The Effect of an Acuity Tool on Job Satisfaction for Medical-Surgical Nurses on a Medical-Observation Unit

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Date of Submission: 5/29/2020
Table of Contents

Abstract .................................................................................................................. 7
Overview ................................................................................................................. 8
  Background ........................................................................................................ 8
  Problem Statement .............................................................................................. 11
  Purpose Statement .............................................................................................. 11
  Outcomes ........................................................................................................... 11
Operational Definitions .......................................................................................... 12
  Job satisfaction ................................................................................................... 12
  Job-related stress .............................................................................................. 12
  Nurse perception of patient safety ..................................................................... 12
  Acuity .................................................................................................................. 12
  Patient satisfaction ............................................................................................. 13
  Patient outcomes ............................................................................................... 13
  Work environment .............................................................................................. 13
  Nursing burnout ................................................................................................. 13
Review of the Literature ....................................................................................... 14
  Search Strategy ................................................................................................. 14
    Exclusive Criteria ............................................................................................. 15
    Inclusive Criteria ............................................................................................. 15
    Limiters ............................................................................................................ 15
Acuity Tools .......................................................................................................... 15
  Patient classification scale ................................................................................ 15
  TEAMS model .................................................................................................... 16
List of Tables

Table 1 Summary of Statistical Results................................................................. 38
List of Figures

Figure 1 Herzberg Hygiene-Motivation Theory ............................................................... 21

Figure 2 Pre and Post Survey Results ........................................................................... 38
Abstract

Background and Review of Literature: Job satisfaction and nursing stress are important aspects for an organization to investigate to reduce the amount of turnover and improve patient outcomes. Acuity tools can be used to help equally distribute patient acuity amongst staff to reduce nursing stress, increase patient safety, and improve nursing job satisfaction.

Purpose: The purpose of this study was to implement Harper and McCully's Patient Classification acuity tool on a medical-observation unit at an urban acute care hospital to improve nursing job satisfaction, nursing stress, and nursing perception of patient safety as evidenced by evaluating pre and post-survey data.

Methods: This study was implemented in an acute-care hospital on a medical-observation unit. Three phases of the study include recruitment, intervention, and evaluation.

Implementation Plan/Procedure: A pre and post-survey design was implemented and evaluated using a paired $t$-test. Three surveys were used to evaluate job satisfaction, nursing stress, and nursing perception of patient safety.

Results: There were 14 pre-survey participants with 4 drop outs. The Job Satisfaction Survey and Practice Environment Scale of the Nursing Working Index scores did improve slightly post-survey, but they did not show statistical significance.

Implications/Conclusion: No significance was found between the pre and post-surveys. Additional research using a longer implementation period would be beneficial before determining whether the acuity tool should be implemented on the unit.

Keywords: acuity tool, job satisfaction, nursing stress, patient safety, work environment
Job satisfaction is an essential aspect of healthcare to ensure that patients receive optimal care. Nursing turnover most often results from low job satisfaction affecting the overall nursing workforce. There are many factors that influence job satisfaction, including work environment, patient load, management, and stress on the job (Lu, Zhao, & While, 2019). Patient acuity can quickly change, thus affecting nurse workload. The acuity of patients must be factored in to provide better care for patients and avoid missed care to promote better patient outcomes. Challenging patient assignments contribute to higher nursing stress and decreases satisfaction with their job. Halter et al. (2017) predict that there will be an increase in demand for qualified nurses over the next decade, creating an increasing nursing shortage. As the population continues to grow older, a larger nursing workforce will be needed to care for the aging population. The general population is living longer with chronic illnesses requiring more complex care. Keeping nurses at the bedside to care for patients is a challenge. Healthcare organizations need to look at job satisfaction for nurses and what can be done to improve satisfaction and reduce nursing turnover rates.

**Overview**

**Background**

Job satisfaction is an essential factor to assess in an organization to reduce the amount of turnover among the nursing workforce. Nurses often regard their working environment as stressful due to staffing shortages, limited resources, and complex patient conditions (Copanitsanou, Fotos, & Brokalaki, 2017). Copanitsanou et al. (2017) found that stressful working conditions lead to burnout, low productivity, and absenteeism,
causing a further problem with understaffing and decreased job satisfaction. Stress impedes the ability to provide high quality and efficient care and also directly impacts health, job satisfaction, and turnover rates (Muhawish, Salem, & Baker, 2019).

Relevant stakeholders related to job satisfaction include the organization, patients, and nurses. Work satisfaction promotes productivity, reduces turnover, decreases absenteeism, and improves patient outcomes. Job satisfaction is a complex term related to internal and external factors individualized for every nurse. External factors affecting satisfaction may include the work itself and working conditions whereas, internal factors may consist of nurses' needs and personal goals (Andrioti et al., 2017). According to Halter et al. (2017), job dissatisfaction and satisfaction are strongly associated with time in a current job. Training costs for nurses cost approximately $42,000 for a medical-surgical nurse and up to $80,000 for a nurse in a specialized department (Hairr, Salisbury, Johannsson, & Redfern-Vance, 2014). High turnover rates of nurses increase the amount of money spent on training costs. Improvement in overall job satisfaction has an impact on reducing the number of training expenditures throughout an organization.

Research indicates that nursing job satisfaction dramatically depends on the workload and ability to provide high-quality care (Kidd, Grove, Kaiser, Swoboda, & Taylor, 2014). Workload and acuity directly affect the ability of a nurse to care for his or her patients and meet patients' expectations during the hospital stay. Copanitsanou et al. (2017) state that adverse nurse environments lead to poorer patient outcomes, including increased hospital complications, infection rates, falls, pressure sores, and mortality. Caring for multiple complex patients causes nurses to feel overloaded with tasks and reduce the quality in which tasks are completed. Nurses are unable to spend a lot of time
with patients when the workload is high. The perception of giving inadequate care causes frustration among nursing staff, also decreasing job satisfaction. Patients want top-quality care, and nurses desire to provide high-quality care for their patients.

The Institute of Healthcare Improvement introduced the "Triple Aim," in 2007. The “Triple Aim” is focused on the patient care experience, improving population health, and reducing healthcare costs (Fitzpatrick, Bloore, & Blake, 2019). Hospital reimbursement is also strongly affected by patient satisfaction and patient outcomes. A healthy work environment is strongly correlated with improved patient outcomes (Fitzpatrick et al., 2019). Patient acuity can change quickly and relies on the capability of nurses to recognize appropriate interventions to improve or maintain patient status. High acuity patients require complex care, and when nurses are inadequately staffed, the care patients receive is impacted (Hill, 2017). High acuity patients require continuous monitoring to ensure patients do not deteriorate and that appropriate interventions are in place. Hill (2017) investigated survival rates after cardiac arrests and found that there was a 5% lower chance of survival with one additional patient per nurse and a 16% lower chance of survival for patients in poor work environments. Heavy workload and acuity contributed to a higher burnout rate and decreased job satisfaction. According to Hill (2017), 71-92% of nurses with heaviest workloads felt dissatisfied with their jobs and experienced burnout. High acuity patient assignments contribute to emotional exhaustion. Patient outcomes are directly affected by the care nurses give. Hill (2017) states that by improving hospital work environments and improving adequate staffing for higher acuity patients, overall patient survival rates will improve. Healthcare organizations need to recognize that increasing job satisfaction and to enhance the global work environment has
benefits for the organization, patients, and nurses.

**Problem Statement**

To improve nurse job satisfaction and patient outcomes, workload and patient acuity needs to be evenly distributed amongst nursing staff. Tools to identify workload and patient acuity support decision-making in determining appropriate staff assignments. More equivalent staff assignments ensure nurses can provide high-quality care and also to improve patient outcomes, therefore increasing job satisfaction. The question addressed in this project was “In medical-surgical nurses on a medical-observation unit at an urban acute care hospital, what is the effect of an acuity tool on the Job Satisfaction Survey, Practice Environment Scale of the Nursing Work Index, and Expanded Nursing Stress Scale over one month (30 days)?”

**Purpose Statement**

The purpose of this study was to implement Harper and McCully's Patient Classification acuity tool on a medical-observation unit at an urban acute care hospital to improve nursing job satisfaction, nursing stress, and nursing perception of patient safety as evidenced by evaluating pre and post-survey data.

