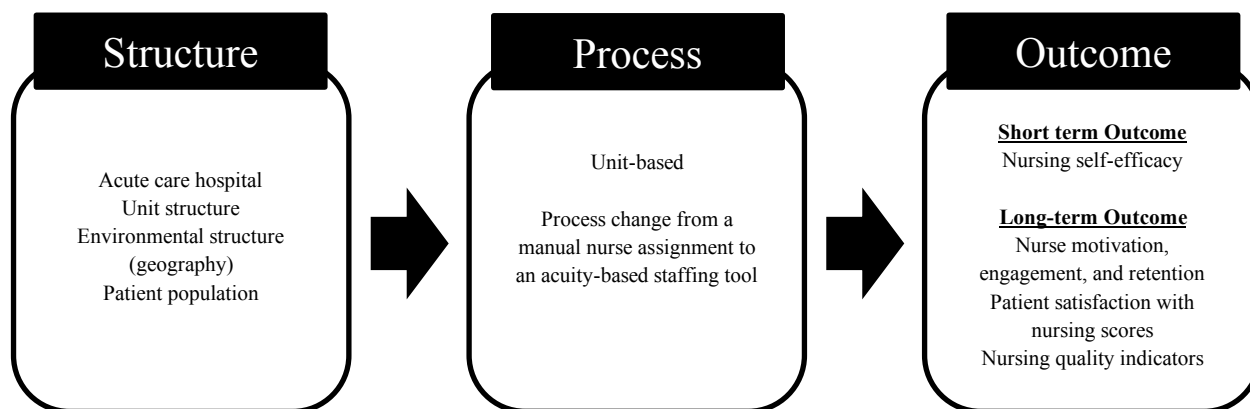
Healthcare continues to change, and nursing professionals are challenged to make decisions to act or contribute knowledge to resolve issues or evaluate best practices for the safety and quality of care for patients (Young et al., 2018). Multiple theories have been formulated throughout the years to assist in guiding practice decisions and the basis of research in healthcare. The application of theory to practice may extend along some lines such as using relevant methods to address patient-centered clinical problems, conceptualized quality improvement initiatives, or address organizational issues related to the uptake and diffusion of well-tested, innovative approaches to clinical practice (Magnan, 2016).

Patient care assignments have been an identified concern that continues to resurface in healthcare settings throughout the years causing the safety of patients to be at risk (Flynn et al., 2016). Healthcare professionals are supposed to prevent harmful acts, offer excellence in care, and gain the trust of patients and families when they enter into healthcare facilities. The application of theory to practice brings the voices of nurses together to achieve unidirectional patient care while creating a logical way to practice (Bernier, 2002). Theory guiding nursing practice and goals setting within healthcare organizations could create a foundation that nurses can question and expand upon to improve the satisfaction of nurses and patients and the quality of care.

### **Conceptual Framework Discussion**

Donabedian's structure process outcome model shows how modifying the structure of healthcare services should lead to improvements in clinical processes resulting in improved patient, nursing, and quality outcomes (ACT Academy, n.d.). According to Donabedian (2005), by identifying gaps and changing the structure, healthcare organizations can enhance a process that will improve the desired outcome. By inputting an acuity-based staffing tool into the role of patient care assignments, nurse efficacy should improve which should influence patient satisfaction and the quality of care (see Figure 1).

Systematic reviews are in the top ranking for evaluating interventions, assessing treatments, and improving patient care (Pussegoda et al., 2017). Systematic reviews are powerful tools that provide transparency and evidence free of bias (Pussegoda et al., 2017). Quality of care is improved with systematic reviews by providing relevant information that includes practice guidelines to stakeholders to allow clinical decision-making.

**Figure 1***Structure-Process-Outcome Model*

The structure-process-outcome model highlights the development of elements that designs, formulates, implements, and achieves outcomes with the adoption of an acuity-based staffing tool. The structure begins with identifying the location and determining the factors that are affecting the ability to distribute practical and efficient patient care assignments. From the analysis of the structure, an acuity-based staffing tool is developed and implemented to change the previous process of a manual nurse assignment. By enhancing the process of patient care assignments, nursing efficacy should improve. Continued adoption should lead to greater nurse motivation and retention, patient satisfaction with increased time, and nursing quality.

**Definition of Key Terms**

Operational definitions or key terms in research provide an overview and measurement of variables in a study. The following key terms provide a description and relevance to the project idea.

**Acuity.** Acuity is the amount of time spent caring for a patient. When looking to separate acuity from productivity, acuity is a measure of the severity of illness of the patient and the intensity of nursing care that the patient requires (Johnston et al., 2019).

**Acuity-based staffing.** The balancing of nurse workloads, direct patient care activities, indirect patient care activities, and nonpatient care activities that occur throughout a work shift. The inclusion of the architect of the hospital unit and the location of a nurse's assigned patients in regards to other unit resources is also considered (Acar & Butt, 2016).

**Patient care assignments.** The matching of nurses with patients to meet the unit and patient needs for a specified length of time. It is a way of coordinating the unit activities for the work shift (Allen, 2019).

**Quality.** The reflection of current values and goals in the medical care system, and the larger society for which it exists (Donabedian, 2005).

**Self-efficacy.** The belief in one's capabilities to organize and execute the courses of action required in producing the given attainments (Khan, 2015).

**Specialty.** Specialty is used for patients with particular conditions including, fall risks, skin precautions, and remote telemetry (Acar & Butt, 2016).

### **Scope and Limitations**

The scope of the project was to identify the best possible evidence within the current literature pertaining to the implementation of acuity-based staffing tools in acute care settings to determine the influence on patient satisfaction, nursing efficacy, and the quality of care. The project included a systematic review of the current literature. Inclusion criteria for the systematic review included articles within the last five years, articles implementing an acuity-based tool, articles in acute care areas, full-text articles, articles written in the English language, and articles involving nurses as the target population. Exclusion criteria followed the PRIMSA model guidelines for removing duplicates and non-full texted articles (Moher et al., 2009). Further exclusion of articles was based on inclusion criteria for the project.

Several limitations are recognized for the systematic review. The synthesis of multiple articles could present a biased perception as to whether or not to implement acuity-based tools. When searching for the articles, information may be limited based on the topic of choice. During the analysis of the research, a single researcher versus a team of researchers provides analytical views of the literature. Based on the inclusion and exclusion criteria of the project, there could be a decrease in the number of included articles.

### **Summary**

The relationship between nurse staffing and patient health outcomes is a significant issue in acute care facilities (Milstein & Schreyoegg, 2020). The purpose of the research project was to provide an executive summary of evidence-based research to nursing leadership on the structure and process for making patient care assignments and evidence on how those patient care assignments affect the quality of care provided to patients. The project provided a systematic review of the literature to inform stakeholders about best practices used for acuity-based staffing. Leaders will be provided evidence-based research about acuity-based staffing tools and be able to make an informed decision about how acuity-based staffing could benefit health care organizations. The ultimate outcome of this project will serve as an advancement to the improvement of patient care assignments by influencing nursing satisfaction, patient satisfaction, and quality of care. Improvement in patient care assignments with the use of acuity-based staffing tools could change the way patient care is provided.

## **Chapter 2: Literature Review**

The purpose of the research project was to provide evidence-based research to stakeholders on the structure and process of making patient care assignments and how patient care assignments affect the quality of care provided to patients. Patient care assignments are an everyday task by charge nurses in clinical practice areas. They involve nurses taking on the responsibility for managing patients' needs. A review of the literature was conducted to understand the development and requirements for patient care assignments and how acuity plays a role in influencing patient and nurse satisfaction and the quality of care.

### **Evidence-Based Practice Methodology**

The problem involves issues surrounding patient care assignments that affect the safety and satisfaction of patients and nurses. Acuity could play a defining factor in the development and distribution of patient care assignments. Patient care assignments are distributed in acute clinical settings where nurses are required to care for a variety of patients with specific needs. Depending on the level of those needs, patient care assignments should be developed to reflect patient needs and influence equity among nurses. A review of the literature was done to analyze data surrounding the use of acuity with patient care assignments and the influence of acuity on nurse and patient satisfaction and the quality of care.

### **Findings**

Using the keywords "nurse-patient assignments" resulted in 692,820 findings. The next step was an advanced search using the terms "nurse-patient assignments" and "acuity," which narrowed the search results to 95,728 findings. The search was further limited to scholarly (peer-reviewed) journals, bringing the findings down to 8,399. Narrowing the timeline for the year of publication to a 5-year span, between 2014 and 2019, resulted in 2,491 findings. Limitations to



the full text were added to prevent incomplete or inaccessible articles from interfering with data collection, reducing United States-based outcomes to 1,595. From the search, 12 articles were selected to use in the analysis, and a search continued to review articles to determine relevance and use.

### **Search Limitations**

The search was limited to peer-reviewed full-text articles within the last five years. The keywords were changed from “patient care assignments” to “nurse-patient assignments” because of limited search results. Only scholarly peer reviewed and full-text articles were selected for analysis. The articles were limited to United States-based and had to be written in the English language to be applicable for selection. The settings were limited to acute care settings such as clinical areas within hospitals.

### **Synthesis**

Many factors are involved in the development and distribution of patient care assignments in healthcare environments. As healthcare becomes more complex and the hospitalized population ages and has multiple comorbidities, it is important to evaluate and implement tools that will consider how patient care assignments are made, the layout of the unit, the fairness of assignments, the unique needs of patients, and the maturity or experience level of nurses. The charge nurse has been traditionally responsible for making patient care assignments, but including the above elements to develop patient care assignments is not always the norm. Nurses have requested equity in patient care assignments to ensure nurse-patient ratios are distributed equally (Marine et al., 2013).

Having assignments in the same location so nurses are able to keep a close eye on patients has been a practice that has been traditionally used with the creation of patient care

assignments. However, assigning rooms within the same area does not ensure equity in assignments and can trigger dissatisfaction among nurses. The architectural layout of healthcare environments has presented a challenge in patient care assignments related to the range of acuity between patients' diagnoses that can affect patient and nursing satisfaction and the quality of care (Acar & Butt, 2016). Patients with the same diagnosis can have different needs because of their comorbidities, mental status, and response to treatment (Trepanier et al., 2017).

The experience among nurses usually ranges within clinical settings and not every nurse is competent to care for all patient needs. A nurse's lack of experience could place them in situations where they are unable to care for specific types of patients (DiClemente, 2018). Patient care assignments should be made with the nurse, the patient, and the layout of the unit in mind. The incorporation of acuity into patient care assignments could be used to impact satisfaction and drive quality of care (Acar & Butt, 2016). The literature provided information on the history and development of patient care assignments, highlighted concerns in the literature with patient care assignments, and discussed some acuity-based staffing tools that have been used while making patient care assignments.

### **Factors in Patient Care Assignments**

When focusing on patient care assignments, factors that should be included are nurse satisfaction, patient needs, and staffing requirements or workloads. According to O'Keeffe (2016), nurses are the largest budgeted personnel in the hospital setting. If seeking to improve nursing satisfaction, healthcare organizations would benefit from paying close attention to the influence of acuity on patient care assignments (O'Keeffe, 2016). The task of making patient care assignments can seem simple, but the impact of not having a focus on assigned workloads or patient needs could lead to complications for patients, staff members, and facilities.

