Patient Safety Culture: Nurse Manager Safety Rounding and Influencing Characteristics

By

Teresa Anderson

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Director of Dissertation: Dr. Elaine Scott

Major Department: College of Nursing

In response to the growing awareness of multifaceted influences on patient safety culture, hospitals have employed a litany of tactics to reduce harmful events. The literature endorses executive safety rounding as being effective in promoting a positive patient safety culture. The influence of nurse manager safety rounding on patient safety culture is not well understood. The purpose of this study was to examine the influence of work systems, defined as nursing staff and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the hospital setting. The complex ever changing healthcare system requires nurse managers to know what is occurring at the front-line to anticipate potential failures and design better systems and processes.

This study utilized a cross-sectional design with data analysis of pre-existing survey data in nursing units within a large healthcare system in the southeastern U.S. The study participants voluntarily completed the Hospital Survey on Patient Safety Culture, which included three additional investigator questions related to work shift, manager contact and rounding. The most significant finding showed the nursing staff gave higher patient safety grades as the frequency of nurse manager safety rounding and contact frequency increased.

This study affirms there is strong evidence to support frequency of manager contact and safety rounding impacts patient safety culture. Furthermore, the joint effects of nurse manager

contact and safety rounding proved a synergistic effect on higher reporting of patient safety culture. Nurse managers can apply in practice open communication, feedback, and discussion about preventing errors with front-line staff to improve patient safety culture.

Patient Safety Culture: Nurse Manager Safety Rounding and Influencing Characteristics

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PATIENT SAFETY: NURSE MANAGER SAFETY ROUNDING AND INFLUENCING

CHARACTERISTICS

by

Teresa B. Anderson

APPROVED BY:

DIRECTOR OF
DISSERTATION: _____
                                          Elaine S. Scott, PhD, RN, NE-BC

COMMITTEE MEMBER: _____
                                          Melvin S. Swanson, PhD

COMMITTEE MEMBER: _____
                                          Joan Wynn, PhD, RN

COMMITTEE MEMBER: _____
                                          Daniel Drake, PhD, RN

COMMITTEE MEMBER: _____
                                          Donna Lake, PhD, RN, NEA-BC

CHAIR OF THE DEPARTMENT
OF GRADUATE NURSING SCIENCE: _____
                                          Elaine S. Scott, PhD, RN, NE-BC

DEAN OF THE
GRADUATE SCHOOL: _____
                                          Paul J. Gemperline, PhD

DEDICATION

I dedicate my dissertation to my loving and dedicated husband, Craig, for his constant support and encouragement. To my daughter, Hannah, for her sweet nature and never ending hugs. I love you both more than you will ever know. Thank you both for your understanding over the years to allow me to pursue my dream. To my grandparents, Durward and Ruth Tyus, who provided me with a strong foundation growing up that made me the person that I am today. To my brother, Jeff Bowman, who has always been there for me through all the twists and turns throughout our lives.

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Chapter 1: Introduction

Despite a decade of reports on medical errors and national prioritization of safety culture by hospitals, the number of deaths from medical errors continues to rise (Makary & Daniel, 2016; Sternberg, 2016). The United States (U.S.) News & World Report asserts that preventable medical errors are the third leading cause of death, resulting in as many as 250,000 U.S. deaths each year (Makary & Daniel, 2016; Sternberg, 2016). A common theme reported in the literature is that a poor patient safety culture may contribute to unsafe practices that lead to patient harm (Frankel et al., 2005; Frankel et al., 2008; Frankel, Leonard, & Denham, 2006; Morello et al., 2012; Singer & Tucker, 2014; Stavrianopoulos, 2012; Thomas, Sexton, Neilands, Frankel, & Helmreich, 2005; Weaver et al., 2013). Patient safety culture is the shared beliefs and practices of employees regarding the organization's willingness to detect and learn from errors (Institute of Medicine, Committee on Quality of Health Care in America [IOM], 2001). The purpose of this study is to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting.

Patient Safety Culture

Patient safety culture is complex in nature and multifaceted making it difficult to understand potential interdependencies (Morello et al., 2012; Sammer, Lykens, Singh, Mains, & Lackan, 2010; Stavrianopoulos, 2012; Weaver et al., 2013). Several reviews of the literature have been conducted to determine what influences patient safety culture (Kaufman & McCaughan, 2013; Sammer et al., 2010; Stavrianopoulos, 2012). In a recent study seven elements were identified that contribute to the culture of safety. These components were

classified as subcultures (Sammer et al., 2010), each exerting a different influence on patient safety. The subcultures included leadership, teamwork, learning, just, patient-centered, evidence-based, and communication (Sammer et al., 2010). Stavrianopoulos (2012) also identified these same cultures as influences on safety. In another study, communication was considered to be a dimension of leadership instead of a separate subculture (Kaufman & McCaughan, 2013).

Promoting a Patient Safety Culture

In response to the growing awareness of multifaceted influences on patient safety culture, hospitals have employed a litany of tactics to reduce harmful events. The implementation of safety rounding was one of the first strategies used by hospitals to develop a positive patient safety culture (Chua & Luna, 2014; Frankel, 2008; Frankel, Gandhi, & Bates, 2003; Frankel et al., 2005; Leonard & Frankel, 2012; Schwendimann et al., 2013; Singer & Tucker, 2014; Thomas et al., 2005). Safety rounding involves executive leaders conducting rounds with front-line nursing staff to listen to their patient safety concerns. There is extensive evidence to support the effectiveness of executive safety rounding (Ashton, 2014; Budrevics & O'Neill, 2005; Frankel, 2008; Frankel et al., 2006; Morello et al., 2012; Thomas et al., 2005; Sexton et al., 2014). Executive safety rounding promotes open communication with front-line staff and the development of a positive patient safety culture (Ashton, 2014; Budrevics & O'Neill, 2005; Chua & Luna, 2014; Frankel, 2008; Frankel et al., 2003; Frankel, et al., 2006; Morello et al., 2012; Singer & Tucker, 2014; Sexton et al., 2014; Thomas et al., 2005; Weaver et al., 2013).