**Outcomes**

The intended outcomes of this project were:

- Increase in job satisfaction as evidenced by the increase in survey scores pre and post acuity tool intervention
- A decrease in job-related stress as evidenced by the reduction of stress levels in survey scores pre and post acuity tool intervention
- Increase in nurse perception of patient safety with equitable patient assignments as
Operational definitions

Job satisfaction. The term job satisfaction implies to the employee’s emotional response towards different job-related factors that result in pleasure towards one’s job (Temesgen, Aychech, & Leshargie, 2018). Factors related to job satisfaction include quality of work environment, autonomy, the relationship between physicians, nurses, and organizational support (Dorigan & de Brito Guirardello, 2017). Personal growth in an organization is also considered a contributor to increased job satisfaction.

Job-related stress. Stress is defined as a psychological response to mental, physical, or emotional stressors (Stickle & Scott, 2016). Stress can be either positive or negative. Every employee handles stress differently and has different coping methods. A healthy work environment promotes decreased job-related stress.

Nurse perception of patient safety. Nursing perception of patient safety is related to positive patient outcomes. The quality of care patients receive is critical during the patients' hospital stay. Inadequate staffing has been linked to decreased perception of quality patient care and patient safety (Ree & Wiig, 2019). Contributors to patient safety would include a reduced number of falls, pressure ulcers, medication errors, open communication, and teamwork amongst hospital staff.

Acuity. Acuity is a concept that identifies the level of care each patient requires while under the supervision of a facility (DiClemente, 2018). An acuity tool is a scoring system for patients that promote safe and adequate staffing to meet individual patient needs. Measuring acuity facilitates safer patient assignments and promotes overall better clinical outcomes. Different patients may require frequent wound dressings, pain
medications, or titrations of complicated intravenous medications. These tasks impact the amount of time needed to spend with each patient. Acuity data is helpful to ensure one nurse does not have all of the higher acuity patients.

**Patient satisfaction.** Patient satisfaction is a subjective concept that is affected by the perceived quality of care a patient receives. Different factors that affect patient satisfaction include effective communication, emotional support, and maintaining respect and dignity (Larson, Sharma, Bohren, & Tuncalp, 2019). High patient satisfaction is associated with confidence in the health system and providers and how well patient expectations have been met during their experience.

**Patient outcomes.** Patient outcomes directly reflect the quality of care provided for patients. Examples of outcomes include mortality, patient safety, patient experience, and readmission rate. Results are essential in identifying what facilities are doing well to incorporate excellent patient service.

**Work environment.** The work environment is a concept that can be identified as the external physical surroundings and internal qualities that either positively or negatively affect the place of work. The work environment is affected by good coworker relationships, a clean environment, a positive perception of manager, workload, and adequate staffing.

**Nursing burnout.** Nursing burnout is a common occurrence among healthcare professionals. Burnout is a state of emotional exhaustion due to chronic, highly stressful environments at work (Fernandes, Trevizani Nitsche, & de Godoy, 2017). Burnout also accompanies reduced enthusiasm with work and a decreased feeling of personal
accomplishment. Chronic stress related to nursing burnout can present with physical, psychosocial, and cognitive symptoms that affect overall work quality.

**Review of the Literature**

**Search Strategy**

A review of the literature was conducted to search for articles in support of the PICOT question in two different databases. The databases utilized in the search included Cumulative Index to Nursing and Allied Healthcare (CINAHL) and Medline. The search terms included nursing job satisfaction, nursing work index, medical-surgical nurses, medical-observation nurses, acuity tool, acuity scale, no acuity tool, no acuity scale, and care complexity tool. Search terms were combined using "and" and "or" in the search. Search words were examined in the title, abstract, and author's keywords. Acuity tools in the literature were reviewed to assess the relevance to the proposed population and goal for the study. Twelve articles were determined to best answer the research question related to the study (See Appendix A). Melynk and Fineout-Overholt's (2019) level of evidence classification system was used to analyze the articles found in the literature search. Level I evidence consists of the highest levels of evidence, including systematic reviews and meta-analysis of randomized control trials (Melynk & Fineout-Overholt, 2019). Level II is considered randomized controlled trials, whereas Level III has control trials without randomization (Melynk & Fineout-Overholt, 2019). Level IV is case-control or cohort studies. Level V consists of systematic reviews of descriptive and qualitative studies (Melynk & Fineout-Overholt, 2019). Level VI is considered single descriptive or qualitative studies, and Level VII evidence is regarded as an expert
opinion. Levels of evidence included amongst the twelve articles included three Level III, two Level IV, five Level VI, and two-Level VII articles (See Appendix B).

**Exclusive criteria.** Articles were excluded if there was no connection to the study question or intervention. Articles were also dismissed if the population was not related to the study question. Articles were rejected if they were not in a hospital setting and took place in-home health care, community, or long-term care setting.

**Inclusion criteria.** The articles were included if they pertained to the study question. Articles were incorporated if the setting was in the hospital. Higher levels of evidence were also considered when determining if articles should be kept.

**Limiters.** Limiters for CINAHL complete include full text, English, peer-reviewed, and dated from July 2007 to present. Medline complete limiters include English, academic articles, and was dated July 2014 to present.

**Acuity Tools**

Multiple articles found discussed utilization of an acuity tool and impact on the individual nursing unit (Amenudzie, Georgiou, Ho, & O’Sullivan, 2017; Connor et al., 2019; Diclemente, 2018; Firestone-Howard, Zedreck Gonzalez, Dudjak, Dianxu Ren, & Rader, 2017; Georgiou, Amenudzie, Ho, & Sullivan, 2018; Harper & McCully, 2007; Thomasos et al., 2015). Multiple articles utilized different acuity tools that best suited their unit, which included TEAMS, Synergy Model, CAMEO II, and Patient Classification Scale.

**Patient classification scale.** Harper and McCully (2007) first developed the Patient Classification Scale designed to improve patient and nurse satisfaction. The categories that were evaluated include medications, complicated procedures, education,
psychosocial issues, and complicated intravenous medications (Harper & McCully, 2007). Nurses rate patients every shift numerically in each category with a higher number indicating higher acuity. The Patient Classification Scale serves as a communication tool and with appropriate education on its use, was found to be an asset to nursing management, staff, and the patient (Harper & McCully, 2007). Firestone-Howard et al. (2017), and Diclemente (2018) utilized the scale developed by Harper and McCully. The scale was implemented for two months and found that the scale promoted a more balanced workload as well as improve patient and nurse satisfaction.

**TEAMS model.** Thomasos et al. (2015) used an acuity rating system known as TEAMS. Categories in the tool included treatment, education, ADLs, medications, and vital signs. This article was different in comparison to other articles by including nursing assistants in evaluating the effectiveness of the tool. The study found that a comprehensive evaluation of patient acuity from nursing assistants was needed to balance workloads on the unit (Thomasos et al., 2015)

**Synergy model.** Amenudzie et al. (2017) and Georgiou et al. (2018) were pilot studies utilizing and evaluating the effectiveness of the Synergy Model. Surveys were done pre and post-implementation to assess the work environment. Day shift nurses were the only staff members that completed the surveys. The Synergy Model was implemented with other interventions on the unit aimed to improve the overall work environment. The studies did show that with the implementation of the Synergy Model that staff were more engaged and believed that quality of patient care was significantly improved (Amenudzie et al., 2017; Georgiou et al., 2018).
CAMEO II. Connor et al., (2019) was the only article focusing on the pediatric population and implemented the CAMEO II tool in paper form. The CAMEO II tool was used to quantify the cognitive workload and complexity of pediatric intensive care (Connor et al., 2019). The focus was on justifying staffing models and to ensure the unit was appropriately staffed. The use of the tool was found to be feasible and a good resource to help support decision making at the bedside and boardroom to support appropriate staffing for units (Connor et al., 2019).

Job Satisfaction

Job satisfaction was a common theme found throughout the research with the implementation of an acuity tool. Means of assessing job satisfaction were typically performed with pre and post surveys. Nursing job satisfaction was found to be correlated with a higher quality of nursing care provided in the hospital (Lu et al., 2019; Muhawish et al., 2019). Turnover rates are high when job satisfaction is low. Nursing shortages are a common problem, and by addressing and bettering nursing job satisfaction, one could help decrease nursing turnover rates and increase the nursing workforce. Lu et al. (2019) and Muhawish et al. (2019) emphasize the importance of nursing retention to improve overall patient healthcare outcomes.