According to Szumlas (2013), achieving practical patient care assignments is essential to the continuity, quality, and safety of patients. The evaluation of patient care assignments and feedback about workload distribution from nurses and patients is vital (Szumlas, 2013). Nurses want to provide input about assessing patient acuity, changes in patient needs, and staffing requirements (Szumlas, 2013). With the incorporation of better planning for nursing inputs and throughputs to shift assignment guidelines, nursing can be better integrated into the essential tasks of front-line caregivers, which facilitates the accurate measurement of professional nursing care (Szumlas, 2013). Leaders should become focused on empowering the staff to escalate and delegate issues or situations in real-time to achieve and maintain an environment that is effective in patient care outcomes and high in the quality of care (Szumlas, 2013).

Understanding perceptions with patient care assignments and taking initiatives to change misperceptions or possible safety concerns should be a priority when healthcare involves patients and needs nurses to function. Allen (2018) conducted a study that surveyed clinical nurses and patients about their perceptions regarding the patient care assignment process. Clinical nurses identified the inclusion continuity of care, nurse status (orientation, floater), acuity, workload, nurse-patient relationship, admissions, discharges, and transfers, and psychological support as necessary measures in the process of patient care assignments (Allen, 2018). Important knowledge and input are valuable for the charge nurse to consider acuity and workload (Allen, 2018). Patients are not all the same in the care they require, and each patient needs to be considered for the care and time required to heal holistically. Patient care goes beyond what healthcare professionals can offer physically. Nurses are the individuals caring for their patients and can recognize the level of care that is required for patients.

Patient care assignments have traditionally been made by the charge nurse or leader of the unit. The patient care assignment process occurs at the end of each shift to prepare and arrange nurses with patient workloads that are equal, manageable, safe, and patient-centered. Charge nurses are leaders who strive for the best intentions when making patient care assignments. Daily routines, workloads, and the unfairness in the distribution of workloads can impact nurse and patient satisfaction (Marine et al., 2013).

Unfair assignments can lead to an unsatisfactory workforce and, if continued, can cause negative effects with staffing and quality of care (Marine et al., 2013). A concern with patient care assignments should be investigated, followed up, and interventions should be considered to correct the concern. Marine et al. (2013) did a study within a pediatric intensive care unit that focused on the perceptions of nurses regarding inequity or bias with patient care assignments made by the charge nurses. Marine et al. confirmed that perceived inequity of assignments was a problem needing further attention. Redesign of the charge nurse structure and the consistent monitoring of equity to balance workloads changed the perceptions of nurses which promoted a healthy work environment and impacted the recruitment and retention of nurses (Marine et al., 2013). Patient care assignments provide a reflection of the quality provided by the facility. Using nurses as resources to provide input on the acuity level of patients may assist in the equal and safe distribution of patients to nurses (Marine et al., 2013).

### **Patient Care Requirements**

There are unique and necessary considerations that go into caring for each patient to ensure patients are receiving the necessary treatment medically and holistically. Patient care assignments should reflect the compassion and urgency patients may need while progressing through their illnesses. Reliable data on the patient's needs have been lacking and have not been

included in a standardized way of staffing decisions (Trepanier et al., 2017). Taking into consideration the nurse and patient needs could be beneficial in developing and distributing patient care assignments.

Trepanier et al. (2017) integrated an acuity-based model that influenced the assignment of each patient for each nurse taking into consideration the expected nursing needs for each patient based on patient diagnosis, care plan, comorbidities, and physical and mental functions. The acuity-based model provided opportunities to objectively assign the right number of patients to each nurse, taking into consideration the number of needs and the number of nurses available (Trepanier et al., 2017). The implementation of the acuity-based staffing tool improved patient outcomes and increased equity in patient care assignments. Other benefits noted were increased nursing satisfaction and enhanced nursing relationships with patients, self, and colleagues through reinforcing a sense of professionalism and value placed on nursing skills, expertise, and experience (Trepanier et al., 2017). Nurses take pride in what they can offer patients, but the strain of high acuity and increased workloads can lead to burnout and dissatisfaction in healthcare environments (Trepanier et al., 2017). Patients' care can be unique, and nurses should be able to provide excellence in quality, safety, and better outcomes when given a patient care assignment.

### **Professional Experience or Maturity of Nurses**

Healthcare has a shortage of nurses to care for every patient, but as more new graduates come into the workforce and older nurses begin to retire, there can be a significant gap with experience (Nissan, 2017). New grads are often put immediately on night shifts when there are fewer human resources available to support clinical decision-making (Nissan, 2017). Though everyone is susceptible to learning, and new nurses have been granted a license by the state, the

healthcare environment is required to keep patients safe and should have nurses' best interests at heart. Nurses are obligated professionally and morally to provide the best possible care, and they can do so more effectively with the appropriate assignments and distributions of workloads (DiClemente, 2018).

DiClemente (2018) conducted a project to create, implement, and evaluate the use of a more objective acuity tool to improve patient assignments. Pre- and postsurveys were conducted within multiple units, measuring nurse perceptions on fairness, time, satisfaction, and safety of patient care assignments (DiClemente, 2018). DiClemente (2018) achieved maximum participation from the interest, support, and investment of the team members, obtained a greater knowledge of utilization of an acuity model, and increased satisfaction with the daily workload with the use of the acuity tool to create patient care assignments. As healthcare continues to gravitate toward a less experienced workload, the attention should focus on the needs of patients and nurses to ensure that safety and quality are maintained.

### **Historical Methods for Determining Staff Assignments**

Assigning nurses to patients has typically been a charge nurse duty based on the geographical closeness of rooms and occasional comments from nurses on patient needs. Acuity can be a rare circumstance for assigning patients, which could cause concerns with experience to care for patient load, satisfaction, and quality of care. The Agency for Healthcare Research and Quality (AHRQ) found a statistically and clinically significant association between nurse-staffing and hospital-related mortality and failure-to-rescue (Kuwata, 2017). A practical assignment includes knowledge of nurse experience, skill, and level of maturity when assigning patients (Allen, 2019). The assignment should anticipate the patients' needs and factor in the location of key resources to even the workloads (Allen, 2019). Patients' status can change within

minutes throughout the shift. Charge nurses should be communicating with staff and patients during the shift to ensure that patients are receiving the best care (Allen, 2019). Patient care assignments are developed and distributed at the shift change, but changes throughout the shift should occur to alter or change assignments when it is necessary.

### **Acuity Involvement in Patient Care Assignments**

Patient care assignments determine the flow, outcomes, safety, and satisfaction within healthcare environments (Salmond & Echevarria, 2017). The decisions on managing nurses and patients are vital to the well-being of the patients and to nursing quality indicators (Salmond & Echevarria, 2017). Healthcare is complex, and consistent changes occur, so being able to observe and understand the necessary time and energy that nurses need to care for patients is important (Salmond & Echevarria, 2017). Acuity is a way of viewing the whole picture with the inclusion of the nurse, the patient, and the actual nursing environment. Not all locations or types of patients are the same, so having a tool that can adjust and assist in mapping out the right assignments could be the intervention that can boost satisfaction, promote safety, and enhance the quality of care within a healthcare organization (Acar & Butt, 2016).

Acar and Butt (2016) asserted that balancing nurse workloads requires consideration of direct patient care activities, indirect patient care activities, and nonpatient care activities that occur throughout a shift. The study's data were collected and analyzed regarding the geographical components of the unit, components of workload and perceived workloads, weights of workloads, and model formulation (Acar & Butt, 2016). Both the nurse and the charge nurse were equipped with a tool to determine the best assignment and measures for patient care and safety based on acuity. Acar and Butt used a Multi-Criteria Decision Making (MCDM) method called the Analytic Hierarchy Process (AHP) to combine qualitative and quantitative factors into

the evaluation of alternatives. The method started with an analysis of the distance between patient rooms, the nearest supply room, and the nearest nursing station (Acar & Butt, 2016). AHP evaluated the types of patients to standardize a workload model involving constraints that would be followed when making patient care assignments. The goal was to minimize and maximize the sum of weighted distance and acuity scores that could be assigned to a nurse during a shift (Acar & Butt, 2016). The findings indicated charge nurses felt the assignments were feasible and easy to implement, and nurses perceived the assignments as unbiased since they were objective and not created by the charge nurse (Acar & Butt, 2016).

The AHP tool was used within another healthcare study to determine the effects among different facilities. Baki and Peker (2015) used an MCDM of AHP and Technique for Order Preference by Similarity to Ideal Solutions (TOPSIS) to evaluate service quality within three hospitals. Baki and Peker used AHP to determine the importance of criteria at the initial stage, and TOPSIS was employed to rank hospitals in the second stage. All the criteria to evaluate the service quality was based on literature and the goals to determine a hierarchal structure (Baki & Peker, 2015). The weights varied based on the closeness to negative and positive values, and hospitals were ranked in service quality (Baki & Peker, 2015). Using AHP to measure service quality differed from the previous subjective methods that depended on people to determine preferences related to services containing multi-criteria, uncertainty, and vagueness (Baki & Peker, 2015).

### **Barriers to Acuity-Based Staffing**

A variety of staffing tools have been initiated to assist with patient care assignments, and not all have been successful. The use of acuity can be challenging when all factors are not aligning (i.e., architectural layout, retention, nurse-patient ratios) to ensure patient care



assignments are equitable. The architectural structure of a nursing unit is not always developed with patient care in mind. Some architects do not include the perspective of healthcare professionals who are occupying the space. Whether building new facilities or reinvigorating existing ones, healthcare organizations across the country are planning, designing, and building to serve a changing rural acute care population (Appold, 2018). Restructuring the architecture within a facility is not an easy resolution and can become costly. Careful consideration of the architect when making patient care assignments should be included to ensure that patient safety, quality, and nursing satisfaction do not suffer (Appold, 2018).

A study conducted by Donahue (2009) on a 38-bed cardiothoracic and a vascular unit known for high acuity looked at the architecture of the unit when making patient care assignments. The unit layout was causing dissatisfaction among the nurses whose assignments would include four hallways at times and patients who were experiencing long wait times from nurses (Donahue, 2009). The distance between patient rooms was causing an effect on productivity and causing extra physical demands for the nurses with a great deal of walking (Donahue, 2009). A pod system was implemented with patients equally divided between nurses by their acuity that was reevaluated every shift change (Donahue, 2009). The study showed consistent improvement month after month on patient satisfaction scores, and nurses' number of steps decreased significantly, allowing nurses more time for direct patient care (Donahue, 2009). The geographical structure of the healthcare environment was not a design that could have been altered, so developing alternative measures that focused on providing nurses time for patient care and limited any unnecessary nursing constraints was prioritized (Donahue, 2009).

### ***Financial Constraints***

Nurse burnout, retention, and satisfaction directly affect the hospital's bottom line (API Healthcare, 2014). The impact of not having a balanced workload can affect nurses physically, emotionally, and mentally (API Healthcare, 2014). The AHRQ stated the risk of nurse burnout increases by 23% and dissatisfaction by 15% for each additional patient a nurse receives (API Healthcare, 2014). Replacing a healthcare employee can cost up to 250% of an employee's salary, and hospitals can lose between \$3.74 million and \$4.98 million every year with the rate of turnover (API Healthcare, 2014).