Nurses, the largest front-line providers of patient care, are able to share their knowledge of patient care errors or system failures during safety rounding. While executive leader safety rounding provides a forum for sharing concerns, nurse managers are the leadership group with

the greatest ability to influence safety behaviors of staff. Nurse managers who engage regularly with front-line staff build trust and create opportunities for conversations about safety concerns. There is a growing emphasis on nurse managers becoming knowledgeable about patient care on their units so they can actively participate in addressing problems (Martin et al., 2014). A recent dissertation found nurse manager patient safety rounding was a safety behavior found to be associated with higher ratings of patient safety culture (Drake, 2015). Understanding the complex ever changing healthcare system requires that nurse managers know what is occurring at the front-line in order to anticipate potential failures and design better systems and processes. Logically, if executive safety rounding has shown a positive impact on patient safety, then nurse manager safety rounding could also have the potential to impact patient safety culture.

Statement of Problem

Over the last decade, many regulatory agencies such as The Joint Commission, Centers for Medicare and Medicaid Services (CMS), and Agency for Healthcare Research and Quality (AHRQ) have required health care systems to take steps to improve quality and safety of patient care in various ways (CMS, n.d.; Kachalia, Mello, Nallamothu, & Studdert, 2016). Despite this great focus on reducing hospital errors and creating a culture of patient safety, hospital error continues. Teasing out the influences that impact safety in the complex labyrinth of a hospital is challenging (Singer & Vogus, 2013). To date, the influence of nurse manager safety rounding on patient safety culture is not well understood. Visible nurse managers who round with staff may prompt staff to share deterrents to safety practice and improve perceptions of patient safety culture. The purpose of this study is to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager

safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting.

Background and Significance of the Problem

History of Safety Rounding

Initially, safety rounding was referred to as walkrounds but over time interchangeable terms have been used including manager safety rounding and/or leader rounding. Walkrounds were developed by the Institute for Healthcare Improvement (IHI) in the early 2000's to help organizations promote culture change, leadership and staff awareness of patient safety as well as identification of events thus improving patient safety culture (Frankel et al., 2003; Frankel, 2008). Walkrounds were designed to provide a structured opportunity for senior leaders to talk to front-line staff about concerns at the bedside to establish an environment of trust and openness with front-line staff and to encourage staff to answer questions honestly (Frankel et al., 2005; Martin et al., 2014). Research on safety rounding has primarily focused on senior leaders rounding (executives and/or vice presidents) with front-line staff rather than unit-level nurse managers.

Implementation and measurement of safety rounding has varied greatly across hospitals. Executive leaders have reported that safety rounding has been directly linked with improvements in the willingness of staff to speak up with safety concerns thus improving the overall patient safety culture (Rubin & Stone, 2010). During safety rounding, managers' words can greatly influence how front-line staff perceives what their organization values and rewards (Singer & Tucker, 2014). Safety rounding focusing on system improvement instead of blaming individuals for mistakes can create a positive safety culture (Chua & Luna, 2014; Schwendimann et al., 2013; Singer & Tucker, 2014; Taylor, Chuo, Figueroa-Altmann, DiTaranto, & Shaw, 2013).

Several studies have found executive safety rounding at the front-line correlates with better outcomes including decreasing patient harm, improvement of safety perceptions, and detecting potential events before they occur (Frankel et al., 2008; Thomas et al., 2005; Singer & Tucker, 2014).

Historical Significance

Leaders and front-line staff share accountability for patient safety. Public reporting of hospital quality data and pay for performance (P4P) are two strategies that have emerged over the last decade to improve the quality of healthcare (CMS, n.d.; Kachalia et al., 2016). Many healthcare reimbursement systems have moved to publicly reported P4P models, which offer financial incentives (reward and penalties) for hospitals to reduce harm to patients (CMS, n.d.; Kachalia et al., 2016). Given varied influences and external drivers on patient safety culture, nurse managers need to be actively involved in patient safety. In an environment of public reporting of quality performance, nurse managers need staff to feel comfortable discussing potential concerns during safety rounding to improve patient safety culture. To date, there is little known about the relationship between nurse manager safety rounding and patient safety culture.

<div align="center">Significance of Study</div>

Nurse managers are responsible for promoting a positive patient safety culture on their units. The focuses of quality and safety performance endeavors have increased, yet the examination of front-line nurse managers and their role in creating a culture of patient safety utilizing safety rounding is limited. Therefore, this research is vital to identify the potential impact of nurse manager safety rounding on the outcome of patient safety culture. The findings

of this study may provide healthcare organizations with an understanding of the influence of nurse manager safety rounding on patient safety culture.

Conceptual Framework

The Systems Engineering Initiative for Patient Safety (SEIPS) model is one of the few conceptual frameworks that include the complexity of variables that contribute to patient safety culture. The SEIPS model can be used to address systemic problems of patient safety by providing a framework for understanding structures, processes, and outcomes in healthcare, and their relationships (Carayon et al., 2006). In the SEIPS model, structure includes the components of the person, organization, technologies and tools, tasks, and environment (Carayon et al., 2006). Processes not only consist of how care is delivered and managed, but also how the care processes are influenced by the structure (Carayon et al., 2006). In the SEIPS model, outcomes include employee, organizational and patient outcomes (Carayon et al., 2006).