Firestone-Howard et al. (2017) had a 20.84% increase in satisfaction with nursing assignments and found shifts to be more manageable with the use of an acuity tool. Research also indicates that staffing considerations and workload are essential in improving job satisfaction (Diclemente, 2018; Dorigan & de Brito Guirardello, 2017; Firestone-Howard et al., 2017; Lu et al., 2019; Muhawish et al., 2019; Thomasos et al., 2015; Winsett, Rattet, Schmitt, Wathen, & Wilson, 2016). Staff inadequacy led to higher
missed care and decreased patient quality care (Georgiou et al., 2018; Norman & Strømseng Sjetne, 2017; Thomasos et al., 2015; Winsett et al., 2016).

**Work Environment**

Intention to stay in the current nursing position was found to be related to a positive work environment (Diclemente, 2018; Dorigan & de Brito Guirardello, 2017; Georgiou et al., 2018; Lu et al., 2019). A nurse's work environment is very complex, involving multiple tasks and care coordination with many different interdisciplinary departments. The ability to accommodate and complete tasks contributes to nursing stress, patient outcomes, and quality of care. Workload and patient acuity increases stress levels and is affected by staff skill level and perception of having adequate staff (Winsett et al., 2016). A healthy work environment helps promote quality care for the patient and provides a sense of fulfillment for nurses.

**Patient Safety**

Patient status and acuity are constantly changing shift to shift. Acuity tool scores are adjusted per shift based on patient status and have been shown to be feasible and useful in various settings (Amenduzie et al., 2017; Georgiou et al., 2018). The Synergy Model ensures that a capable nurse is taking care of an appropriate patient (Amenudzie et al., 2017; Georgiou et al., 2018). Nursing experience is varied on units, with each nurse having different levels of expertise. Nurses with less experience may not be proficient at caring for a higher acuity patient. Acuity tools provide insight into resources that are needed to promote high-quality care. Patient census on the unit often determines the number of staff members required on a shift. Acuity tools help justify the need for
additional staff members to care for the fluctuation of acuity on the nursing unit (Amenudzie et al., 2017; Georgiou et al., 2018; Connor et al., 2019).

Missed care related to increased acuity or workload contributes to worsened patient outcomes. Georgiou et al. (2018) and Winsett et al., (2016) found that missed cares were higher when the perception of staff adequacy was low. Commonly missed care includes mouth care, ambulation, and delivery of medications at the scheduled time (Winsett et al., 2016). The use of an acuity tool helped promote safety, decreased number of falls, and a reduction of laboratory errors (Georgiou et al., 2018).

In conclusion, multiple acuity tools exist, and characteristics vary to meet units' needs. Acuity tools were shown to be useful on various types of units for staffing purposes, balancing workloads, improving patient outcomes, patient safety, and improving job satisfaction. Patient acuity can change every shift, minute, or hour, positively or negatively. Staffing units appropriately based on acuity can improve job satisfaction, reduce turnover rate, and improve patient outcomes. Factoring the concept of acuity into patient assignments can help nurses provide high-quality care for their patients and improve overall job satisfaction, nursing stress, and perception of patient safety.

Summary of Literature Review

This study intended to improve job satisfaction, nursing stress, and nursing perception of patient safety in a medical observation unit. Working conditions were considered an extrinsic factor that is connected with job satisfaction. Organizations need to be involved in improving working conditions to ensure employees do not become increasingly dissatisfied with their job. Improved working conditions decreases the amount of dissatisfaction on the unit, and can help reduce turnover rate, stress, and
burnout (Chaudhury, 2015). Higher job satisfaction results in lower medical costs and more satisfactory services. Employers must even recognize intrinsic factors that ultimately motivate the employee to perform high-quality work (Chaudhury, 2015). Typically, employees who are highly motivated do a better job and are more efficient in carrying out tasks. Higher job satisfaction amongst nursing staff and other employees makes the organization as a whole more competitive and successful.

**Theoretical Framework**

The theoretical framework used to guide this study included Herzberg’s Theory of Motivation-Hygiene Factors. Boundless Management (n.d.) demonstrated Herzberg’s theory involving intrinsic and extrinsic factors that led to workplace satisfaction and dissatisfaction (See Figure 1). Identifying aspects of the work environment that led to satisfaction and dissatisfaction was useful to recognize factors to improve overall job satisfaction.

Intrinsic factors of Herzberg’s theory included the motivating or satisfiers of the work environment (Helbing, 2017). Satisfiers in the workplace consisted of achievement, recognition, advancement, responsibility, or the work itself (Helbing, 2017). Intrinsic factors provided personal growth for the nurse that makes one's job satisfying.

Hygiene factors are also known as extrinsic factors or dissatisfiers. Hygienic factors include job security, working conditions, administration, supervision, salary, benefits, or work relationships (Helbing, 2017). If hygienic factors at the workplace are unpleasant, dissatisfaction with the job increases.
Zeb, ur Rehman, Saeed, and Hamidullah (2014) stated that Herzberg's theory was related to Maslow's Hierarchy of Needs. Intrinsic factors of recognition, self-development, and reward are placed towards the upper level of hierarchy (Zeb et al., 2014). Hygienic factors are actually considered on the lower level of needs and prevent job dissatisfaction but do not necessarily improve satisfaction.

**Organizational Assessment**

This study took place in a Midwest, urban, community hospital. A community needs assessment was performed to assess the needs of the unit. The most common theme of the community needs assessment included the need for a balance of workload and acuity of patients. The unit is evolving from a short-stay surgical unit to a combination of surgical patients with observation patients. The combination of patient populations has proven to be complicated. There have been more falls, medication errors, and decreased patient and nurse satisfaction with the evolving unit. The unit typically
cares for 35-45 new surgical patients per day, while discharging approximately 25-30 patients per day.

The unit displayed readiness for change with the community needs assessment and had been actively searching for a solution to evenly distribute the workload and acuity of the new population of patient. There were multiple discussions in the Unit Based Council meetings discussing the safety of patients with the increasing acuity. Management had been discussing ideas with staff in an effort to improve overall job satisfaction and the work environment. Employees completed a survey with the community needs assessment and 100% of the employees were in favor of using an acuity tool to help distribute acuity on the floor.

The quick influx of patients made appropriate patient assignments for nurses difficult. The study idea was discussed with staff, the service leader, and the clinical educator. A letter of permission to implement the study was obtained from the unit’s service leader. It was hoped that an acuity tool would be useful to ensure that acutely ill patients are evenly distributed amongst nurses to ensure that patients are receiving high-quality care.

Barriers to the implementation of this study included completing the acuity tool every shift. Staff seemed receptive to change; however, the time it takes to fill out the tool was an issue when the unit was hectic. Eventually, once staff were well acquainted with the tool, it was hoped that the nurses could report to the charge nurse the acuity score without actually filling out the tool. The experience of the nurse was considered a potential barrier as a newer nurse might have found a patient more acute than an experienced nurse.
Charge nurses on the unit were key facilitators of the implementation of the acuity tool. Charge nurses received report from staff every shift and needed to request an acuity number from the tool. Nurse accountability to fill out the acuity tool enabled the charge nurse to make improved patient assignments.

Potential unintended consequences of the tool included inappropriate scoring of the patient. Acuity scores of units were intended to justify the amount of staff needed on the unit. If nurses scored patients more acutely than deemed appropriate, overstaffing the unit could occur.

**Methodology**

This study aimed to improve job satisfaction, nursing stress, and perception of patient safety on the unit with the implementation of an acuity tool to equally distribute higher acuity patients amongst the nursing staff. Acuity tools help with patient assignments and balance the acuity of patients on a unit. This study was a comparative-correlational study with a convenience sample design. Quantitative data was investigated over a one-month period, which included job satisfaction, nursing job-related stress, and nursing perception of patient safety. The study utilized pre and post-survey results from established surveys to measure outcomes investigated with the implementation of the acuity tool. Surveys were gathered using the data to analyze the impact of the use of Harper and McCully's (2007) acuity tool on job satisfaction, nursing stress, and nursing perception of patient safety.

Harper and McCully's (2007) acuity tool served as a cost-effective and straightforward communication method between the staff members on the unit to ensure that patient assignments were equitable. By equally distributing patient tasks and
workload, nurses were able to provide better quality of care. The acuity tool was one
means to help keep the charge nurse up to date on patient status to ensure that patient
assignments were not overwhelming.