### ***Nurse-Staffing Ratio Laws***

Numerous states have already mandated staffing ratios and more states are pushing to include legislation (API Healthcare, 2014). Senate and the House of Representatives resolutions that discuss staffing levels continue to appear in current legislation (API Healthcare, 2014). If passed, the National Nursing Shortage Reform and Patient Advocacy Act would amend the Public Health Service Act to allow nurses to be patient advocates, and the Nurse Staffing Standards for Patient Safety and Quality Care Act of 2013 would ensure hospitals maintain strict nurse-patient ratios and appropriately match caregivers with patients for improved care quality and patient safety (API Healthcare, 2014). The Nurse Staffing Standards for Hospital Patient Safety and Quality Care Act of 2019 was reintroduced to House and referred to the Subcommittee on Health in May 2019 (Congress.gov, 2020). A study by Young et al. (2018) explored perceived barriers to having the right staff at the right time. The study validated the need to implement process improvement initiatives, and the approval to hire because of insufficient staff. As a stakeholder, it is easy to see how those responses could be labeled as an issue.

## **Critique**

A strength of the literature review was that most authors recommended a further study of research topics, and the use of graphs and tables brought visual stimulation to the reviews. A weakness identified was that most of the reviews were within an individual setting or involved a small population. The review of the literature did not reveal one specific acuity-based staffing tool that worked for every environment. Each acuity tool would need to be adjusted to fit the unit or specialty area before being implemented in other areas.

## **Summary**

The use of acuity in patient care assignments can be critical to the safety and quality of care that patients receive, which influences nursing satisfaction (Acar & Butt, 2016). Charge nurses are sometimes challenged with tough decisions, so using nurses as resources to provide input on the acuity of patients can assist in equal and safe distribution of patients (Marine et al., 2013). The geographical structure of healthcare environments is not a problem that can be alleviated (Donahue, 2009). Developing alternative measures that focus on providing nurses time for patient care or influencing nurse and patient satisfaction may be resolved by taking away unnecessary staffing constraints (Donahue, 2009). Reliable data on patient needs have been lacking and have not been included in a standardized way for staffing decisions (Trepanier et al., 2017). As healthcare continues to gravitate toward a less experienced workload, the attention should focus on the needs of patients and nurses to ensure that safety and quality are maintained.

### **Chapter 3: Research Method**

Patients rely on nurses to ensure they are receiving quality care and the attention that is necessary to fulfill their basic and unique needs. Developing patient care assignments that address patient needs while taking nurse experiences and the healthcare environment into consideration can be a challenge in acute care settings. Acuity is described as the measure of the severity of illness of the patient and the intensity of nursing care that the patient requires (Johnston et al., 2019). The description of acuity provides insight that acuity varies and can change with each patient, nurse, or healthcare environment. Acuity is not new in healthcare, and facilities have attempted to conquer the challenge of acuity by providing safe, efficient, and quality patient care assignments (Allen, 2019). Conducting a systematic search of the literature is an unbiased and structured format to find acuity-based staffing tools implemented within acute care settings. Analyzing the outcomes to synthesize information could bring knowledge to the development of patient care assignments and influence nurse self-efficacy and quality in healthcare.

#### **Purpose**

The purpose of the research project was to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients. The project provided a systematic review of the literature to inform stakeholders about best practices used for acuity-based staffing. Acuity-based staffing tools can assist with staffing challenges with nurses and the high patient acuity that can cause challenges with the development of patient care assignments. The project aimed to assist in providing knowledge to healthcare professionals about the

literature and influences of implementing acuity-based staffing tools for patient care assignments in acute care settings.

### **Project Design**

A systematic review of the literature was conducted using the university databases. The keywords used for the search included “nurse-patient assignments” AND “acuity-based staffing tool.” Articles published within the last five years were used to allow the most current literature to be reviewed. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model (see Appendix A) was used to evaluate the articles and to classify articles by evidence type and sample size (Johnston et al., 2019). Findings within the articles were analyzed to determine a relationship and significance to the project question. Additional articles were located by checking the reference lists within articles to find literature that may contribute or meet the requirements of the project. Any duplications in articles were removed. Articles were screened to exclude any information that is not relevant to the topic. Full-text articles were evaluated for eligibility of inclusion and exclusion criteria of the systematic review. The *Johns Hopkins Nursing Evidence-Based Practice: Evidence Level and Quality Guide* (see Appendix B) was used to evaluate the articles. Excluded articles were documented with the reasons for ineligibility. Included articles were separated into three categories: qualitative, quantitative, and meta-analysis.

### **Methodology Appropriateness**

Systematic reviews are considered a valid form of medical evidence and provide current literature relevant to a research question used in the healthcare profession (Jahan et al., 2016). A systematic review offered an unbiased assessment of studies related to acuity-based staffing tools by gathering narrative literature to form a systematic review to provide the best form of evidence

available to healthcare professionals (Jahan et al., 2016). The review of the evidence was strategically analyzed with the research question and used to systematically identify and critique relevant research and data from existing studies to introduce influential findings regarding the effects of using acuity-based staffing tools. The systematic review method involved in the project provided evaluations that contribute to how patient care assignments influence patient satisfaction, nurse efficacy, and the quality of care.

Systematic reviews are preferably developed based on the structure of a PRISMA model (Jahan et al., 2016). The PRISMA model assisted in evaluating articles related to implementing an acuity-based staffing tool. Based on the quality level of the articles, the articles were either included or excluded from the research. Using the PRISMA model identified eligible research studies that contributed to the findings from the implementation of acuity-based staffing tools. Conducting a systematic review using a PRISMA model provided even, unbiased literature about patient care assignments along with information as to how patients are receiving the safest, most efficient, and highest quality of care (Jahan et al., 2016). The systematic review approach helped healthcare organizations identify, develop, and implement the best-suited acuity-based staffing tool to increase the empowerment and involvement of nurses in staffing decisions. The desired outcome of the project was to provide substantial information with an opportunity for healthcare improvements in nurse satisfaction and patient care assignments.

The PRISMA model was used throughout the search and analysis of the literature. The model began with a search for literature articles related to the implementation of acuity-based staffing tools. The primary literature search included the university database and Research Gate. Secondary sources included EBSCOHost, ProQuest, and the Internet. The project involved identifying additional resources from the identified articles in the search. References from

articles were checked for words pertaining to acuity or information related to the topic discussion. Once literature was collected, the articles were checked to determine if any duplicates existed. Duplicates were removed from the project.

Articles were screened for inclusion and exclusion. The systematic review has specific inclusion and exclusion criteria, and articles not meeting the criteria were removed. Removal of articles not meeting the criteria occurred in three stages. The first stage included eliminating any articles that were not current within the last five years, did not have full text availability, or were not written in the English language. The next stage removed any articles with studies not implemented in an acute care setting. The final stage eliminated articles that did not implement an acuity-based staffing tool in the study.

Full-text articles were assessed for eligibility or exclusion from the study. Full-text articles were reviewed to determine contributions and significance regarding the implementation of an acuity-based staffing tool. The literature included the implementation and the findings of an acuity-based staffing tool in an acute care setting. Any articles that are excluded from the study were documented with the reasons for exclusion. Studies were analyzed and evaluated in a qualitative synthesis, quantitative synthesis, or meta-analysis. The synthesis determined the effects of the implementation of acuity-based staffing tools in acute care settings. The synthesis was used to obtain, analyze, and document information for the systematic review according to the research question. The findings were used to determine recommendations that could become part of a useful guide for healthcare professionals seeking to influence the patient care assignment process.

**Feasibility**

The systematic review was feasible within the 6-month timeline and the parameters provided. Two months of the project involved a collection of literature. Based on the inclusion and exclusion criteria, one month involved excluding articles and the documentation of full-text articles not meeting the criteria of the study. Another two months involved a synthesis of the remaining articles to determine the effects of implementing acuity-based tools within the literature. The last month involved analyzing, formatting, and providing results and recommendations to finalize the project.

**IRB Approval and Process**

Two courses of training were required by the university for the IRB application process to be approved. “Protecting Human Research Participants” and “Ethics CORE” trainings were completed to prepare for the IRB approval process. A proposal defense was initiated and successfully completed. Before initiation, the project was approved by the project chair and the approved committee. The defense proposal was submitted to the university IRB committee for project approval. The IRB gave final approval before moving forward with the project (see Appendix C). The project did not involve the use of the hospital’s facilities or access to a patient population.

**Interprofessional Collaboration**

Interprofessional collaboration (IPC) is critical to improving the delivery of effective care. IPC can bring together common interests to facilitate information sharing and knowledge translation of best practices (McLoughlin et al., 2018). Since this project is nursing-focused, collaboration with the chair of the project was maintained throughout to assist with searching, formatting, and guiding the project development. The university librarian was used as a resource



to understand and assist with search strategies on obtaining sufficient information on acuity-based staffing tools.

### **Practice Setting**

A systematic review does not require a practice setting for collecting, analyzing, or synthesizing literature. During the collection of data for the project, the inclusion criteria for the study included practice settings within acute care. The studies within the literature focused on nurses involved in patient care assignments who are caring for patients within the acute care settings.

### **Target Population**

The population included articles that have implemented acuity-based staffing tools in acute care settings. The target population within the studies included nurses participating in patient care assignments within acute care settings. Articles included a variety of sample sizes, acute care areas, and acuity-based staffing tools. The selected articles for the project were current within the last five years, have implemented an acuity-based staffing tool within an acute care area in the study, full text, and written in the English language.

### **Risks and Protection of Human Subjects**

Systematic reviews can encounter risks with inadequate studies, unstructured assessments, and bias. A systematic review can lead to false conclusions if the search is inadequate or studies are diversified (Jahan et al., 2016). Inadequate information can sometimes be mistaken as providing biased information. On the other hand, a systematic review can result in an extensive number of articles causing the project to extend because of the amount of time needed to review each article. Any article obtained in systematic reviews should be assessed and only excluded when the criteria are not met (Jahan et al., 2016). A structured assessment of the

quality of the literature is very important to prevent adverse consequences. The PRISMA model was used as a guideline to screen, analyze, and synthesize the articles, and the inclusion and exclusion criteria for the project was used as an additional standard.

### **Benefits**

Evidence-based practice is the preferred approach for healthcare professionals in pursuit of making the best possible decisions to promote growth and integration of best practices (Schlosser, 2006). Searching the evidence to find the most current and relevant literature can be time-consuming. Systematic reviews can provide information that can bridge the gaps in knowledge with the implementation of acuity-based staffing tools (Schlosser, 2006). The systematic review will benefit healthcare professionals by eliminating the time that could be spent researching, critically appraising articles, and analyzing and synthesizing data. The evidence-based project provides benefits for the unit, facility, and organization if the data findings show improvement in quality and safety. Future improvements in patient care assignments and nursing satisfaction are a potential benefit as well.

### **Instruments and Measurement Tools**

The scope of the project was to identify the best possible evidence within the current literature pertaining to the implementation of acuity-based staffing tools in acute care settings to determine the influence on patient satisfaction, nursing efficacy, and the quality of care. The PRISMA model was a preferred method for systematic reviews. The project used the PRISMA model as an unbiased, structured format to collect, eliminate, and synthesize data from articles collected during the search. Permission to use the PRISMA model was given (see Appendix D). The PRISMA model has a specific format that was used as a guide for systematic reviews (Jahan et al., 2016). Each phase of the PRISMA model involved documentation of the sample size and

inclusion or exclusion from the study based on model standards. Once articles were finalized for inclusion in the study, synthesis was conducted to analyze and evaluate outcomes of the studies.