The SEIPS model further specifies the "system components that can contribute to causes and control of medical errors, adverse events, showing the nature of the interactions between the components, and their interactions can contribute to acceptable or unacceptable processes" (Carayon et al., 2006, p. 50). This model is consistent with the AHRQ's goal of supporting a culture of safety. The AHRQ has supported patient safety culture research to expand innovative methods with patient safety data, understanding the influence of working environments on patient safety culture including the sciences of human factors, and promoting the use of information technology to reduce medical errors (AHRQ, 2004).

The AHRQ research priorities and SEIPS model illustrate the multiplicity of factors that influence patient safety culture. The SEIPS model, evolved from Donabedian's work, refines these factors and clusters them into like categories of structure, process, and outcomes. As the

healthcare industry has become more focused on human factors associated with patient safety culture and multi-level interactions, the SEIPS 2.0 was introduced (Holden et al., 2013). The SEIPS model has been used to guide patient safety evaluation in multiple healthcare delivery settings. The expansion of the SEIPS model encouraged engagement in patient safety priorities particularly focusing on designing systems that produce safe patient care.

Hospital Survey on Patient Safety Culture

In 2004, AHRQ developed the Hospital Survey on Patient Safety Culture (HSOPSC) to provide health care organizations with a valid and widely used tool to measure safety culture at the unit and hospital level, as well as patient safety culture outcomes. The HSOPSC will be used to capture variables of interest found in the SEIPS model. The survey measures hospital staff opinions about patient safety issues, medical errors, and event reporting. The survey includes 42 items that measure 12 dimensions of patient safety culture including teamwork within units, supervisor/manager expectations, organizational learning, hospital manager support for patient safety, overall perception of safety, feedback and communication about error, communication openness, frequency of event reporting, teamwork across hospital units, staffing, hospital handoffs and transitions, and non-punitive response to errors. In addition, the survey includes two outcome questions that ask respondents to provide an overall patient safety grade for their work area/unit and the number of events they reported over the past 12 months. For this study, additional survey questions were designed to examine how frequently the nurse manager is engaged in conducting safety rounding, how frequently staff see their manager, and the shift the staff typically work.

Using the SEIPS 2.0 model, a research model for this specific study was designed and illustrated in Figure 1.
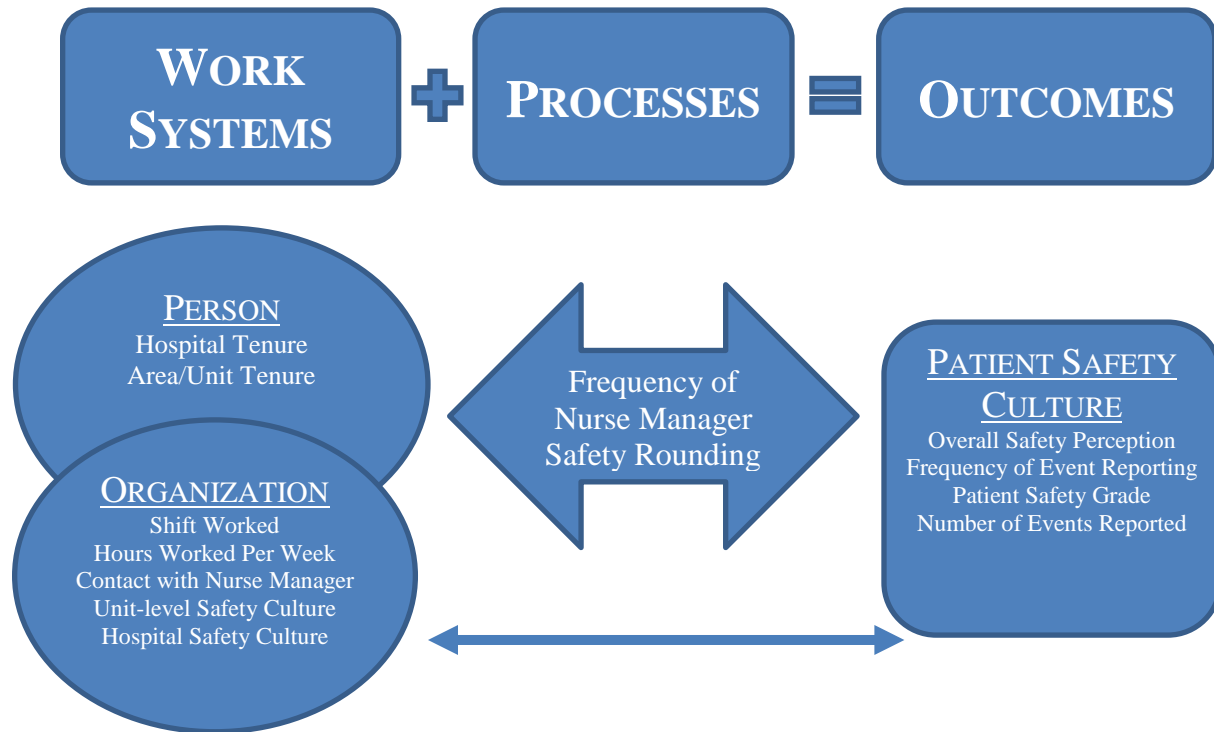
Figure 1: Proposed research model within SEIPS 2.0 Model (Holden et al., 2013).