Setting

The study took place in a Magnet designated, community hospital with 423 beds
in a Midwestern city. Approximately 22,000 patients are admitted to the facility every
year. There are more than 2000 full-time employees and over 400 physicians employed
throughout the organization. This acute care facility provides quality care to many
clinical areas, including cardiovascular, neurosurgery, women's services, cancer care,
gastroenterology, and orthopedics.

The specific unit where the pilot study was performed is a medical-observation
unit. This is a 32-bed unit with one infusion room. The population of the unit during
implementation was mostly middle age to older adults. Pediatric patients do not typically
present to the unit for surgery or observation. Common diagnoses for observation patients
included cellulitis, pulmonary embolism, deep vein thrombosis, weakness, abdominal
pain, and transient ischemic attacks. Surgeries admitted to the floor were typically
considered outpatient and discharged within hours or 1-2 days after the procedure. Some
of the most common procedures included appendectomies, cholecystectomies,
ureteroscopies, biopsies, pacemaker implantation, and hernia repairs.

Sample

Participants in this study were nurses and had to have an active registered nurse
(RN) license. The study sample included medical-surgical nurses working on the
medical-observation short stay unit. During the study, all nurses were female except for
one nurse. Approximately three-fourths of the nurses working on the unit were 25-45 years of age. Five nurses were 50-65 years of age, with three of them having forty years of experience. Most nurses on the unit have ten or fewer years of experience. All of the nurses working on the unit have a bachelor's degree in nursing (BSN). One nurse on the night shift has a master's degree in nursing for education.

**Inclusion criteria.** The inclusion criteria included all Registered Nurses who work on the medical-observation floor. Participants were at least 19 years of age or older. Part-time, full time, and casual positions were included in this study. Nurses were considered if they were working at the bedside, providing direct care to patients. Nurses were required to speak English.

**Exclusion criteria.** Other hospital units were excluded from the pilot study. Participants were excluded if they are not Registered Nurses. Nurses who didn’t provide direct care to patients, including administration and managers, were excluded. Registered nurses who were part of the float pool or who are considered travelers were excluded. Orientees were excluded from the study considering the short amount of experience on the unit. Nurses who gave a 30-day notice were also excluded from the study.

**Implementation Procedures**

The process of implementing the acuity tool involved three phases: recruitment, intervention, and evaluation. Recruitment for this study began in early March 2020, and pre-survey data was collected in early March. The intervention was implemented for one month (30 days). Post-survey data was collected after the one-month trial period of the acuity tool.
Recruitment of this study was performed by sending an email to registered nurses who currently work on the unit. An invitation to participate in this study was included in the email. Information was provided on the purpose of this study, acuity tool, and the use of pre and post-surveys. Registered nurses were instructed to reply by email or in person whether they accepted or rejected the invitation to join the study. Once the invitation to participate was accepted, informed consent was provided by the investigator and completed by each participant.

The acuity tool was presented in the charge nurse monthly meeting in January 2020 to discuss specifics about the use of the tool and its goals for the unit. Examples of patient scenarios were given to help familiarize the charge nurses on how to use the tool. The nursing staff was educated on Harper and McCully’s (2007) acuity tool. An email was sent out to all nursing staff on the unit with the acuity tool format discussing the use of the tool to help make patient assignments. A copy of the tool was given to each staff nurse to use as a reference. Extra copies were placed at the charge nurse desk. The use of the acuity tool was discussed and encouraged by the charge nurses before every shift during the unit's pre-shift meeting. Nurses were provided examples and were asked to score the provided example to exhibit an understanding of the use of the tool.

Prior to implementing the acuity tool, nurse completed the Practice Environment Scale of the Nursing Work Index, Job Satisfaction Survey, and Expanded Nursing Stress Scale. These surveys served as the pre-intervention data. The acuity tool was implemented on the entire unit for all the registered nurses for both day and night shift. The acuity tool was filled out once per shift for every patient for one month (30 days). Nurses filled out the acuity tool in paper form. The tool was filled out at any point of the
shift if the nurse knew the patient needed to be assigned for the next shift. If patient status changed, the primary nurse filled out another acuity tool, so the acuity score represented the patient accurately.

An acuity score was determined by the primary nurse to help the charge nurse make assignments for the next shift. The charge nurse used the acuity score to distribute more difficult or acute patients equally amongst staff for the next shift. The goal was that higher acuity patients were divided equally, so nursing shifts were much more manageable, and all patient needs were met.

After assignments were made, the charge nurse documented the number of completed acuity tools and the number of patients assigned organized by the date and day or night shift. This recorded nurse compliance in using the acuity tool. The charge nurse recorded the number of acuity tools completed and census for each shift in a designated binder. No patient identifiers were listed in the binder to ensure confidentiality. The completed acuity tools were destroyed in the paper shredder after every shift and were not included as part of the patient’s medical record.

Approximately one week after the one-month trial of the acuity tool, another Practice Environment Scale of the Nursing Work Index, Job Satisfaction Survey, and Expanded Nursing Stress Scale were distributed amongst nursing staff. Nurses had one week to complete the survey in paper form.

**Measurement Instruments.**

The outcomes of this study were measured by using the following instruments: Practice Environment Scale of the Nursing Work Index (PES-NWI), Job Satisfaction Survey (JSS), and the Expanded Nursing Stress Scale (ENSS). The participants also
completed a demographic survey that was created by the investigator. All surveys were taken together at the same time for the pre and post-survey. Appropriate permission was obtained from tool authors prior to use in this study.

**Practice Environment Scale of the Nursing Work Index.** Eileen Lake was the creator of the PES-NWI and adapted it from the Nursing Work Index survey (Lake, 2002). The tool is a 31-item Likert scale questionnaire used to determine the relationship to the nursing practice environment and patient outcomes (Lake, 2002). Two specific subscales target one of the intended outcomes of this study. The subscales of nursing foundations for quality of care and staffing and resource adequacy enabled this study to measure the outcome of improving the nursing perception of patient safety.

Lake (2002) established that two issues in a working environment are dominant, including decision-making control over the work and coordination of the work amongst staff. The five subscales included nurse participation in hospital affairs, nursing foundations for quality of care, nurse manager ability, leadership, and support of nurses, staffing and resource adequacy, and collegial nurse-physician relations.

Lake (2002) had 3 to 15 subscales analyzed in different structures and chose current subscales based on having the most reliability, validity, and generalizability. The PES-NWI was determined to have internal consistency reliability judged by Cronbach's alpha using a measure of .80 (Lake, 2002). Mean rater reliability was also assessed and determined that an ample number of raters and satisfactory agreement amongst the raters must be sought to assure reliability (Lake, 2002). The average interitem correlation and the intraclass correlation should be 0.6 to substantiate collectiveness (Lake, 2002). Construct validity of the subscales was measured by evaluating the scores of nurses
between Magnet and non-Magnet hospitals. A correlation matrix was generated to assess for satisfactory independence between subscales (Lake, 2002). A correlation value of less than .60 indicated that subscales were independent of one another (Lake, 2002). Lake (2002) stated that overall, the subscales for this tool demonstrated coherence, internal consistency, reliability, and generality to improve outcomes for both the nurses and patients in the work environment.

**Job Satisfaction Survey.** The JSS was created by Paul Spector and identified nine aspects of job satisfaction chosen from a literature review (Spector, 1985). The nine subscales included pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication (Spector, 1985). The JSS is a 36-item questionnaire that used a 6-point Likert scale to help discover the magnitude of what contributed to job satisfaction. Internal consistency was measured with a total scale measuring .91 (Spector, 1985). Test-Retest reliability was also performed and ranged from .37 to .74 amongst the subscales with the total scale reliability equaling .71 (Spector, 1985). Discriminant validity was also considered to measure how distinct the subscales are which were .11 to .59 with a median correlation of .35 (Spector, 1985). Overall, the tool is considered to have exceptional internal consistency and good reliability over time (Spector, 1985).

**Expanded Nursing Stress Scale.** French, Lenton, Walters, and Eyles (2000) created the Expanded Nursing Stress scale to identify the sources and frequency of stress experienced by nursing staff. Stress is associated with absenteeism, turnover, job satisfaction, and the psychosocial well-being of nurses (French et al., 2000). The ENSS is a 57-item Likert scale questionnaire and contained nine factors or subscales. The
subscales included death and dying, conflict with physicians, inadequate preparation, problems with peers, problems with supervisors, workload, uncertainty concerning treatment, patients and their families, and discrimination (French et al., 2000).