*The Johns Hopkins Nursing Evidence-Based Practice: Evidence Level and Quality Guide* was used to determine the evidence level and quality of the articles. Permission to use the PRISMA model was given (see Appendix E). Evidence levels can range from one to three, depending on the type of study. Quality guides were rated based on sample size, control, conclusions and recommendations, and results. Depending on the evidence level and the quality of the article, elimination from the study occurred.

Synthesized information from the study was evaluated and summarized with the research question as a guide. Information from the synthesis determined the findings for the systematic review. Recommendations were offered to healthcare professionals.

### **Data Collection and Management**

Data collection involved the search and screening of articles through multiple databases using keywords such as “nurse-patient assignment” and “acuity-based staffing.” Once articles were obtained from the literature search, reference lists were checked within the articles to find supplemental articles related to the topic by searching for keywords of “acuity” or topic information within the title of the source. The articles were screened to determine if any duplicates were present, and those duplicates were discarded. Articles were further screened using the inclusion criteria to exclude any articles not meeting the criteria for the study. Inclusion criteria included articles that are current within the last five years, articles where the study has implemented an acuity-based staffing tool within an acute care setting, full-text articles, and articles written in the English language. Full-text articles were assessed for eligibility and exclusion from the study based on the contribution and significance regarding the

implementation of an acuity-based staffing tool. Reasons for exclusion were documented for later use in the results. An evaluation included qualitative, quantitative, and meta-analysis synthesis of the articles.

I collected data and analyzed the data. I collaborated with the university librarian within the first month and throughout the project to ensure adequate data were obtained through the search and screening of articles. Data were obtained, analyzed, and synthesized throughout the study.

### **Timeline**

The project was formulated upon the start of the university program in January of 2019 (see Table 1). A problem of interest was identified for the project that involved patient care assignments in the acute care setting. IRB approval was finalized. A graph of the task list is included (see Appendix F).

**Table 1***DNP Project Timeline*

Date Month/ Year	Project Task
August 2019	IRB Training
September 2019	Approval to Use PRISMA Model
October-November 2019	Project Development (PICO/ Lit. Review)
December 2019	Proposal Defense
January 2020	Literature Search
February 2020	Additional Literature Search from Reference Lists
March 2020	Duplicate Removal/Screening
March-April 2020	Full text Articles Assessed Per Criteria
April 2020	Document Reasons for Exclusions
May 2020	Quality/ Level of Evidence Determined
May-June 2020	Studies Synthesized: Qualitative
June-July 2020	Studies Synthesized: Quantitative/Meta-Analysis
August 2020	Analyze and Evaluate Results
September-November 2020	Preparing for Final Defense (Paper/ PP edits)
December 2020	Inactivation of IRB
January 2021	Final Defense

**Analysis Plan**

The project included a systematic review of the current literature from the last five years. The PRISMA model was used to analyze and eliminate articles within the research search. Using the PRISMA model provided an unbiased approach to managing data in a structured format. I developed the inclusion and exclusion criteria. Data were analyzed for quality, sample size, and level of evidence. The *Johns Hopkins Nursing Evidence-Based Practice: Evidence Level and Quality Guide* was used to evaluate the articles. The analysis was inputted and filtered to create statistical charts (i.e., bar charts, line graphs, tables, etc.). Providing statistical tables allowed visualizations of data analyses and results.

## Summary

Patient care assignments are distributed every day to nurses in acute care settings. Patient satisfaction, nurse efficacy, and quality of care will continue to be an influence in the development of patient care assignments. A systematic review was conducted to determine the effects of the implementation of acuity-based staffing tools within acute care settings. The purpose of the research project was to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients. Systematic reviews can provide knowledge and a guide to the introduction and implementation of best practices with healthcare. The PRISMA model is the preferred method for systematic reviews, and the project used the model to provide an unbiased approach to collect, analyze, and synthesize articles for the study. Chapter four will discuss the results of the study.

## Chapter 4: Results

A systematic review of the literature was conducted to identify evidence-based research to inform stakeholders about the best practices used for acuity-based staffing. The purpose of the project was to provide knowledge to healthcare professionals about the literature and the impact of implementing acuity-based staffing tools for patient care assignments in acute care settings. The systematic review of the literature identified evidence-based research on acuity-based staffing tools implemented in acute care settings and provided a data analysis of the outcomes to synthesize information and determine the effect on patient care assignments as well as their influence on nurse efficacy and quality of care.

### **Purpose**

The purpose of the research project was to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients. The question answered by the systematic review was:

**Q1.** What is the current evidence-based literature regarding acuity-based staffing models?

### **Discussion**

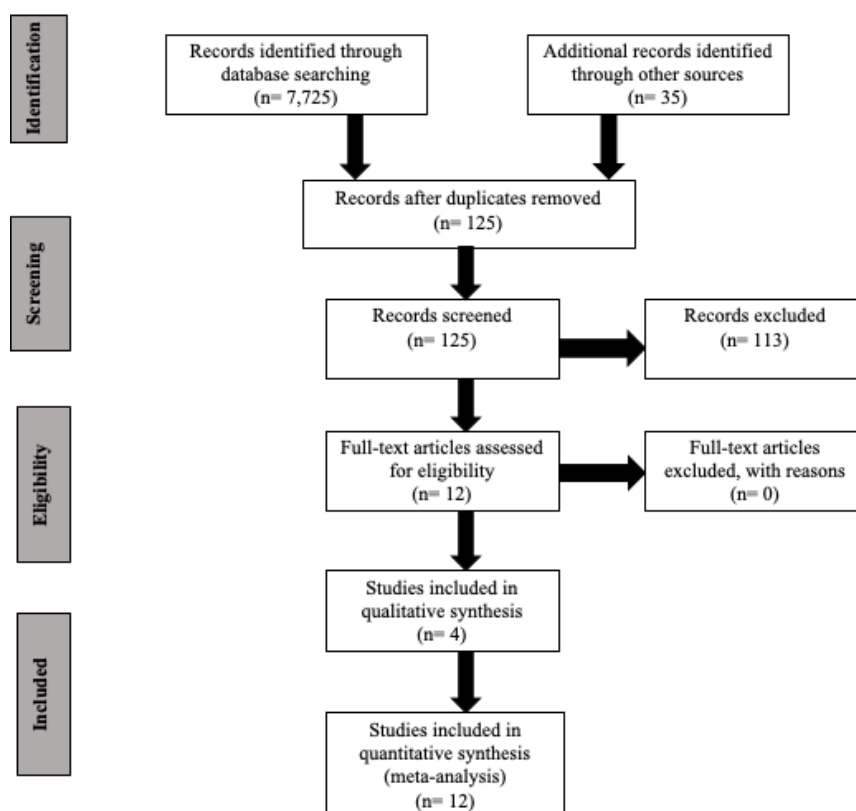
The systematic review of the literature involved using the PRISMA model as a structured assessment to screen and eliminate articles during the article search. A search of the university database using keywords of “nurse-patient assignments” AND “acuity-based staffing tool” was conducted to find literature involving acuity-based staffing tools that have been implemented in acute care settings. An additional search was conducted throughout the reference section of identified articles using keywords to gather additional literature for review.

The initial search of the literature retrieved 7,725 articles that were screened and eliminated using the PRISMA model and inclusion and exclusion criteria for the project (see Figure 2). After a review of full-text availability, only 2,532 articles remained. Of 2,532, only 870 articles were determined to be scholarly peer-reviewed, with 240 articles being published in the last five years and written in the English language. The 240 articles were screened for duplicates leaving 92 articles for the final analysis and synthesis of data.

Reference sections from articles were searched using keywords of “acuity-based staffing” and “patient care assignments” to identify additional articles for the systematic review. The search of the articles’ references retrieved 35 articles that were screened and eliminated using the PRISMA model with 33 remaining, totaling 125 articles for final analysis and synthesis of data.

**Figure 2**

*PRISMA Flowchart of Systematic Review*





Each of the 125 articles was analyzed using inclusion and exclusion criteria for nurses involved in the study and the implementation of acuity-based staffing tools in acute care settings during the study. The careful analysis left 12 articles to analyze further and synthesize data to determine the effects of acuity-based staffing tools on patient care assignments. Of the 12 articles, all included a quantitative synthesis, and four included a qualitative synthesis.

The review of articles found that the implementation of acuity-based staffing tools in an acute care setting is associated with outcomes that included self-efficacy or retention, patient and nurse satisfaction, quality of care, and other additional findings. All data from the systematic review were synthesized to collectively determine the effects of each acuity-based tool on patient care assignments within the acute care settings (see Table 2).

**Table 2***Evidence Table for Acuity-Based Nurse-Patient Assignments in Acute Care Settings*

Associations							
References	Design	Level of Evidence	Quality Rating	Retention/ Self-Efficacy	Patient/ Nurse Satisfaction	Quality of Care	Additional Findings
Bell, 2015	Qualitative	2	B	1. Encourages nurse retention	1. Support for nurses, 2. Promotes patient satisfaction	Not applicable	Not applicable
DiClemente, 2018	Qualitative	3	B	1. Increase communication of patient and nurse needs	Not applicable	Not applicable	1. Increase awareness of patient discharges
Georgiou et al., 2018	Mixed Method (Qualitative & Quantitative)	2	B	1. Better "fit" between patient needs and nurse competence, 2. Novice nurses felt better supported, 3. Greater nurse engagement and involvement in decision-making	1. Nurses perceived assignments as more manageable in terms of workload, 2. Improvement in nurse engagement and satisfaction	1. Nurse perceived improvement in the quality of care, 2. Decrease in safety occurrences and errors (mostly noted with patient falls and laboratory errors)	1. 40% reduction in overtime
Ho et al., 2017	Mixed Method (Qualitative & Quantitative)	2	B	1. Increase in nurse perception on engagement, 2. Supports optimal use of nurse competencies, 3. Provides improvement in nurse workload and level of engagement	1. Nurse viewed assignments as more manageable, 2. Workload and work-life balance, Stress satisfaction offset, 4. Decrease in missed breaks, 5. Increase in prioritizing patient needs	1. Increase in quality of patient care, 2. Increase in safety	Not applicable
Kennedy-Lueptow, 2020	Mixed Method (Qualitative & Quantitative)	2	B	Not applicable	1. Increase in patient satisfaction, 2. Perceived personalization of care, 3. Increased communication with nurses serving patients	Not applicable	1. Decreased length of stay (LOS) and expected bed days (EBD)
Kidd et al., 2014	Qualitative	2	B	1. Improve nurse equity in assignments, 2. Match nurse strengths and competencies	1. Increase nursing satisfaction by 42%, 2. Nurses felt valued as a partner in the change process	Not applicable	Not applicable
Associations							