Work Systems

This research study considers both person and the organization as elements of the work systems within a hospital. Work systems, comprised of the noted characteristics of the person(s) and organizations interact simultaneously to shape performance processes and outcomes (Holden et al., 2013). The work systems affect both the work and processes, which in turn influence the outcomes. Changes to the work systems depend on how the change or improvement is designed and implemented and may negatively or positively affect the work and process and the consequent outcomes (Carayon et al., 2006).

Person. In the SEIPS model, the person (healthcare provider) is at the center of the work system (Carayon et al., 2006). More specifically, in this study the characteristics of the nursing staff, how long they have worked on the unit and within the hospital, are viewed as a possible

influence on nurse manager safety rounding. Units with more novice staff may receive more

frequent rounding compared to those with more expert staff. Several studies have reported

greater years of nursing staff experience positively influences patient safety culture perceptions

(Ammouri et al., 2014; El-Jardali, Dimassi, Jamal, Jaafar, & Hemadeh, 2011; Khater, Akhu-

Zaheya, AL-Mahasneh, & Khater, 2014).

Organization. In the work systems, the organization refers to structure external to a

person, although often put into place by people within the organization. This may include

characteristics of work schedules, assignments, culture, management systems, and training

(Carayon et al., 2006; Holden et al., 2013). The components examined within the organization in

this study are shift worked, hours worked per week, contact with nurse manager, and perceptions

of unit-level safety culture and hospital-level safety culture.

Processes. SEIPS 2.0 differentiates work activities by who is actively engaged in

performing the processes. To be engaged is to be an active agent who performs some or all of a

health-related activity (Holden et al., 2013). While there are many processes that may influence

patient safety culture, in this study, nurse manager safety rounding is the process of interest. One

aspect of the research will be to examine the relationship between work system variables and the

process of nurse manager safety rounding.

Outcomes. Outcomes in this model are defined as states or conditions resulting from

work processes. Outcomes can be distinguished given that some outcomes may be the

immediate result of work processes while others are further down the causal chain and may only

emerge over time (Holden et al., 2013). In this study the outcome is patient safety culture.

Patient safety culture is measured in this study as overall perception of patient safety, frequency

of event reporting, patient safety grade, and number of events reported. These specific outcome variables are captured in the AHRQ HSOPSC.

Purpose Statement

The purpose of this study is to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting. Understanding these relationships could improve patient outcomes.

Research Questions

Specific questions that will be addressed in this study are:

(1) What are the characteristics of the study sample with regard to individual characteristics (hospital tenure and work area/unit tenure), organizational characteristics (shift worked, hours worked per week, contact with nurse manager, unit-level safety dimensions, hospital-wide safety dimensions), process variable of frequency of nurse manager safety rounding, and patient safety culture outcome variables (overall perception of safety, frequency of event reporting, patient safety grade, number of events reported)?

(2) How does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and the hospital patient safety culture dimensions, and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

(3) At the unit level, how does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and unit-level patient safety culture dimensions and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

Delimitations

The following are delimitations for this study.

Time of the study: Survey conducted March 14th, 2016 through April 4th, 2016.

Location of the study: Large regional healthcare system in southeastern United States which includes one academic medical center and six community hospitals.

Sample of the study: Voluntary participants employed at healthcare system who completed the HSOPSC during time of study.

Participants: Inpatient nursing units (medicine, surgery, obstetrics, pediatrics, intensive care units, psychiatry, rehabilitation) and outpatient units (emergency department and observation) within the regional healthcare system.

Definition of Terms

For the purpose of this study, the following terms are defined as:

Patient safety culture is the shared beliefs and practices of the organization's members regarding the organization's willingness to detect and learn from errors (IOM, 2001). In this study patient safety culture is measured as overall perception of safety, frequency of event reporting, patient safety grade, and number of events reported from the HSOPSC.

Nurse manager in this study is a registered nurse who is responsible for the daily operations of one or more hospital units.

Manager safety rounding in this study is an intentional method discussing patient safety concerns with front-line staff.

Frequency of manager safety rounding is defined in this study by how often the manager conducts daily safety rounding.

Inpatient units are defined in this study as medicine, surgery, obstetrics, pediatrics, intensive care units, psychiatry, and rehabilitation.

Outpatient units are defined in this study as emergency department units and observation units.

Individual characteristics are defined as hospital tenure and work area/unit tenure.

Hospital tenure in this study is defined as how long the employee has worked in current hospital area/unit.

Unit/Area tenure is defined as the department or clinical area of the hospital where the employee spends most of their work time. In this study unit/area tenure is defined as how long has the staff worked in their current work area/unit.

Organizational characteristics are defined as shift worked, hours worked per week, contact with nurse manager, unit-level safety dimensions, and hospital-wide safety dimensions.

Shift worked is defined as what shift the employee typically works. For this study, shift worked is defined by day, night, both day and night, or weekends.

Hours worked per week is defined as the average number of hours typically worked in the hospital.

Frequency of manager contact is defined in this study by how often the employee sees their supervisor/manager on a typical workday.

Outcomes variables in this study are defined as overall perception of safety, frequency of event reporting, patient safety grade, and number of events reported.

Overall perception of safety in this study is defined as processes and safety at the unit level as measured by several questions in the survey. Overall perception of safety is reported by strongly disagree, disagree, neither agree or disagree, agree, and strongly agree.

Frequency of events reported in this study is defined as when mistakes happen, how often does the staff member report them. Frequency of events is reported by never, rarely, sometimes, most of the time, and always.

Patient safety grade is defined as the overall grade on patient safety in the unit/area worked. Patient safety grade in this study is defined as A (Excellent), B (Very Good), C (Acceptable), D (Poor), and E (Failing).