Cronbach’s alpha was calculated with each of the factors to establish scale reliability and internal consistency amongst the categories. French et al. (2000) provided factor correlations supporting moderately strong associations among the subscales. Gray-Toft and Anderson (1981) produced the Nursing Stress Scale, which included a 34-item scale that did not identify other important sources of stress that the ENSS was able to expand on (French et al., 2000). Cronbach alpha values were found to be high, providing supporting data of internal consistency (French et al., 2000).

Construct validity was also determined by hypothesizing higher stress was associated with more health problems (French et al., 2000). French et al. (2000) were able to show through nursing responses with a questionnaire that higher stress was associated with poorer health. Nurses were asked questions about exhaustion, headaches, migraines, insomnia, back pain, and feeling depressed. A correlation of .30 was suggested to be considered significant (French et al., 2000). According to French et al. (2000), subscales did meet criteria ranging from .12 to .34.

**Participant Demographic Survey.** The demographic survey that was completed was a 4-question survey gathering details about the participants. The investigator created the survey. The survey listed four questions including the number of years worked on the specific unit, the number of hours worked per week, the number of years the participant has been a nurse, and if the participant is day or night shift. Since this was a study specific survey, no reliability and validity measures are available.
Data Collection Procedures

Data for this study was collected using the Participant Demographic Survey, JSS, PES-NWI, and ENSS as pre and post-surveys with the implementation of the Harper and McCully (2007) acuity tool.

One week before the implementation of the acuity tool, participants completed the pre-surveys with the investigator while at work. The investigator sent an email to all of the participants to coordinate and confirm dates that worked to take the surveys, so the investigator was present. The investigator was present during both day and night shifts to collect the surveys for one week. Day shift participants took the surveys with the investigator at the beginning of their shift. Night shift participants completed the surveys towards the end of the shift. If the investigator was unable to obtain the surveys from all involved participants, the investigator set up a separate time and date for the participant to take the survey. Participants were given at least 30 minutes total to complete the three surveys. Surveys were printed in paper form and provided to the participants. Pencils were also provided for the participants. The surveys were pre-labeled with the assigned number given to them, followed by the letter "A." Once the participant completed the pre-survey, the investigator immediately collected them.

Upon completion of the one-month implementation period of the acuity tool, participants took the post-surveys within one week. Participants completed the post-surveys while at work. The investigator was present for one week for both day and night shift. The night shift took the surveys towards the end of their shift, and the day shift completed surveys towards the beginning of the shift. Participants were allotted 30 minutes total to complete the three surveys. The investigator provided the post-surveys
EFFECT OF AN ACUITY TOOL ON JOB SATISFACTION

using paper and pencil. The surveys were pre-labeled with their assigned number and the letter "B". Upon completion, the investigator immediately picked up the surveys. The pre and post-surveys enabled the investigator to decipher if the outcomes of this study were met. The goal of this study included the improvement of job satisfaction, nursing stress, and perception of patient safety scores.

Ongoing data collection was completed by keeping track of the number of acuity tools completed on every shift. Information was held in a binder stored at the charge nurse's desk. The data collected had the date, the number of patients assigned, and the number of patients assigned an acuity score. Being able to monitor that acuity tools were completed ensured that the tool was being utilized. Patient identifiers were not included or attached on the ongoing data collection sheet. The charge nurse recorded the data at each shift.

Data collection was kept confidential by providing participants with an assigned number and letter “A” or “B” that was pre-labeled on his or her surveys. A master list of participants and assigned numbers was locked in a file cabinet that only the investigator had access to.

Accurate record keeping was utilized by educating the charge nurse on how to keep track of the data needed for the study. Each shift recorded the number of acuity tools completed with the number of patients assigned. The information was kept at the charge nurse's desk in a binder designed for the charge nurses.

Ethical Considerations/Protection of Human Subjects

Institutional Review Board (IRB) approval was obtained from the college and study facility before initiating this study. A consent to participate was obtained from the
unit participants who volunteered to participate in this study. Staff consent was not required to administer the acuity tools but was used for those who participated in the pre and post-intervention surveys. Participating in this study did not affect employment.

Pre and post-intervention survey data was not kept and was disposed of with a paper shredder after study completion. Data was kept on a password protected computer. Data analyzed and kept on the computer was deleted from the hard drive after study completion. The investigator and faculty mentor completed the Collaborative Institutional Training Initiative (CITI) program module for Social Behavioral Research Investigators and Key Personnel prior to study start.

Participants were protected by keeping responses to the surveys anonymous by assigning each participant a unique number throughout the study. The investigator was the only one with the master list of participants' assigned numbers. The master list was locked in a file cabinet that only the investigator was able to access. The participant was instructed not to share their assigned number with anyone. Pre-surveys were labeled "A," and post surveys were labeled "B." The investigator pre-labeled the pre and post-surveys to avoid illegible numbers. Participants' survey answers were not shared with management. Data shared with the statistician was without personal identifiers.

Some potential conflicts of interest in this study included influencing the recruitment and selection of participants. The investigator currently works on the unit and has personal relationships with potential participants for this study. The investigator remained objective in gathering data by remaining neutral in this study. Own beliefs or bias did not alter factual data in this study. Information was not falsified, fabricated, or
misinterpreted to produce statistical significance with this study. All efforts were made to protect the data and participants to enable the production of the most accurate results.

**Data Analysis**

Data was analyzed with descriptive and inferential statistics with Excel software. Investigator utilized the college statistician to assist with the data analysis portion of this study. Pre and post-survey data was organized on an Excel worksheet and provided to the statistician. The statistician provided results to the investigator with an Excel worksheet.

A dependent samples *t*-test was performed to analyze the pre and post-survey data using Excel to identify if there was a relationship or correlation between the variables with the use of the acuity tool. A dependent *t*-test is testing the null hypothesis that there will be no difference between the means of the surveys (Kellar & Kelvin, 2013). Statistical significance was investigated. The critical value for the *t*-statistic was calculated and compared to the *p*-value. If the *p*-value was < .05, it was assumed that the variables of job satisfaction, nursing stress, and nursing perception of patient safety were affected by the implementation of the acuity tool. The surveys used in this study were used to measure these variables pre and post-implementation.

Demographic information was gathered from the participants, including the number of years worked on the unit, how many hours a week worked, number of years of being a nurse, and if the participant worked day or night shift. A table created with Microsoft Word was used to display participant demographic information. Demographic information from the participants was helpful to illustrate the population of participants that participated in this study.
The Job Satisfaction Survey was used to analyze the outcome of job satisfaction. All of the questions on the survey were used to analyze the total score of job satisfaction amongst the employees. Descriptive statistics using Excel were utilized with this survey and included the mean and standard deviation for each subscale. Inferential statistics with a dependent $t$-test was also performed using Excel to analyze if there was a correlation between the pre and post-survey data with the implementation of the acuity tool. The degrees of freedom, $p$-value, $t$-statistic, and confidence interval was also investigated.

The Practice Environment Scale of the Nursing Work Index assessed the nursing perception of patient safety. Questions 1, 8, 9, 12, and 30 were analyzed to evaluate the impact of the acuity tool. Descriptive statistics, including the mean was calculated with Excel software. Inferential statistics using a dependent $t$-test was also performed to assess if there was a correlation between the pre and post-survey data. The degrees of freedom, $p$-value, $t$-statistic, and confidence interval was also investigated.

The Expanded Nursing Stress Scale assessed stress experienced by nursing staff. This study addressed Factor 6, which consisted of stress related to workload. Questions including 13, 41, 23, 32, 42, 45, 51, 55, and 57 were analyzed. The analysis of the descriptive statistics for the ENSS were also completed by analyzing the mean. Inferential statistics using a dependent $t$-test was utilized to assess a correlation of pre and post-survey data with the implementation of the acuity tool. The degrees of freedom, $p$-value, $t$-statistic, and confidence interval were calculated.

**Results**

The outcomes investigated in this study included job satisfaction, nursing stress, and nursing perception of patient safety. The outcomes were investigated before and after
a one-month implementation period of using Harper and McCully’s (2007) acuity tool. A summary of p values is found in Table 1. Raw mean scores are reported in Figure 2.

**Participants**

There were a total of 14 participants in the study. There were 14 pre-surveys and 10 post-surveys collected by the investigator. Throughout the duration of the study, there were four dropouts. Reasons participants dropped out of the study were related to personal and family medical leave and transferring to another unit.