References	Design	Level of Evidence	Quality Rating	Retention/ Self-Efficacy	Patient/ Nurse Satisfaction	Quality of Care	Additional Findings
Massarweh, 2017	Qualitative	3	A	Not applicable	1. Decrease time nurses spent at the nurses' station assessing workload (more time at bedside)	1. Safe patient care delivery	1. Eased access to records
O'Keeffe, 2016	Mixed Method (Qualitative & Quantitative)	3	A	Not applicable	1. 42% reduction in nurse call-outs	Not applicable	Not applicable
Pappas et al., 2015	Mixed Method (Qualitative & Quantitative)	2	B	1. Increase in nurse empowerment	1. Adequate time for nurses to complete work, 2. Value for clinical condition to be factored into assignments	1. Decrease in nurse-sensitive indicators (Falls: 3.44 to 2.15, CAUTI: 2.72 to 2.15, CLABSI: 1.18 to 0.38, and PUP: 3.86 to 1.57), 2. Increase in safety awareness for patients	1. 30% decrease in overtime, 2. Decrease in cost per case study by \$4,175, 3. Decrease in patient length of stay, 4. 5.36% increase in the patient population
Sarno & Nenni, 2016	Mixed Method (Qualitative & Quantitative)	3	B	1. Support for nurses in scheduling system	1. Takes into account "real" patient needs	1. Incorporates timed tasks and activities	1. Assists with floating nurses within the hospital
Van Oostveen et al., 2014	Mixed Method (Qualitative & Quantitative)	2	A	1. Improvement in job satisfaction, morale, and retention with promotion of fairer assignments	1. Decrease nursing satisfaction with less authority to choose assignments, 2. Decreased in perceived nursing workload	1. Improved quality of care with time savings and balanced workloads, 2. Increase time for direct care, improving quality of care	1. Decreased time required for assignment process
Vortherms et al., 2015	Mixed Method (Qualitative & Quantitative)	2	B	1. Improved nurse environment, 2. No additional nurses needed	1. 57% reduction in use of hospital time off, 2. 22% reduction in sick time, 3. Balanced workload, 4. Enhanced patient care experience	Not applicable	1. 8% increase in patient activity, 2. 76% reduction in overtime

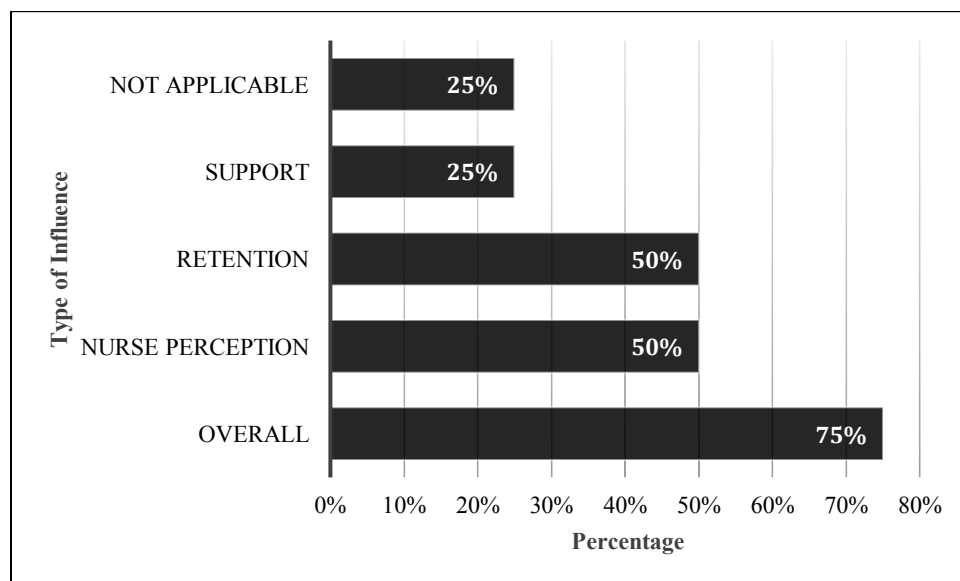
Abbreviations: CAUTI- catheter-associated urinary tract infection, CLABSI- central line-associated blood stream infection, PUP- pressure ulcer prevalence

*Note.* Evidence table highlighting synthesis of data from the literature on acuity-based nurse-patient assignments in acute care settings.

### Self-Efficacy and Retention

Nine of the 12 articles (75%) found an improvement in self-efficacy or retention with the implementation of acuity-based staffing tools. The remaining three of the 12 articles (25%) did

not discuss self-efficacy and retention as an outcome. Six of the 12 articles (50%) showed improvements in nursing environments surrounding the increased nursing perception of equity in assignments, improved nurse engagement and involvement in decision-making, more significant support for nurses in the scheduling system, and improvements in nurse morale (Georgiou et al., 2018; Ho et al., 2017; Kidd et al., 2014; Sarno & Nenni, 2016; Van Oostveen et al., 2014; Vortherms et al., 2015). Equity in assignments refers to fair, unbiased, and balanced workloads (Van Oostveen et al., 2014). Six of the 12 articles (50%) showed improvements in retention brought on by increased nurse-to-patient communication and nurse-to-nurse communication, reduced staffing needs, and improvements in nurse workloads (Bell, 2015; DiClemente, 2018; Ho et al., 2017; Pappas et al., 2015; Van Oostveen et al., 2014; Vortherms et al., 2015). Three of the 12 articles (25%) found that novice nurses reported feeling better supported and a better “fit” between patient needs and nurse competencies (Georgiou et al., 2018; Ho et al., 2017; Kidd et al., 2014) (see Figure 3).

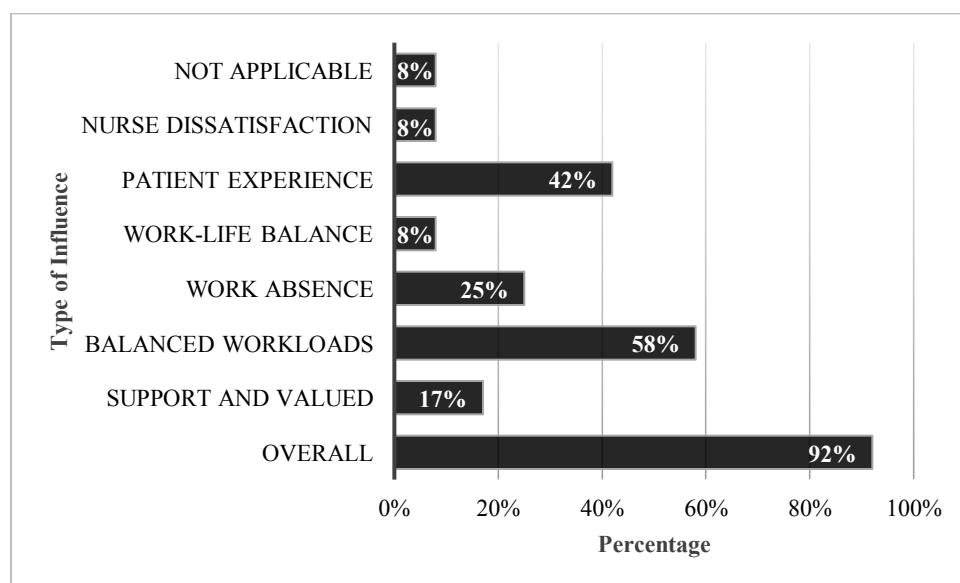
**Figure 3***Influences on Self-Efficacy and Retention***Nurse and Patient Satisfaction**

Eleven out of 12 articles (92%) found improved patient and nurse satisfaction with the implementation of acuity-based staffing tools. The remaining one of the 12 articles (8%) did not discuss nurse and patient satisfaction as an outcome. Two of the 12 articles (17%) found that nurses felt better supported and valued as a partner in the assignment process (Bell, 2015; Kidd et al., 2014). Seven of the 12 articles (58%) found assignments to be perceived as more manageable and nursing workloads to be more balanced. The perceptions led to a decrease in the amount of time nurses spend at the nurses' station assessing workload and an increase in the time nurses have to complete daily tasks and serve patients (Georgiou et al., 2018; Ho et al., 2017; Kennedy-Lueptow, 2020; Massarweh, 2017; Pappas et al., 2015; Van Oostveen et al., 2014; Vortherms et al., 2015). Three of the 12 articles (25%) found a reduction in nurses' use of hospital time off, reduced call-outs by nurses from work, decreased missed breaks, and fewer sick days used by nurses (Ho et al., 2017; O'Keeffe, 2016; Vortherms et al., 2015). One of the 12

(8%) found a decrease in stress and an improvement in work-life balance for nurses (Ho et al., 2017). Five of the 12 articles (42%) found that patients reported having an enhancement in care experience with perceived improvement in the personalization of care, a more significant consideration for “real” patient needs and prioritizing patient needs (Bell, 2015; Ho et al., 2017; Kennedy-Lueptow, 2020; Sarno & Nenni, 2016; Vortherms et al., 2015). One of the 12 articles (8%) reported a decrease in nursing satisfaction due to having less authority to choose patient care assignments (see Figure 4).

**Figure 4**

*Influences on Nurse and Patient Satisfaction*



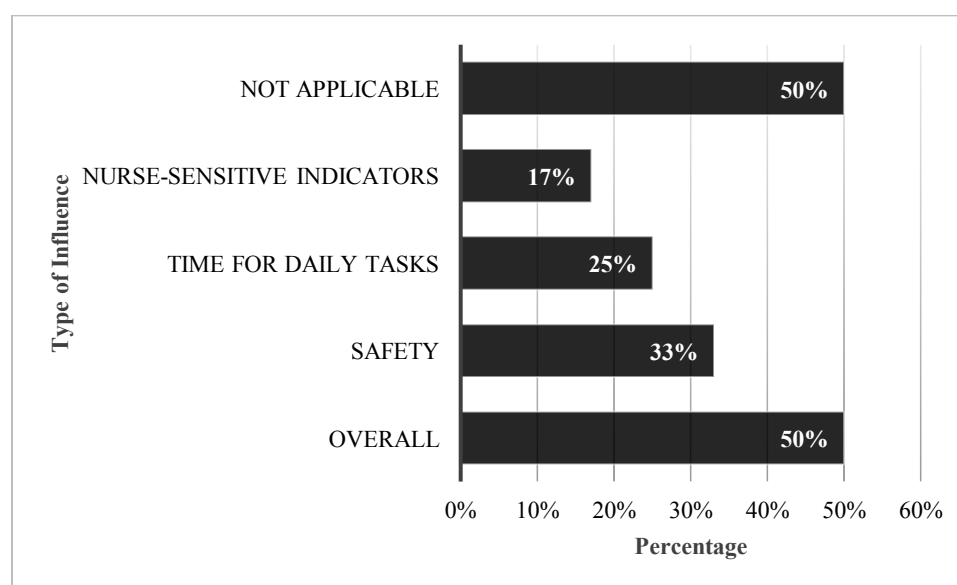
**Quality of Care**

Six out of 12 articles (50%) found improved quality of care with the implementation of acuity-based staffing. The remaining six of the 12 articles (50%) did not discuss quality of care as an outcome. Four of the 12 articles (33%) showed an increase in patient safety with identified decreases in safety occurrences and errors and increased safety awareness for patient needs and outcomes (Georgiou et al., 2018; Ho et al., 2017; Massarweh, 2017; Pappas et al., 2015). In three

of the 12 articles (25%), nurses reported perceptions of improvements in quality of care due to time savings to complete daily tasks, balanced workloads, and the incorporation of timed tasks and activities (Georgiou et al., 2018; Ho et al., 2017; Sarno & Nenni, 2016; Van Oostveen et al., 2014). Two of the 12 articles (17%) noted an improvement in nurse-sensitive indicators with a decrease in patient falls, central line-associated bloodstream infections, catheter-associated urinary tract infections, and pressure ulcer prevalence (Georgiou et al., 2018; Pappas et al., 2015) (see Figure 5).