Number of events reported in this study is defined as how many event reports have been filled out and submitted in the past 12 months. The categories are no event reports, 1 to 2 event reports, 3 to 5 event reports, 6 to 10 event reports, 11 to 20 event reports, and 21 event reports or more.

Succeeding Chapters

The remainder of the study is organized into five chapters, a bibliography, and appendices. Chapter two, Review of the Literature, consists of review of the relevant literature of the key concepts of the study. A synthesis of the literature and the emerging themes will be presented. Chapter three, Research Design and Methods, presents the study design, rationale for instrument selection and methods for data collection, and data analysis of the study. Chapter

four, Results, summarizes the data collected, statistical treatment of the data, and the summary of findings. Chapter five, Summary, Findings, and Implications, presents the conclusions that can be drawn from the research questions, practice implications and recommendations for future research.

Chapter II: Review of the Literature

The purpose of this study is to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting. This chapter is a review of the relevant literature on the key concepts including emerging themes, what is known, and the gaps in the literature. These key concepts and their relevance to this study will be discussed in detail. Lastly, a conclusion will be provided. For the purposes of this study, the major concepts that will be used are work systems including person(s) and organizational characteristics, safety rounding, and patient safety culture outcomes.

Work Systems and Patient Safety: Person and Organizational Components

Person Components of Patient Safety

The level of experience of the nursing staff is an important influence on patient safety culture. In several recent studies using the HSOPSC, nurses who had more years of experience had a higher overall perception of patient safety (Ammouri et al., 2014; El-Jardali et al., 2011; Khater et al., 2014). Conversely, in another study greater years of experience were associated with a steady decrease in overall perceptions of patient safety (El-Jardali, Sheikh, Garcia, Jamal, & Abdo, 2014). Although in this same study, greater years of experience were associated with a higher patient safety grade. Respondents who had six to twenty years of experience had greater odds of reporting a higher patient safety grade (El-Jardali et al., 2014). One study found that the frequency of event reporting also increased as the years of experience increased (El-Jardali et al., 2011).

Ammouri et al. (2014) found there was no significant relationship with the nurses' perception of overall patient safety culture related to demographic characteristics including age,

gender, degree, and position at hospital and work unit. While hospital tenure was correlated to several of the outcomes of patient safety culture, area/unit tenure was not measured in any of the studies.

Organizational Components of Patient Safety

In this study, the organizational components related to patient safety culture are typical shift worked by staff, hours worked per week, contact with the nurse manager, perception of the unit and hospital level patient safety culture. Several studies using the HSOPSC have found nurses who worked more weekly hours had a lower perception of patient safety culture compared with nurses who work less weekly hours (El-Jardali et al., 2014; Khater et al., 2014). In the El-Jardali et al. (2014) study, staff reported working longer hours than they felt was best for patient safety.

Many studies using the HSOPSC, note teamwork at the unit-level is highly scored from staff indicating strength in patient safety culture (Chen & Li, 2010; El-Jardali et al., 2014; Sammer et al., 2010; Singer & Tucker, 2014; Top & Tekingunduz, 2014; Wagner, Smits, Sorra, & Huang, 2013). The dimension of teamwork within the unit indicates that nursing staff in the same work area/unit support each other, work well together, respect each other, and help each other out when the unit is busy. A patient safety culture cross-sectional study of 741 hospitals in the Netherlands, Taiwan, and the U.S., using data from the HSOPSC, discovered the dimension of teamwork within units had the highest percentage of positive responses by staff (Wagner et al., 2013). Another study in five Belgian hospitals using the HSOPSC showed similar results with teamwork within units. Teamwork within units received the highest positive responses, although there was some variation across the different Belgian hospitals (Hellings, Schrooten, Klazinga, & Vleugela, 2007). Teamwork within the unit was also the highest scoring dimension

in a Jordanian cross-sectional study using the HSOPSC (Khater et al., 2014). In another cross-sectional study using the HSOPSC in 28 units across 20 hospitals in the Netherlands, teamwork within units was also the highest scoring dimension (Smits, Wagner, Spreeuwenberg, Van der Wal, & Groenewegen, 2009).

In a Turkish public hospital also using the HSOPSC, the dimension of teamwork within units had the highest correlation with organizational learning dimension of patient safety (Top & Tekingunduz, 2014). In this same study, the lowest scoring dimension in all three countries was handoffs and transitions indicating staff felt important patient information was often lost during shift changes or exchanges across hospital units (Wagner et al., 2013). In an earlier study using the HSOPSC across 42 hospitals in Taiwan, handoffs and transitions was also the lowest scoring dimension (Chen & Li, 2010).

Processes and Patient Safety Culture: Safety Rounding and Themes

Safety rounding has been examined in a variety of ways. Many studies on safety rounding use qualitative methods, such as structured and unstructured interviews with staff, to obtain information on the effectiveness of safety rounding and identification of concerns. In addition, there are many published papers on safety rounding implementation, challenges of safety rounding, and lessons learned to provide organizations with insight. In a literature review to determine the effectiveness of patient safety culture strategies, it was noted that there is evidence to support patient safety rounding (Morello et al., 2012). In another literature review to identify and assess interventions to promote patient safety culture, one of the best interventions noted was executive engagement in patient safety rounding (Weaver et al., 2013). One literature review on the effectiveness of patient safety rounding concluded a majority of hospitals reported that safety rounding had a positive impact on the organization and the potential to improve

patient safety culture (Singer & Tucker, 2014). In a recent dissertation paper, it was found that

nursing staff who indicated patient safety rounding occurred most of the time or always had

significantly higher mean scores on all patient safety culture dimensions (Drake, 2015). Several

studies have found better outcomes including decreasing patient harm, improving safety

perceptions, and detecting error before it occurs with executive safety rounding (Frankel et al.,

2008; Thomas et al., 2005). It is also well supported that safety rounding provides an

opportunity for front-line staff to have face-to-face contact with leaders to communicate patient

safety concerns (Ashton, 2014; Frankel, 2008; Frankel et al., 2006; Martin et al., 2014; Thomas

et al., 2005; Sexton et al., 2014; Singer & Tucker, 2014).