The participant demographic survey was created by the investigator to help characterize the sample collected for the survey and was collected pre-intervention only.

There were 14 participants for pre-survey data collection. Of the 14 participants, six worked on the unit 1 year or less; four worked 2 to 5 years on the unit; 3 worked 6 to 10 years on the unit; and one participant worked on the unit for greater than 16 years. There were five participants that worked an average of 13 to 24 hours per week; one who worked 0 to 12 hours per week; seven who worked 25 to 36 hours per week; and one who worked greater than 37 hours per week. There were four night-shift participants and ten day-shift participants in the study. There were two nurses with greater than 16 years of experience; two nurses with 11 to 15 years of experience, three with 6 to 10 years experience; five nurses with 2 to 5 years of experience; and two nurses with 1 year or less of experience.

**Job Satisfaction**

The Job Satisfaction Survey was utilized to assess job satisfaction on the unit. A paired $t$-test was performed to determine if the acuity tool improved job satisfaction on the unit. The $t$-test showed no significant difference in the scores of the pre and post-
survey data (M = -6.7, t = -1.8212, df = 9, p = .10). A 95% confidence interval was calculated to be (-15.022293, 1.622293). The p value was greater than .05, therefore, no increased job satisfaction was noted with the implementation of a patient acuity tool in this pilot study.

**Nursing Stress**

The Expanded Nursing Stress Scale was used to analyze nursing stress before and after the use of the acuity tool. Pre and post-surveys were used to calculate a paired t-test to measure if a difference was made with the acuity tool. The paired t-test showed no significant difference in the scores of the pre and post-survey data (M = 2.8, t = 2.1574, df = 9, p = 0.059). A 95% confidence interval was calculated (-0.1359667, 5.7359667). No statistically significant difference in nursing stress was noted with the implementation of an acuity tool in this pilot study.

**Nursing Perception of Patient Safety**

The Practice Environment Scale of the Nursing Work Index was utilized to analyze nursing perception of patient safety before and after using the acuity tool for one month. A paired t-test was used to calculate the difference between the pre and post-surveys and was considered not significant (M = -0.3, t = -0.7093, df = 9, p = 0.49). A 95% confidence interval was calculated (-1.2567852, 0.6567852). The p value was also greater than .05, thus no statistical significance was noted.
Table 1

Summary of Statistical Results

<table>
<thead>
<tr>
<th></th>
<th>Mean Of the Difference</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENSS</td>
<td>2.8</td>
<td>-0.14 - 5.74</td>
<td>2.16</td>
<td>9</td>
<td>0.06</td>
</tr>
<tr>
<td>JSS</td>
<td>-6.7</td>
<td>-15.02 - 1.62</td>
<td>1.82</td>
<td>9</td>
<td>0.1</td>
</tr>
<tr>
<td>PES-NWI</td>
<td>-0.3</td>
<td>-1.26 - 0.66</td>
<td>-0.71</td>
<td>9</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Note. ENSS=Expanded Nursing Stress Survey; JSS=Job Satisfaction Survey; PES-NWI=Practice Environment Scale of the Nursing Work Index

Figure 2

Pre and Post-Survey Results

Discussion

There was not a statically significant change in scores for the PES-NWI, ENSS, or JSS after the acuity tool was implemented for one month. Although the results of the study did not show significance in improving job satisfaction, nursing stress, or
perception of patient safety between the pre and post-surveys, the use of the acuity tool could be further investigated.

Job satisfaction was one of the outcomes investigated in this study. When comparing the pre and post survey results, the difference of the means was -6.7. The before-treatment mean was lower than the mean after the implementation of the acuity tool. Job satisfaction scores did increase after the acuity tool was implemented, but $p > .05$, so the difference was not statistically significant. Job satisfaction is a very broad term with multiple contributing factors. Herzberg’s Theory states there are extrinsic and intrinsic factors that contribute to employee’s rating of job satisfaction (Hellbing, 2017). Both have to be addressed in order for job satisfaction to improve and many other factors play a role in improving job satisfaction.

Nursing stress was also measured. In this instance, the difference of the mean increased by 2.8. The post-survey mean was actually lower than the pre-survey mean. The results indicated that $p > .05$, so the results were not considered significant. Other factors during this time that could affect nursing stress include the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, furloughs, and reduced hours.

Nursing perception of patient safety was also measured using the PES-NWI survey. The difference of the means was -.3 between the pre and post survey data. The pre-survey means was slightly lower than the post-survey means. The change was very minimal, and $p > .05$ indicates that the change in means was not significant. The acuity tool was supposed to help improve patient safety by balancing nursing patient assignments. Georgiou et al. (2018) determined that the acuity tool helped clarify which
nurses would be best to care for a higher acuity patient, promoted teamwork, and reduced the number of patient falls. This study did not look at patient outcomes and focused strictly on nursing outcomes. During the implementation period, the census was abnormally low and elective surgeries were canceled. The acuity tool was not being utilized in the “normal” or typical environment of the medical-observation unit.

The implementation of the acuity tool was to hopefully help create a better balance with nursing assignments, which would lead to increased nursing job satisfaction. The acuity tool was implemented for one month; however, it did not make a significant impact on the outcomes means. Diclemente (2018) implemented an acuity tool for 8 weeks and portrayed significant results. Georgiou et al. (2018) implemented an acuity tool for 5 months with an improvement in care delivery and work environment. Firestone-Howard et al. (2017) also had improved satisfaction while implementing the acuity tool for 2 months. Satisfaction related to the acuity of patient assignment improved by 20.84%, but was also not seen as statistically significant (Firestone-Howard et al., 2017). Diclemente (2018) states that a longer implementation period would have been beneficial as well for their study to increase compliance and use of the tool. Extending the implementation period would have been beneficial in this study in order to help staff become more oriented to using the tool and improving consistency. A longer implementation period may also have more of an impact on the intended outcomes.

The charge nurses were instructed to keep a record of the number of acuity tools used. There were a total of 164 acuity tools filled out during the one-month implementation period. During the one-month period, there was opportunity for 206 acuity tools to be used. Nurses were not consistent with using the acuity tool. The acuity
tool was used approximately 79.6% of the time. Nurses would report forgetting to use the tool or the patient would go home shortly after shift change. Some nurses thought that the acuity tool was slightly confusing and were unsure of correct use. Diclemente (2018) ensured staff was using the acuity tool correctly by randomly auditing nurse’s completed acuity tools. Nurses were reeducated if the tool was filled out incorrectly to ensure complete understanding. The nurses in this study were not audited. Consistency and accuracy of the tool could have been better ensured if auditing was completed by the investigator. The study may have had different results if nurses were more consistent in filling out the acuity tool.

There are approximately 33 nurses who work on the unit and less than half participated in the study. Many did not respond to the recruitment email, but instead, approached the investigator while at work. The investigator works three 12 hour shifts limiting the number of people who had the opportunity to approach the investigator to volunteer themselves in the study. Selection bias of the sample was reduced by the investigator not asking participants to involve themselves in the study. Response bias was also diminished by ensuring confidentiality with all pre and post-survey data. A higher participation rate would have been beneficial to support results of the study.

Limitations

This study was implemented during the SARS-CoV-2 pandemic which could have affected implementation contributing to the results. Prior to implementation, the hospital census was very high. The hospital census decreased exponentially during the SARS-CoV-2 pandemic. The unit where the acuity tool was implemented occasionally closed due to low census. There were typically less than 10 patients at change of shift and
multiple staff were canceled every shift. Some staff only had opportunities of using the acuity tool a few times due to being canceled or floating to other units where help was needed.

The sample was fairly small and had the high dropout rate that contributed to limitations of the study. Less than half of the unit nurses participated in the study. It is difficult to assume the entire representation of nurses’ perceptions were captured during the study due to the small sample.

The hospital also implemented a labor pool during the SARS-CoV-2 pandemic which ensured one’s pay, paid time off (PTO) hours, and hours based on the employees full-time equivalent (FTE) hours. Staff’s hours were drastically reduced, forcing staff to take PTOs if they were not in the labor pool. Staff that were part of the labor pool appreciated the organization’s assistance, which could have affected job satisfaction and nursing stress scores. Job satisfaction and nursing stress could have also been affected for those staff members who were not part of the labor pool related to loss of pay and reduced hours.