**Figure 5**

*Influences on Quality of Care*



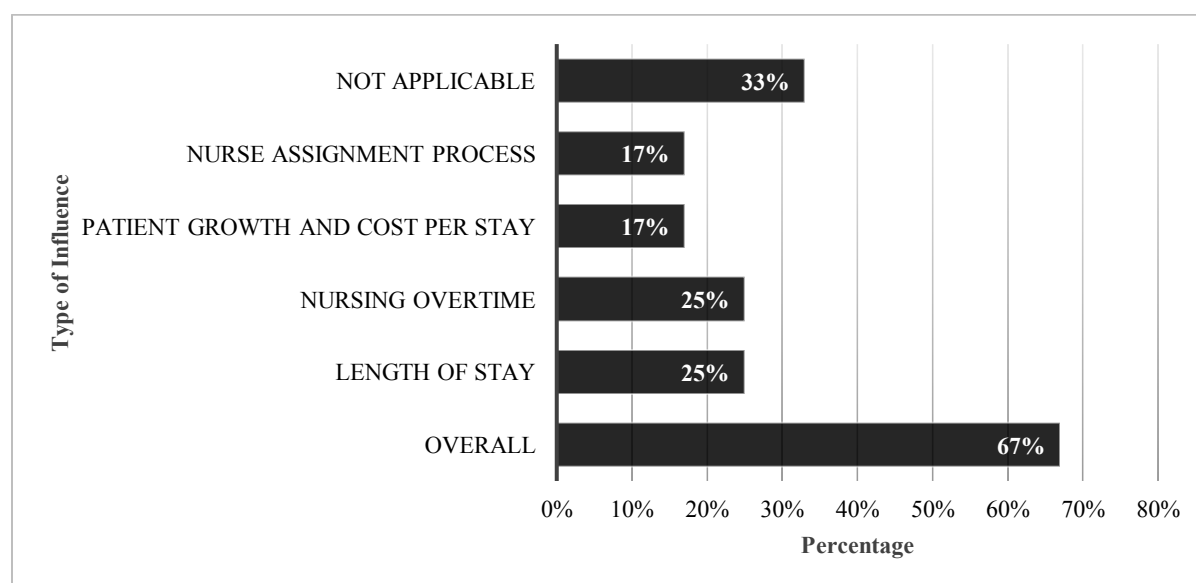
**Additional Findings**

Eight out of 12 articles (67%) found additional positive associations with the implementation of acuity-based staffing tools. The remaining four of the 12 articles (33%) did not discuss additional findings. Three of the 12 articles (25%) showed a decrease in the length of patient stays and expected bed days and an increase in the awareness of timely patient discharges (DiClemente, 2018; Kennedy-Lueptow, 2020; Pappas et al., 2015). Three of the 12 articles

(25%) found a decrease in nursing overtime (Georgiou et al., 2018; Pappas et al., 2015; Vortherms et al., 2015). An increase in the number of patients, an increase in the diversity of patient populations, and a decrease in the cost-per-patient stay were identified in two of the 12 articles (17%). Two of the 12 articles (17%) showed that a decreased time was required for the assignment process and assisted with assigning nurses to float within the hospital (Sarno & Nenni, 2016; Van Oostveen et al., 2014) (see Figure 6).

### Figure 6

#### *Additional Findings*



### Summary

The systematic review of the literature identified several essential outcomes that were improved during the implementation of acuity-based staffing tools in acute care settings. Self-efficacy and retention, nurse and patient satisfaction, and quality of care were among the outcomes. The articles indicated a 92% improvement in nurse and patient satisfaction. Only one study found that nurses felt like they had less authority to choose patient care assignments. Self-efficacy or retention was shown to be the next most improved in 75% of articles, which could



indicate a boost in confidence or nurses being more willing to perform tasks and nurses wanting to remain employed at the facility. In 50% of the articles, quality of care was shown to have improved in areas of safety, prevention of errors, balanced workloads, and time-saving for completion of daily tasks. Although self-efficacy or retention, nurse and patient satisfaction, and quality of care are considered essential outcomes, additional findings were indicated in 67% of the articles. Decreased length of stay, reduced overtime, and reduced time for the assignment process were some additional findings. Chapter Five will interpret the results.

## **Chapter 5: Interpretation of Results**

The systematic review of literature provides knowledge to healthcare professionals about literature and the influence of implementing acuity-based staffing tools for patient care assignments in acute care settings. The purpose of the evidence-based research project was to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients. The question that the systematic review answered was, “What is the current evidence-based literature regarding acuity-based staffing models?” With the screening, analysis, and synthesis of the collected data from the systematic review of literature, evidence-based research was reviewed on acuity-based staffing tools implemented in acute care settings. Data analysis of the outcomes was provided to synthesize information and determine the effect of acuity-based staffing models on patient care assignments and their influence on nurse efficacy and quality of care.

### **Interpretation of Results**

The following sections discuss an interpretation of the results of the systematic review of literature involving the implementation of an acuity-based staffing tool in acute care settings. The interpretation is divided into four sections: self-efficacy and retention, nurse and patient satisfaction, quality of care, and any additional findings related to the systematic review of the literature. Each section explains the effects of implementing an acuity-based staffing tool and its relation to the outcome.

#### **Effects of Implementing an Acuity-Based Staffing Tool on Self-Efficacy and Retention**

The systematic review of the literature showed improvements in self-efficacy and retention with the implementation of acuity-based staffing tools in acute care settings. Nurses’

perceptions of the nursing environment and their involvement in changes that affect their daily tasks are essential. Most nurses perceived an increase in equity with assignments, more involvement in decision-making, an improvement in nurse engagement and morale, and significant support for nurses in the scheduling system (Georgiou et al., 2018; Ho et al., 2017; Sarno & Nenni, 2016). Retaining nurses has been an issue for some facilities due to consistent competition and environments of care. Retention was shown to improve with the implementation of acuity-based staffing tools by increasing communication among nurses and patients, decreasing the need for additional staffing, and improving nurse workloads (Bell, 2015; DiClemente, 2018; Van Oostveen et al., 2014). Nurses' experience and maturity can be diverse within acute care settings, so managing care can become arduous if not considered. The systematic review determined that nurses, especially novice nurses, felt better supported, and the environment of care improved with incorporating patient needs and nurse competencies into patient care assignments.

### **Effects of Implementing an Acuity-Based Staffing Tool on Nurse and Patient Satisfaction**

The satisfaction of nurses and patients was an improvement that was identified with the implementation of acuity-based staffing tools in acute care settings. The satisfaction of nurses and patients was significant for successfully caring for patients and improving the quality of care in healthcare environments. Nurses felt better supported and valued as partners in the assignment process and perceived the patient care assignments as more manageable and more balanced during the systematic review. Implementation of acuity-based tools led to a decrease in the time of nurses assessing workloads at the nursing stations and more time for nurses to complete daily tasks and serve patients. The physical, mental, and emotional demands of healthcare can be challenging and lead to burnout, but the systematic review showed that with the implementation

of acuity-based staffing tools in acute care settings, nurses were less likely to use hospital time off, call-out from work, miss breaks, or require sick days. Stress was shown to decrease, and nurses saw improvements in work-life balance with acuity-based staffing tools. Patients found that implementing an acuity-based staffing tool enhanced the care experience by providing a better personalization of care, consideration of individual needs, and managing patients' needs more efficiently.

There is a possibility that everyone will not accept change. Although most of the systematic review found improvement in nurse and patient satisfaction, one article showed a decrease in nursing satisfaction based on nurses having less authority in choosing patient care assignments. Providing collaboration in decision-making efforts to improve outcomes is essential to establish rapport or acceptance of the change.

### **Effects of Implementing an Acuity-Based Staffing Tool on Quality of Care**

Improvements in quality of care were found to be associated with the implementation of acuity-based staffing tools during the systematic review of the literature. Patients in acute care settings showed an increased sense of safety when an acuity-based staffing tool was being used. The number of safety occurrences and errors during patient care delivery decreased due to having implemented an acuity-based staffing tool. Nurses within the acute care settings that had implemented an acuity-based staffing tool had more time to complete daily tasks, balanced workloads, and timed tasks and activities. An acuity-based staffing tool's implementation provided a decrease in nurse-sensitive indicators, including patient falls, central line-associated bloodstream infections, catheter-associated urinary tract infections, and pressure ulcer prevalence.

### **Additional Findings Related to Implementing an Acuity-Based Staffing Tool**

In addition to self-efficacy and retention, nurse and patient satisfaction, and quality of care, the systematic review found various other areas that showed improvements. Patients' lengths of stay and expected bed days decreased, and the awareness of patient discharges increased with the implementation of acuity-based staffing tools. The implementation of acuity-based staffing resulted in an increase in the amount of patient activity and population and a decrease in the cost-per-patient stay. The time required for the assignment process decreased, and the ability to float or move nurses based on skill level to other departments in the hospital improved.

### **Implication of Analysis for Leaders**

Patient care assignments are an everyday task within acute care settings. The process of developing patient care assignments has led to several issues affecting patient care delivery and hospital success. Implementing an acuity-based staffing tool in an acute care setting is an important element for improvements in nurse self-efficacy, retention, nurse and patient satisfaction, and quality of care. Leaders can benefit from the systematic review of the literature by being informed on evidenced-based research surrounding the implementation of an acuity-based staffing tool in acute care settings and how the tool can provide improvements within hospitals.

Turnover and lack of confidence, motivation, and engagement within nurses have presented a challenge with striving for excellence in patient care and quality in hospitals (Nasabi & Bastani, 2018). Maintaining high self-efficacy with the implementation of an acuity-based staffing tool can provide increased equity in patient care assignments, improve nurse engagement and involvement in decision-making, and offer significant support from nurses. Retention of

nurses provides improved communication among nurses and patients, reduced staffing needs, and improved nurse workloads. Leaders could benefit from higher self-efficacy and retention of nurses with the ability to institute effective change through collaborations with nurses, improved productivity, cost savings from rehiring and retraining of nurses, reduced staffing challenges, and increased nurse competence to care for a variety of patient conditions.

When nurses are satisfied, they usually remain in hospitals and display ownership characteristics that assist in the hospital's success (Meier et al., 2019). Patients who are satisfied with the hospital's care come back and recommend the hospital's care and services to others. Implementing an acuity-based staffing tool improves nurse and patient satisfaction by providing more time for nurses to complete daily tasks, making assignments more balanced and manageable, and reducing hospital time off, call-outs, missed breaks, and sick days by nurses. Nurses experienced less stress, improved work-life balance, and felt valued as partners in the patient care assignment process with the acuity-based staffing tool implementation. Patients voiced improved care experiences and improvements in the nurses' considerations for individual patient needs and prioritizing patient needs. Nurse and patient satisfaction with implementing an acuity-based staffing tool can benefit leaders by improving productivity, increasing finances, reducing staffing challenges, retaining nurses, providing more nurse engagement, and increasing service ratings.