Safety Rounding: Sharing Staff Concerns

One of the first discoveries from conducting patient safety rounding was the

overwhelming response from front-line staff in identification of safety concerns leading to better

patient safety culture outcomes (Ashton, 2014; Budrevics & O'Neill, 2005; Frankel, 2008;

Frankel et al., 2003; Frankel et al., 2005; Martin et al., 2014; Rubin & Stone, 2010; Saladino,

Pickett, Mall, & Champagne, 2013; Thomas et al., 2005). Several of the first studies on

executive safety rounds collected data on the number of safety rounds conducted, concerns

identified on safety rounding, and length of time spent safety rounding. In the first study by

Frankel et al. (2003), data was collected on safety rounding regarding actions taken as well as

lessons learned. In this study a total of 47 safety rounds were conducted with 432 concerns

identified and entered into a database and classified according to contributing factors by

Vincent's four categories of teamwork, hardware, individual and patient components. Each

category was then categorized by theme with subcomponents. The most common contributing

factor reported was work environment, which included equipment, supplies, and staffing

(Frankel et al., 2003). Later, in another Frankel et al. (2005) study, an average of 12 concerns from front-line staff were collected on executive safety rounding from four hospitals. In a follow-up study utilizing a spreadsheet to track data from safety rounding, Frankel et al. (2008) identified the primary patient safety concerns were equipment, communication, staffing, and workload. This study identified a need to implement consistent robust tracking mechanisms to ensure front-line staff recognized that concerns were acknowledged and addressed. Several other studies revealed similar themes with identification of equipment or facility concerns (Budrevics & O'Neill, 2005). These studies recognized the areas identified by front-line staff to be addressed by executive leaders. Conversely, in a recent qualitative study interviews were conducted to explore the views and experiences of patient safety rounding. This study found that during patient safety rounding executive leaders who dismiss equipment or other facility issues from front-line staff increase distrust and frustration of front-line staff (Rotteau, Shojania, & Webster, 2014). Singer & Tucker (2014) literature review also recognized that follow up with front-line staff on issues identified was essential to building relationships.

In a descriptive pre and post study in a 22-bed critical care unit, a formalized safety program was implemented over a 6-month time period, with a goal to prioritize and resolve safety issues through executive safety rounding. The study used the Safety Attitudes Questionnaire (SAQ) to measure staff perceptions of safety climate in work environment and number of identified safety issues and resolution of those safety issues. There was no statistically significant difference in safety climate. Staff reported 77 safety issues and 57% of safety issues recognized during safety rounding were resolved (Saladino et al., 2013). The safety issues were similar to other studies and related to equipment, communication, and staffing. The key successes discussed were the follow up of identified safety issues, creation of a cohesive safe

environment and safety issues that remained active were placed on a board display for front-line staff to see (Saladino et al., 2013).

Safety Rounding: Safety Climate Scores

Several studies have examined the influence of rounding on safety climate scores. Safety climate is referred to as values, beliefs, or norms at one point in time (Frankel et al., 2008; Sammer et al., 2010; Schwendimann et al., 2013; Thomas et al., 2005). Many of the studies examined or measured safety climate as one component of patient safety culture. Thomas et al. (2005) conducted one of the few studies that examined the effectiveness of executive leadership safety rounding and safety climate scores on providers. The study was a randomized before and after study of safety rounding for 23 clinical units in a tertiary care teaching hospital using a safety climate survey adapted from the aviation survey for healthcare. Findings showed there was a positive effect on the safety climate of nurses who participated in safety rounding ($p =$ 0.02). Although there was no effect on patient safety climate scores reported by physicians and the nurses who did not participate (Thomas et al., 2005). Frankel et. al (2008) had similar findings on a prospective study using the SAQ on the impact of executive safety rounding on front-line staff and safety climate. Results included units who had safety rounding and improved safety climate scores from 62% to 77% ($p =$ 0.03) in hospital A, and in hospital B safety climate scores improved from 46% at baseline to 56% ($p =$ 0.06) (Frankel et al., 2008).

A retrospective cross-sectional study conducted across 49 hospitals using the SAQ, Schwendimann et al., (2013) found a relationship between executive safety rounding and safety climate, patient safety risk reduction, and safety round feedback. The higher number of executive rounds conducted, the higher the safety climate scores were at the unit-level. A cross-sectional survey study using the SAQ and HSOPSC examined patient safety culture and the

association between executive patient safety rounding, patient safety culture and caregiver burnout across 44 neonatal intensive care units (NICUs) and found an association with safety rounding, better overall perception of safety culture, and lower burnout rates (Sexton et al., 2014).

Safety Rounding: Vital Components

Several themes regarding safety rounding emerged in the literature. Components contributing to effective safety rounding are intensity or exposure of safety rounding, engagement, willingness of staff to talk, and ability to conduct follow up.

Intensity or Exposure of Safety Rounding. Effective safety rounding must be consistent in frequency and with as many staff as possible to be beneficial to adequately identify patient safety concerns (Singer & Tucker, 2014). Although, several articles remarked on the difficulty of scheduling and sustaining safety rounding and the need for organizational support in order to ensure long-term commitment for patient safety culture (Frankel, 2008; Martin et al., 2014). Managers who plan and schedule patient safety rounding in advance are more likely to conduct rounding (Ashton, 2014). Managers need to be visible and conduct safety rounding to understand what concerns there are related to patient safety.