**Plan for Sustainability**

Results of this study will be reported to unit management to determine ongoing plans for the implementation of an acuity tool. Sustainability for the acuity tool would be possible if the charge nurses continue to encourage use of the acuity tool and ask for an acuity number after obtaining report. Change in practice is often difficult initially and improved support is seen as time goes on. The consistency of using the acuity tool would most likely improve the longer it was implemented, due to comfortability of use and creation of habit amongst staff.
Implications for Practice

This study did not show significant improvements in job satisfaction, nursing stress, or perception of patient safety, however, Harper and McCully’s (2007) acuity tool was found useful in distributing acuity and workload equally amongst staff. A longer implementation period would be useful in determining and evaluating the effect of the acuity tool. There is a need for further pilot studies on other units before the organization would implement the acuity tool. Acuity tools have been shown to be beneficial in improving job satisfaction, improving care delivery, and the overall work environment (Diclemente, 2018; Firestone-Howard et al, 2017; Georgiou et al., 2018). An acuity tool not only helps the nurse, but promotes better quality of care for patients as well (Georgiou et al., 2018). There are multiple acuity tools that exist that staff may find more useful or beneficial for the unit. Other acuity tools could also be investigated to see if there is an improvement with consistency or ease of use amongst staff.

Conclusion

As the population continues to grow older, healthcare must continue to grow their workforce for the aging population. Older patients with multiple comorbidities require more complex care increasing nursing stress. High stress contributes to reduced job satisfaction leading to increased turnover rates. Acuity tools have been shown to be a helpful tool in order to help distribute and divide difficult nursing assignments. This study contributed to determining that additional research is needed on acuity tools in order to help balance nursing patient assignments and the effect it has on job satisfaction. Data for this study indicates that the acuity tool did affect job satisfaction, but it was not considered statistically significant. It can not be certain due to circumstances surrounding
the COVID-19 pandemic that the acuity tool was the sole perpetrator to improved satisfaction scores.

An organization’s ability to improve the overall work environment incorporates benefits for the organization, nurses, and patients. Job satisfaction, nursing stress, and perception of patient safety are just some factors that promote a positive work environment. An acuity tool can help provide insight to complexities of patient care that are important to factor in when assigning patients. Job satisfaction, nursing stress, and perception of patient safety are important outcomes to assess in order to promote better bedside staff retention, patient outcomes, and high-quality care.
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expanded nursing stress scale. Journal of Nursing Measurement, 8(2), 161-178. doi: 
10.1891/1061-3749.8.2.161

of the synergy model, in hematology to improve care delivery and the work 
doi:10.5737/236880762811316


Appendix A

Literature Review Search Trail

In medical surgical nurses on a medical observation unit at an acute care hospital, what is the effect of an acuity scale on a Practice Environment Scale of the Nursing Work Index, Job Satisfaction Survey, and Expanded Nursing Stress Scale over one month (30 days)?
## Appendix B

### Reference Matrix

#### PICOT Question

In medical surgical nurses on a medical-observation unit at an acute care hospital, what is the effect of an acuity tool on the Practice Environment Scale of the Nursing Work Index, Job Satisfaction Survey, and Expanded Nursing Stress Scale over one month (30 days)?

<table>
<thead>
<tr>
<th>Citation/Level of Evidence</th>
<th>Participant/ Setting/ Sample Size</th>
<th>Purpose/Background</th>
<th>Methods/Design &amp; Limitations</th>
<th>Findings/Summary/Strengths/ Weakness</th>
<th>Applicability to Own Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenudzie, Y., Georgiou, G., Ho, E., &amp; O'Sullivan, E. (2017). Adapting and applying the synergy model on an inpatient hematology unit. <em>Canadian Oncology Nursing Journal</em>, 27(4), 338-347. doi:10.5737/23688076274338342</td>
<td>Two focus groups, Staff nurses on a hematology unit, 568 nursing surveys, 73 Unit Leader surveys collected from January 13, 2014-March 31, 2014 over 73 shifts. Did not specify how many nurses took part in the survey. Did say that it was collected from only day nurses</td>
<td>The purpose was to examine the feasibility of adapting the Synergy Model to make nursing assignments in a hematology/oncology patient population and to evaluate its usefulness and impact. Tool based on four characteristics including participation in care, predictability, complexity, and stability.</td>
<td>Pilot study, Synergy Work Group formed. 568 nursing surveys, 73-unit leader surveys completed and analyzed using statistical measures to ascertain reliability, validity, consistency, and significance. Common themes extracted from focus groups, surveys, and interviews. Nurses also completed competency</td>
<td>94% of nurses felt the synergy scores reflected patient acuity accurately. Results indicate that Synergy model can be used and adapted to many different patient populations. The tool helps make more informed decisions about resource utilization and response to changes in patient acuity. The results demonstrate that the Synergy Model is feasible to use in an acute inpatient setting.</td>
<td>This article supports that an acuity tool can be used to help distribute acute patients and account for when more resources are needed to improve nursing care.</td>
</tr>
<tr>
<td>Citation/Level of Evidence</td>
<td>Participant/ Setting/ Sample Size</td>
<td>Purpose/Background</td>
<td>Methods/Design &amp; Limitations</td>
<td>Findings/Summary/Strengths/ Weakness</td>
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<tr>
<td>Connor, J. A., LaGrasta, C., Gauvreau, K., Porter, C., O’Brien, K., &amp; Hickey, P. A. (2019). Scaling the measurement of pediatric acuity using the complexity assessment and monitoring to ensure optimal outcomes (CAMEO II) tool. <em>Dimensions of Critical Care Nursing</em>, 38(3), 146–152. doi:10.1097/DCC.0000000000000356</td>
<td>Setting was in a large urban children’s hospital among 4 different ICUs that equaled 101 beds. Neonatal ICU is 24 beds preterm to 6 months of age. Medical surgical ICU 30 bed peds to adult who are medical and</td>
<td>The aims of this study were to scale and implement a standardized acuity measure of pediatric critical care nursing.</td>
<td>The study used a modified Delphi method. The technique is designed as a structured communication process that aims to achieve a consensus of opinion by using series of questionnaires or rounds to collect data from a panel of experts.</td>
<td>Implementation of acuity scale is feasible and provided an opportunity to make informed decisions in staffing models. Allowed for development of standardized measures to quantify the workload and acuity of pediatric nursing care. Weakness—further testing beyond content validity and internal reliability to inform further use of the CAMEO II across pediatric ICUs.</td>
<td>This article could be used because it supports the use of a tool to distribute pediatric patients among nurses to distribute workload and nursing care.</td>
</tr>
</tbody>
</table>
surgical patients. CICU 31 beds requiring cardiac care. Medicine ICU is a 16-bed unit who require critical care medical needs.

<table>
<thead>
<tr>
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<td>32 bed medical surgical/cancer care unit in a 210-bed community hospital in Illinois. Only 25 of 39 nurses completed pre survey so only those that completed pre survey were</td>
<td>The purpose of this project was to create, implement, and use a more objective standardized acuity tool in creating nurse-patient assignments to improve productivity and clinical outcomes.</td>
<td>Pre/Post Survey questions including nurses’ perceptions of quality of care being given, time spent with patients, satisfaction of patient assignments, and awareness of acuity model Data was collected</td>
<td>Pre project one staff member thought they never had fair assignments, six said some of the time, 16 said most of the time, and two reported all of the time. After the project was implemented no one responded that they never had fair assignments, two reported some of the time, and 13 said most of the time and three indicated all of the time. Another question asked if nurses spent enough time with their patients- presurvey indicated that one reported never, 12 some of the time, 11 most of the time, and one all of the time. Post survey no one reported</td>
<td>This article supports the need for a patient acuity tool to promote patient outcomes and the equal distribution of acute patients among nurses.</td>
</tr>
</tbody>
</table>
allowed to complete post survey.

over 8 weeks, every 2 weeks 15 tools were pulled at random to assess compliance, completion, and accuracy. Limitations- Little has been done on collecting qualitative data on nursing perspective on overload. Future projects should have longer survey period with one draft of a tool; improve staff participation-the project 8-week duration was a limitation.

ever, 9 said some of the time, 8 said most of the time and 1 said all of the time. Assignments geared towards assigning related to patient acuity should be expanded with the growing number of acutely ill patients requiring more intensive care.

Tool allowed to communicate patient needs as well as their own. Provided nurses with a method to quantify patient acuity and promote patient outcomes.