Providing safe, efficient, and quality care is a top initiative for many facilities. Implementing an acuity-based staffing tool in acute care settings can increase safety awareness in patients and decrease the number of safety occurrences and errors. Nurses' perceived improvement in the quality of care provided more time for daily tasks, balanced workloads, and additional tasks or activities, such as communicating with or assessing patients or collaborating

with other healthcare professionals on the patient's plan of care. The implementation of an acuity-based staffing tool also showed a decrease in nurse-sensitive indicators, such as patient falls, central line-associated bloodstream infections, catheter-associated urinary tract infections, and pressure ulcer prevalence. Improved patient outcomes, decrease in unnecessary or preventable costs, increased service ratings, improved nurse and patient satisfaction, and retention of nurses are benefits leaders can be offered with improvements in quality from implementing an acuity-based staffing tool in acute care settings.

Some additional findings associated with implementing an acuity-based staffing tool are decreased patient length of stay, increased awareness among nurses of efficient discharges, and an increase in the number of patients and patient populations. Nursing overtime was shown to decrease, and there was a reduction in the time required to make patient care assignments, and improved assistance with floating nurses with the implementation of an acuity-based staffing tool. The findings can benefit leaders with reduced costs per patient stay, decreased overtime, increased finances, improved productivity, and increased nurse and patient satisfaction.

### **Relation to the Essentials of Doctoral Education for Advanced Nursing Practice**

All eight essentials of doctoral education for advanced nursing practice were utilized during the development and throughout of this project.

#### ***Essential I: Scientific Underpinnings***

A thorough understanding of nursing theory and the discipline of nursing is the foundation for advancing nursing practice. The systematic review of the literature provides a thorough assessment and evaluation of acute care environments to enhance health care delivery and improve patient outcomes.

***Essential II: Organizational and Systems Leadership***

Through the assessment and evaluation of acute care environments, the systematic review of the literature was able to translate and disseminate research that can be used to develop clinical practice guidelines, design evidence-based interventions, and evaluate practice outcomes.

***Essential III: Clinical Scholarship and Analytical Methods***

Patient care assignments create complex issues and ethical dilemmas in healthcare environments. The systematic review provides a unique approach to ensuring organizational leadership stays focused and accountable for quality care and patient safety when facilitating healthcare delivery changes.

***Essential IV: Information Systems Technology and Patient Care Technology***

Technology provides safe, efficient, and patient-centered care. The systematic review utilizes evidence-based information and technologies for patient care to support organizational leadership and clinical decision making.

***Essential V: Health Care Advocacy***

Patient care assignments have been identified as a concern within health care environments. The systematic review of literature provided a critical analysis of acuity-based staffing tools and advocates for social justice and improvements to the nursing profession.

***Essential VI: Inter-Professional Collaboration***

Team-based care is essential for patient safety and well-being. The systematic review of the literature analyzed acuity-based staffing tools implemented within acute care environments to provide an executive summary for leadership to develop evidence-based practices and standards of care.



### ***Essential VII: Clinical Prevention and Population Health***

When improving the health and patient risk, it is imperative to evaluate and interpret health within individuals and communities. The systematic review analyzes a multitude of leadership concerns and issues that revolve around patient care assignments and equips leadership with a tool to synthesize social, environmental, and cultural impacts that influence population health.

### ***Essential VIII: Advanced Nursing Practice***

The nursing profession's goal is to improve patient outcomes through the analysis, practice transitions, and update of systems that continue to advance nursing practice. The purpose of the systematic review of the literature was to improve patient outcomes by determining the organization's needs and critically analyzing the data to provide an executive summary of evidence-based literature on the effects of acuity-based staffing tools.

### **Recommendations for Change and Future Research**

The systematic review of literature on the implementation of acuity-based staffing in the acute care setting provided evidence-based research that can inform stakeholders about best practices. Upon completing the project, the systematic review will be used as a tool to present data to stakeholders on the hospital board and within the division for permission to initiate a pilot study to implement an acuity-based staffing tool in an acute care setting. The pilot study could lead to a continued practice that could evolve and become adaptable throughout the facility, division, and organization.

Data obtained in the systematic review of literature provides insight into the acuity-based staffing method that should be used or can be adapted in a variety of patient care environments. Although the knowledge provided in the systematic review contributes to nursing research,

further research can be explored to compare acuity-based staffing tools to determine which tool would provide more significant benefits and could be adapted to various patient care settings.

Self-efficacy and retention, nurse and patient satisfaction, and quality of care were identified as primary findings of data obtained from the systematic review of the literature. Additional findings were identified during the data collection related to a reduction in healthcare costs with decreased length of patient stays and expected bed days, a decrease in nursing overtime, and an increase in patient activity and patient population. Further research could provide information for potential cost savings from implementing an acuity-based staffing tool.

### **Summary**

The purpose of the research project was to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients. The systematic review of literature determined that the implementation of acuity-based staffing tools in an acute care setting can improve nurses' self-efficacy and retention, increase nurse and patient satisfaction, and improve quality of care. Some benefits leaders can associate with the implementation of an acuity-based staffing tool are the ability to institute effective change through collaborations with nurses, improved productivity, increasing finances and cost savings, reduced staffing challenges, increased nurse competence, increasing service ratings, and improved patient outcomes.

Further research is recommended for comparing acuity-based staffing tools to determine which one is the most beneficial and adaptable in a variety of settings. A further research study on the potential cost savings from implementing an acuity-based staffing tool is another recommendation. The systematic review will be used as a tool to present data to stakeholders on the hospital board and within the division for permission to initiate a pilot study to implement an

acuity-based staffing tool in an acute care setting. The pilot study could lead to a continued practice that could evolve and become adaptable throughout the facility, division, and organization.

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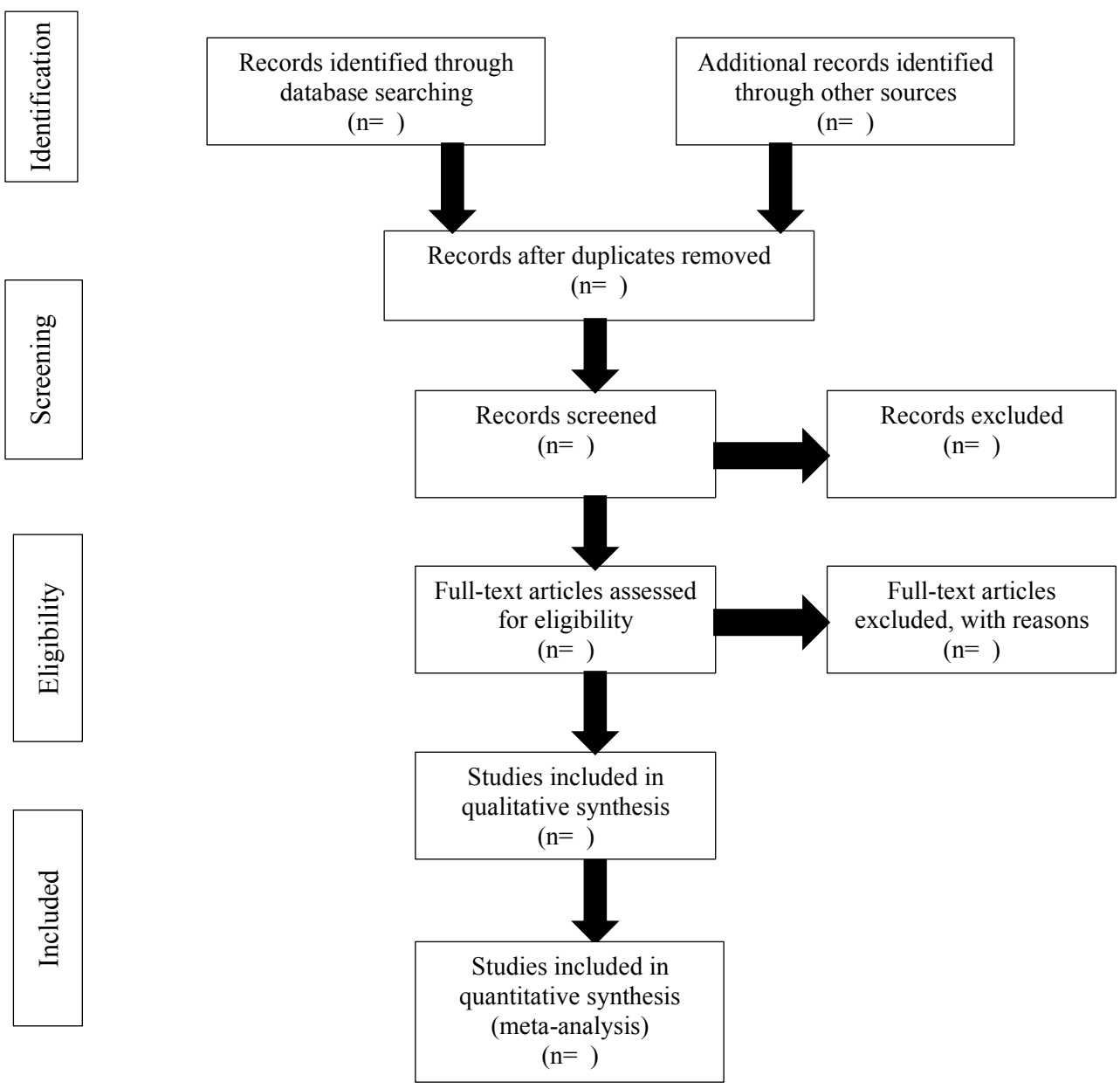
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### Appendix A: PRISMA Model



#### PRISMA 2009 Flow



## Appendix B: Johns Hopkins Nursing Evidence-Based Practice Model

### Evidence Level and Quality Guide

Evidence Levels	Quality Ratings
<p><b>Level I</b></p> <p>Experimental study, randomized controlled trial (RCT)</p> <p>Explanatory mixed method design that includes only a level I quantitative study</p> <p>Systematic review of RCTs, with or without meta-analysis</p>	<p><b>Quantitative Studies</b></p> <p><b>A High quality:</b> Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence.</p> <p><b>B Good quality:</b> Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.</p> <p><b>C Low quality or major flaws:</b> Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.</p> <p><b>Qualitative Studies</b></p> <p>No commonly agreed-on principles exist for judging the quality of qualitative studies. It is a subjective process based on the extent to which study data contributes to synthesis and how much information is known about the researchers' efforts to meet the appraisal criteria.</p> <p>For meta-synthesis, there is preliminary agreement that quality assessments of individual studies should be made before synthesis to screen out poor-quality studies<sup>1</sup>.</p> <p><b>A/B High/Good quality</b> is used for single studies and meta-syntheses<sup>2</sup>.</p> <p>The report discusses efforts to enhance or evaluate the quality of the data and the overall inquiry in sufficient detail; and it describes the specific techniques used to enhance the quality of the inquiry. Evidence of some or all of the following is found in the report:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Transparency: Describes how information was documented to justify decisions, how data were reviewed by others, and how themes and categories were formulated.</li> <li><input type="checkbox"/> Diligence: Reads and rereads data to check interpretations; seeks opportunity to find multiple sources to corroborate evidence.</li> <li><input type="checkbox"/> Verification: The process of checking, confirming, and ensuring methodologic coherence.</li> <li><input type="checkbox"/> Self-reflection and scrutiny: Being continuously aware of how a researcher's experiences, background, or prejudices might shape and bias analysis and interpretations.</li> <li><input type="checkbox"/> Participant-driven inquiry: Participants shape the scope and breadth of questions; analysis and interpretation give voice to those who participated.</li> <li><input type="checkbox"/> Insightful interpretation: Data and knowledge are linked in meaningful ways to relevant literature.</li> </ul> <p><b>C Low quality</b> studies contribute little to the overall review of findings and have few, if any, of the features listed for high/good quality.</p>
<p><b>Level II</b></p> <p>Quasi-experimental study</p> <p>Explanatory mixed method design that includes only a level II quantitative study</p> <p>Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis</p>	
<p><b>Level III</b></p> <p>Nonexperimental study</p> <p>Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis</p> <p>Exploratory, convergent, or multiphasic mixed methods studies</p> <p>Explanatory mixed method design that includes only a level III quantitative study</p> <p>Qualitative study Meta-synthesis</p>	