Engagement. Managers and executives who listen actively to front-line staff gain an understanding of concerns at the bedside (Frankel et al., 2008; Singer & Tucker, 2014). Studies have reported that when executives do not listen or portray themselves as knowing more than the front-line staff they come across as non-caring and controlling thus restricting the conversation (Martin et al., 2014; Rotteau et al., 2014; Singer & Tucker, 2014). In a qualitative study on safety rounding where data was collected on 82 semi-structured interviews, it was noted that engaged executives are focused on patient safety (Martin et al., 2014). Rotteau et al. (2014)

qualitative study found similar findings that executives must be willing to engage in front-line patient safety concern even if the executive thinks the concern is small. Successful managers understand their engagement is essential in conducting patient safety rounding.

Willingness of staff to talk. Managers are more likely to discover patient safety concerns if staff are willing to freely and openly discuss concerns without fear of a punitive response (Boysen, 2013; Singer & Tucker, 2014). Drake (2015) found staff reported they were more comfortable speaking up about safety concerns when managers conducted patient safety rounding most of the time with staff. To capture near misses and adverse events, staff must feel safe to talk about their patient safety concerns. When conducting rounds, managers need to listen attentively to gain understanding of issues at the front-line in order to connect with staff (Rubin & Stone, 2010; Singer & Tucker, 2014). Front-line staff are more likely to discuss concerns with their managers if the environment is safe and non-punitive.

Ability of Manager to Conduct Follow Up. One of the most important components of manager patient safety rounding is follow up. Front-line staff want to know that their patient safety concerns voiced were addressed in a timely manner (Gandhi, Graydon-Bake, Huber, Whittermore, & Gustafson, 2005). Many hospitals have implemented tracking databases to assist managers and executives with following up on patient safety concerns in an adequate time frame (Singer & Tucker, 2014). As patient concerns identified are resolved, managers follow up with staff to celebrate successes.

Safety Round Summary and Gaps

Conducting patient safety rounding is an important driver of creating and maintaining a healthcare system that strives to prevent harmful events (Frankel, 2008; Taylor et al., 2013). Safety rounding allows the manager an opportunity to interact with the front-line staff to discuss

patient safety concerns. A lack of consistency in these habits could cause small failures, that when undetected, lead to complex failures resulting in harm to patients. Most of the reported studies involved executive management rounding. There are gaps in the literature regarding the impact of nurse manager safety rounding on patient safety culture. Bridging these gaps in order to improve patient safety in hospitals could benefit patients and managers, as well as the organization in improving patient safety culture outcomes.

<center>**Patient Safety Culture: Outcomes**</center>

In an effort to evaluate the outcome of patient safety culture, many hospitals use the AHRQ HSOPSC. In this study, patient safety culture is measured by the HSOPSC outcomes of overall perception of patient safety, patient safety grade, frequency of event reporting, and number of events reported. As noted in the SEIPS model, many different dimensions can influence these outcomes. Research reporting these outcomes will be discussed.

Overall Perception of Patient Safety

Many studies have examined the outcome of overall perception of safety culture. The overall perception of patient safety scores how staff perceives patient safety at the unit-level. A study found higher scores on hospital handoffs and transitions were linked to a greater likelihood of better overall perception of safety and higher patient safety grade (El-Jardali et al., 2014). In the Wagner et al. (2013) cross-sectional study using the HSOPSC, the weakest dimension across three countries (Netherlands, U.S., and Taiwan) was handoffs and transitions. Top & Tekingunduz (2014) found six significant predictors of overall perceptions of safety including organizational learning-continuous improvement, communication openness, teamwork within units, frequency of event reporting, and hospital unit-level patient safety grade.

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A cross-sectional study of 2120 respondents in a Swedish hospital system showed the overall perception of patient safety differed between the manager and staff on a majority of dimensions measured using the HSOPSC. Respondents with management positions score a higher positive perception of patient safety culture (Nordin, Theander, Wide-Larsson, & Nordstrom, 2013). These findings suggest that managers are disconnected or unaware of the safety concerns perceived by front-line staff (Nordin et al., 2013).

Patient Safety Grade

Patient safety grade allows staff to rate their unit according to a unit grade. In a study, using the HSOPSC, with a total of 2,572 (overall response rate of 85.7%), 49% of respondents gave their hospital a B (very good) patient safety grade (El-Jardali et al., 2014). In this same study, the only dimension that was found not to be significantly associated with the patient safety grade was hospital handoffs and transitions (El-Jardali et al., 2014). In another cross-sectional study across three countries, 73% of respondents within U.S. hospitals gave their work area/unit a patient safety grade of A (excellent) or B (very good), 63% of respondents in the Netherlands gave a grade of C (acceptable), and 51% of respondents in Taiwan gave a grade of C (acceptable) (Wagner et al., 2013).

Several studies have evaluated predictors of patient safety grade of the hospital unit. In two studies, four significant predictors of hospital unit patient safety grade were found which included feedback and communication about error, organizational learning-continuous improvement, hospital management support for patient safety, and supervisor/manager expectations and actions promoting safety (El-Jardali et al., 2011; Top & Tekingunduz, 2014). However, El- Jardali et al., (2011) reported the lowest predictor of perception of patient safety was teamwork across hospital units. Top & Tekingunduz, (2014) did not observe that teamwork

across units was a significant predictor of the overall perception of safety and patient safety grade.