A lot of resistance with staff members on filling out survey and participating with tool. Included multiple drafts of the tool versus one final draft.

### Citation/Level of Evidence


Level VI, Evidence from a single descriptive or qualitative study. (Melnyk & Fineout-Overholt, 2019).

### Participant/Setting/Sample Size

Nurses who worked in direct patient care and or in supervisory functions at healthcare facilities in the state of São

### Purpose/Background

To assess the nurses’ perception on the practice, job satisfaction, safety climate and to verify correlations among these variables and the adequacy of material and human resources, as well as the intention to stay at the institution and in the profession.

### Methods/Design & Limitations

Descriptive study with a quantitative approach. Likert scale response was used. The Nursing Work Index-Revised was used to assess nurses’ perception on the work

### Findings/Summary/Strengths/Weakness

The intention to stay at current job was strongly correlated with nursing job satisfaction—the more satisfied the nurse the more likely the nurse was to stay at her job.

Strengths was that sample was calculated to ensure adequate sample size was met.

Weakness was the possibility of outdated

### Applicability to Own Research

This article supports this study by using the Nursing Work Index as a survey to assess for job satisfaction among the nurses.
Paulo and had worked for 6 months or more. Surveys sent out electronically in a randomized manner in 6 waves of 4000 electronic surveys. Email addresses could not be verified, representing a problem when determining the response rate, interpretation range of the results were restricted due to the cross-sectional design; email addresses may be outdated, nurses may not have seen the messages.

Variables on job satisfaction and safety climate were extracted from the Safety Attitudes Questionnaire. Findings did not show statistical significance but results did trend in a direction of improved nursing satisfaction. Findings did not show statistical significance but results did trend in a direction of improved nursing satisfaction.

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<tr>
<th>Citation/Level of Evidence</th>
<th>Participant/Setting/Sample Size</th>
<th>Purpose/Background</th>
<th>Methods/Design &amp; Limitations</th>
<th>Findings/Summary/Strengths/Weakness</th>
<th>Applicability to Own Research</th>
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<tbody>
<tr>
<td>Firestone-Howard, B., Zedreck Gonzalez, J. F., Dudjak, L. A., Dianxu Ren, &amp; Rader, S. (2017). The effects of implementing a patient acuity tool on nurse satisfaction in a pulmonary medicine unit. <em>Nursing</em></td>
<td>40-bed pulmonary</td>
<td>The purpose of the study was to measure the impact of a patient acuity tool on nurses’ satisfaction with patient environment.</td>
<td>Quality improvement project that</td>
<td>Findings did not show statistical significance but results did trend in a direction of improved nursing satisfaction</td>
<td>This article supports research for this study by</td>
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Level III, Evidence obtained from well-designed controlled trials without randomization, (Melnyk & Fineout-Overholt, 2019). | **EFFECT OF AN ACUITY TOOL ON JOB SATISFACTION** | **medicine unit at a 520-bed Magnet Designated hospital; 2-month period with 35 RNs** | **implemented the patient acuity tool and used a pre and post implementation survey to assess nurse satisfaction with the tool and ease of use. Limitations- lack of consistency in accurately scoring patient admissions and day shift was the only time period with a charge nurse dedicated to considering acuity while making patient assignments. Interrater reliability was not tested. PAT was also not embedded in electronic record resulting in duplication of documentation for nurses.** | **with patient acuity tool. RN satisfaction with patient assignment increased by 20.84%. Increased perception of fairness and equity of assignments. Patient acuity tool easy to use and has potential to increase nurse satisfaction and perception that patient assignments are equitable. Weakness-small sample, should consider blinding the pre and post survey results to measure whether individual perceptions improved, no control group or randomization.** | **using a tool closely related to the PICOT question and using a tool that could be used for this study.** |
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<td>Georgiou, G., Amenudzie, Y., Ho, E., &amp; O'Sullivan, E. (2018). Assessing the application of the synergy model, in hematology to improve care delivery and the work environment. <em>Canadian Oncology Nursing Journal</em>, 28(1), 13–21. doi:10.5737/236880762811316</td>
<td>Staff nurses on a hematology unit, 568 nursing surveys, 73 Unit Leader surveys collected from January 13, 2014-March 31, 2014 over 73 shifts. Did not specify how many nurses took part in the survey. Did say that it was collected from only day nurses</td>
<td>The purpose of the pilot project was to examine the adaptability, applicability, and effectiveness of the Synergy Model in a Canadian inpatient hematology/HSCT setting. It was done in two phases over 18 months. The first phase demonstrated that the Synergy Model could be adapted and implemented in a hematology population. This paper focuses on the second phase to evaluate the usefulness and impact of the model on the professional practice environment and care delivery.</td>
<td>Pre and post implementation survey using Synergy Work Environment Survey. Chi Square test was used to compare pre and post ratings for statistical significance. Nurse Assessment Assignment survey was also completed over 73-day shifts from January 13th, 2014-March 31st, 2014</td>
<td>Results regarding usefulness of Synergy Model reported better fit towards patient needs and nurse competency, more supported in practice, and patient assignment more manageable in terms of workload. Showed greater staff engagement and perceived improvement in quality of patient care. Reduction of safety occurrences including falls and laboratory errors. Model does show promise for improving care delivery and work environment by helping clarify who is best suited to provide care for patients. Weakness- Other interventions to improve work environment may have affected survey results. It is a pilot study.</td>
<td>This review supports the use of an acuity model to help improve the work environment.</td>
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<td>Harper K, &amp; McCully C. (2007). Acuity systems dialogue and patient classification system essentials. Nursing Administration Quarterly, 31(4), 284–299. Retrieved from <a href="https://journals.lww.com/naqjournal/pages/default.aspx">https://journals.lww.com/naqjournal/pages/default.aspx</a></td>
<td>Registered nurses on a medical surgical unit in a small rural hospital</td>
<td>The purpose of the paper is to review the literature on acuity tools, discuss the pros and cons of acuity tools, and highlight current available patient classification systems, and disseminate the data and description of the new Patient Classification System acuity tool. Limitations include needed education to complete the tool; has not yet been tested for computerized setting. Has not been tested in other settings and unsure of validity of tool for use in other nursing settings.</td>
<td>Two questionnaires distributed to nurses on a medical surgical unit evaluating the nurses’ opinions of the 5 concepts and the importance of establishing patient acuity for patient care. Limitations include needed education to complete the tool; has not yet been tested for computerized setting. Has not been tested in other settings and unsure of validity of tool for use in other nursing settings.</td>
<td>77% rated the tool effective in its ability to serve as a nurse’s voice about patient care. 64% believe the tool accurately reflects patient differences with staffing considerations. More than 55% believe categories represent the patient accurately. 58% believe tool can be completed in a timely manner. Tool can be used as an interdisciplinary communication tool. Includes patient education and holistic care. Comment section where each professional could offer input/thoughts on strengths and weaknesses of tool. A weakness of this study was that the course was required for students, so responses may not be quality data and the responses were not anonymous. Patient classification system has only been tested in 3 specialty settings, 2 medical surgical floors, and an overflow unit. Further studies would help with validity of the tool in other nursing settings.</td>
<td>This study was provided information on Patient classification system and acuity tools. The Acuity tool used in the article could be implemented in this study.</td>
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<td>Level VII, Expert opinion, Melnyk &amp; Fineout-Overholt, 2019)</td>
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<td>59 articles listed in the review</td>
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<td>To identify and extend knowledge of job satisfaction among nurses working in acute care hospitals and associated factors in the literature in the last 5 years.</td>
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<td>Literature review Search completed in PubMed, Web of Science, CINHAHL, Embase, PsychINFO and the Applied Social Sciences Index. Chinese databases also used CNKI, WanFang, SinoMed, and VIP Limitation includes that more research is needed to examine relationship</td>
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<td>Discusses importance of improving nursing satisfaction and how it correlates with patient perception of quality care. Nursing retention is a key factor to counteract the shortage and improve patient outcomes. There’s a correlation between job satisfaction and work environment. By improving nursing satisfaction, it will help ensure an adequate nursing workforce. Literature review follows purpose of the paper. Multiple search engines used to gather data. Did not identify what types of articles were included in the literature review.</td>
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<td>The article supports research in that nursing job satisfaction affects patients and healthcare outcomes and emphasizes the importance of nursing retention.</td>
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