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(Note: Referenced from The Johns Hopkins Hospital/ The Johns Hopkins University, 2017)

### Evidence Level and Quality Guide

Evidence Levels	Quality Ratings
<p><b>Level IV</b></p> <p>Opinion of respected authorities and/or nationally recognized expert committees or consensus panels based on scientific evidence</p> <p>Includes:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Clinical practice guidelines</li> <li><input type="checkbox"/> Consensus panels/position statements</li> </ul>	<p><b>A High quality:</b> Material officially sponsored by a professional, public, or private organization or a government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies and definitive conclusions; national expertise clearly evident; developed or revised within the past five years</p> <p><b>B Good quality:</b> Material officially sponsored by a professional, public, or private organization or a government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations of included studies with fairly definitive conclusions; national expertise clearly evident; developed or revised within the past five years</p> <p><b>C Low quality or major flaws:</b> Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the past five years</p>
<p><b>Level V</b></p> <p>Based on experiential and nonresearch evidence</p> <p>Includes:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Integrative reviews</li> <li><input type="checkbox"/> Literature reviews</li> <li><input type="checkbox"/> Quality improvement, program, or financial evaluation</li> <li><input type="checkbox"/> Case reports</li> <li><input type="checkbox"/> Opinion of nationally recognized expert(s) based on experiential evidence</li> </ul>	<p><b>Organizational Experience (quality improvement, program or financial evaluation)</b></p> <p><b>A High quality:</b> Clear aims and objectives; consistent results across multiple settings; formal quality improvement, financial, or program evaluation methods used; definitive conclusions; consistent recommendations with thorough reference to scientific evidence</p> <p><b>B Good quality:</b> Clear aims and objectives; consistent results in a single setting; formal quality improvement, financial, or program evaluation methods used; reasonably consistent recommendations with some reference to scientific evidence</p> <p><b>C Low quality or major flaws:</b> Unclear or missing aims and objectives; inconsistent results; poorly defined quality improvement, financial, or program evaluation methods; recommendations cannot be made</p> <p><b>Integrative Review, Literature Review, Expert Opinion, Case Report, Community Standard, Clinician Experience, Consumer Preference</b></p> <p><b>A High quality:</b> Expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader(s) in the field</p> <p><b>B Good quality:</b> Expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions</p> <p><b>C Low quality or major flaws:</b> Expertise is not discernable or is dubious; conclusions cannot be drawn</p>

1 [https://www.york.ac.uk/crd/SysRev/SSL/Help/6\\_4\\_ASSESSMENT\\_OF\\_QUALITATIVE\\_RESEARCH.htm](https://www.york.ac.uk/crd/SysRev/SSL/Help/6_4_ASSESSMENT_OF_QUALITATIVE_RESEARCH.htm)  
2 Adapted from Polit & Beck (2017).

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(Note: Referenced from The Johns Hopkins Hospital/ The Johns Hopkins University, 2017)

## Appendix C: IRB Approval Letter

### 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



December 18, 2019

Demitria Stafford  
Department of Nursing  
Abilene Christian University

Dear Demitria,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "A Systematic Review of Acuity-Based Staffing in Healthcare Environments",

(IRB# 19-164 ) is exempt from review under Federal Policy for the Protection of Human Subjects as:

- Non-research, and
- Non-human research

Based on:

\* This research does not involve obtaining information about living individuals [45 CFR 46.102(f)]

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 D: Permission Letter to Use PRISMA Model Tool

myACU Mail - Regarding Using Your Work of the PRISMA Model for a Student Doctoral Project

1/10/21, 8:06 PM



Demitria Stafford <xxxxxx@acu.edu>

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### Regarding Using Your Work of the PRISMA Model for a Student Doctoral Project

2 messages

**Demitria Stafford** <xxxxxx@acu.edu> To: xxxxxx@ohri.ca

Sun, Sep 29, 2019 at 5:26 PM

Dr. David Moher (Email: xxxxxx@ohri.ca),

My name is Demitria Stafford and I am a current online doctoral student with Abilene Christian University in Abilene, Texas USA. My program of study is a Doctoral of Nursing Practice (DNP) in Executive Leadership.

As you may know, as a doctoral student, I am required to complete a research project. I wanted to get ahead and reach out to you as a courtesy to ask for your permission or authorization to use the PRISMA model to adapt, implement, and incorporate for my DNP project. I am asking permission to include a diagram of the PRISMA model and any other related work of yours (e.g., articles, books, journals, tables, figures.) related to my systematic review research project that can contribute to the validity of my research.

The purpose of my DNP project is to provide evidence-based research to stakeholders on the structure and process for making patient care assignments and how those patient care assignments affect the quality of care provided to patients.

Is there any way that you can grant me permission to use your work and the PRISMA model in my research project?

P.S. If you do not mind, would you be able to provide me your contact info as well? If you want to reach me, you can also contact me at the phone number or email address below. Also, if you have any other relevant work that will contribute, feel free to provide.

Your help would be greatly appreciated, thank you!

Demitria Stafford, MSN, RN-BC  
 Email: xxxxxx@acu.edu  
 Cell phone: xxx-xxx-xxxx

---

**Moher, David** <xxxxxx@ohri.ca>  
 To: Demitria Stafford <xxxxxx@acu.edu>

Mon, Sep 30, 2019 at 3:59 AM

Dear Demitria, you have my permission to use any aspect of PRISMA for whatever purposes you would like. PRISMA is published under an open access license. All the best in your studies.

dm

take care, dm

ORCID: 0000-0003-2434-4206

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Centre for Journalology  
 Clinical Epidemiology Program  
 Ottawa Hospital Research Institute



xxx.xxx.xxxx, xxxxx | f: xxx.xxx.xxxx | e:xxxxxx@ohri.ca

Vera Pecurica

Research Administrative Assistant

The Ottawa Hospital—General Campus, Centre for Practice Changing Research Building (CPCR1)

T: xxx-xxx-xxxx x xxxxx | xxxxxxxx@ohri.ca

---

**From:** Demitria Stafford <xxxxxx@acu.edu>

**Date:** Sunday, September 29, 2019 at 6:26 PM

**To:** David Moher <xxxxxx@ohri.ca>

**Subject:** Regarding Using Your Work of the PRISMA Model for a Student Doctoral Project

**CAUTION: External Mail.** Do not click on links or open attachments you do not trust.

**ATTENTION: Courriel externe.** Ne cliquez pas sur des liens et n'ouvrez pas de pièces jointes auxquels vous ne faites pas confiance.

[Quoted text hidden]

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Confidentiality Statement - The contents of this email, as well as what's attached, are to be used only by the person meant to receive it. The email may contain private or privileged information. If you are not the person meant to receive it, by law you cannot read, use, disclose, copy, or send this email or any of its contents. If you received this email by mistake, let the sender know right away, and delete the email and what's attached, as well as any copies you have. Also, if you think the email is spam or is sales-like and you don't want to receive any more, let the sender know right away. You may also report the email to the Information and Privacy Office ([infoprivacyoffice@toh.ca](mailto:infoprivacyoffice@toh.ca)). Thank you.

Avis de confidentialité – Seule la personne à qui ce courriel est destiné peut en utiliser le contenu et ses pièces jointes. Ce courriel peut contenir des renseignements confidentiels ou protégés. Si vous n'êtes pas le destinataire du courriel, il vous est interdit par la loi d'en lire, utiliser, divulguer, copier ou envoyer le contenu. Si vous avez reçu ce courriel par erreur, avisez-en immédiatement l'expéditeur et supprimez le courriel et ses pièces jointes et toute copie que vous possédez. Par ailleurs, si vous croyez que ce courriel est du pourriel ou du matériel de vente et que vous ne voulez plus recevoir de courriels semblables, informez-en immédiatement l'expéditeur. Vous pouvez aussi signaler ce courriel au Bureau de la protection de la vie privée et de l'information ([info.privee@lho.ca](mailto:info.privee@lho.ca)). Merci.

---

## Appendix E: Permission Letter to Use Johns Hopkins Nursing EBP Model Tool

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[JHN WEBSITE](#)

Home » JHNEBP Model and Tools- Permission

# JHNEBP MODEL AND TOOLS- PERMISSION



Thank you for your submission. We are happy to give you permission to use the JHNEBP model and tools in adherence of our legal terms noted below:

- You may not modify the model or the tools without written approval from Johns Hopkins.
- All reference to source forms should include "©The Johns Hopkins Hospital/The Johns Hopkins University."
- The tools may not be used for commercial purposes without special permission.

If interested in commercial use or discussing changes to the tool, please email [ijhn@jhmi.edu](mailto:ijhn@jhmi.edu).

Downloads:

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Do you prefer hands-on learning?

We are offering a 5-day intensive Boot Camp where you will learn and master the entire EBP process from beginning to end. Take advantage of our retreat-type setting to focus on your project, collaborate with peers, and get the expertise and assistance from our faculty. Click [HERE](#) to learn more about EBP Boot Camp. Group rates available, [email ijhn@jhmi.edu](mailto:ijhn@jhmi.edu) to inquire.

[Go back to the form](#)

Institute for Johns Hopkins Nursing  
[http://www.hopkinsmedicine.org/institute\\_nursing/](http://www.hopkinsmedicine.org/institute_nursing/)  
[ijhn@jhmi.edu](mailto:ijhn@jhmi.edu)  
 443-287-4745



### Appendix F: DNP Task List

Task	Aug 2019	Sept 2019	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sept 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021
IRB Training																		
Approval of Instrument/Tool																		
Project Development (PICO/ Lit. Review)																		
Proposal Defense																		
Literature Search																		
Add'l Literature Search-Reference Lists																		
Duplicate Removal/Screening																		
Full-text Articles Assessed Per Criteria																		
Document Reasons for Exclusions																		
Quality/ Level of Evidence Determined																		
Studies Synthesized: Qualitative																		
Studies Syn.: Quantitative/Meta-Analysis																		
Analyze and Evaluate Results																		
Preparing for Final Defense (Paper/ PP edits)																		
Inactivation of IRB																		
Final Defense																		