Frequency of Event Reporting

Patient safety is generally based on a systems approach that preventable errors are caused by the interaction between imperfectly designed systems (Etchells, Lester, Morgan, & Johnson, 2005). An important factor for staff is the concept of non-punitive response to error reporting which encourages staff to voluntarily report errors or events by removing the fear of punishment (Etchells et al., 2005). In order to learn from mistakes, front-line staff need to know it is safe to discuss their mistakes and near misses with leaders (Leonard & Frankel, 2012).

In a study, within the dimension of frequency of events reported, the strongest correlation was feedback and communication about error (El-Jardali et al., 2014). Khater et al. (2014) study found the highest scoring outcome variable was frequency of reporting events (69.2%). Although in this same study it was found that staff believe that their mistakes will be held against them and concerned that mistakes made are placed in their personnel file (Khater et al., 2014). Several studies have found that overall patient safety culture is significantly associated with the frequency of events reported, more teamwork within units and more feedback about errors (Ammouri et al., 2014; El-Jardali et al., 2014). Non-punitive response to error is the lowest scoring dimension in many studies using the HSOPSC (Hellings et al., 2007; Khater et al., 2014). A presence of fear may exist with staff that reporting errors may be held against them.

Number of Events Reported

Higher scores on communication and openness, feedback and communication about error, and non-punitive response to error were associated with lower number of events reported in work area/unit (El-Jardali et al., 2014). In another study, over half the sampled respondents

reported no events (52.7%), roughly a third (28.7%) of staff reported one to two events, and 13% reported three to five events (El-Jardali et al., 2014). The number of events reported has not been well published.

Conclusion

The ultimate goal in a patient safety culture is to reduce harm to patients. Nurse managers can help their team establish a culture of safety at the unit level, empowering nurses to be the first line of defense against patient harm (Sammer & James, 2011). It has been recognized that providing the highest quality of care is dependent upon a strong safety culture foundation at the unit level (Smits et al., 2009). There may be an association with the process of patient safety rounding by nurse managers with the conceptualization that patient safety rounding is an opportunity to discover concerns, openly discuss with front-line staff and improve patient safety culture together (Sexton et al., 2014). Outcomes from this study may help explain the influence of work systems on the process of nurse manager safety rounding, and outcomes of patient safety culture. Understanding these relationships could lead to interventions that improve the patient safety culture outcomes on hospital units.

Chapter III: Research Design and Methods

This chapter outlines the research design and methods that were utilized in this study to examine the influence of work systems, defined as nursing staff and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting. The proposed research design, population and sample, setting, instruments, measurements, data collection and data analysis procedure will be discussed.

Research Design

This study is a secondary analysis of the 2016 HSOPSC, with investigator added questions, administered to hospital nursing staff within tertiary and community hospitals in a large healthcare system in the southeastern U.S. Cross-sectional design allowed the comparison of the research study variables at the same time.

Population and Sample

The study used data collected from a seven hospital regional health care system in the southeastern U.S. The regional healthcare system serves 29 counties and over 1.4 million people. The regional health care system is compromised of one tertiary academic medical center with over 750 beds and six community hospitals. The regional health care system employs approximately 14,000 employees. The study participants completed a voluntary survey, the HSOPSC, between March 14th, 2016 and April 4th, 2016. Employed hospital staff were notified of the opportunity to complete HSOPSC through several communication avenues, which included hospital wide email notification, announcement on intranet, fliers, meetings, and/or face-to-face communication from supervisor/manager.

The sample included 53 units within the academic medical center and community hospitals. The total survey response rate for all the hospitals in this study was 70% for full time employees. The total sample size included 1487 participants. Inclusion criteria included participants who completed the survey on inpatient nursing units (medicine, surgery, obstetrics, pediatrics, intensive care units, psychiatry, rehabilitation) and outpatient units (emergency department and observation) within the regional healthcare system. The study sample included registered nurses, nursing assistants, and unit secretaries who work on the units selected in the inclusion criteria. Pharmacy, laboratory, radiology, anesthesiology, outpatient areas, or other areas not classified in selected nursing areas listed were excluded from the sample. Other disciplines in the hospital were not included as well other designated staff that completed the survey but were not in units selected. The study sample included only staff who report to a nurse manager because nurse manager safety rounding is a key concept in the study.

Study Approval

The principal investigator received Institutional Review Board (IRB) approval prior to beginning the data analysis and was granted exempt status (Appendix A). The study utilized de-identified data set of pre-exiting survey and demographic data. The primary investigator received pre-existing data in which the name of the nursing unit was de-identified. Permission was obtained from the nurse executives at each of the hospitals included in the study.

Instrument

The AHRQ HSOPSC was utilized in this study (Appendix B). The AHRQ sponsored development of the HSOPSC to determine patient safety culture in hospitals. In 2004, the AHRQ released the HSOPSC instrument after rigorous piloting examining item statistics and the

reliability and validity of safety culture subscales (AHRQ, 2004). The final HSOPSC includes

12 dimensions with 42 items, 2 outcomes dimensions as well as demographic information.

Survey Development

The HSOPSC was developed by several researchers who conducted a review of the

literature on safety management and accidents in several areas including nuclear and

manufacturing industries, employee health and safety, safety and organizational climate and

culture, and medical error and event reporting. The researchers also reviewed current published

and unpublished climate and culture instruments (Sorra & Nieva, 2004). Two existing health

care safety culture surveys were used for psychometric analysis. One developed and

administered by Westat for the Medical Event Reporting System for Transfusion Medicine

(MERS-TM), which consisted of a 100-item safety culture data set of 945 staff from 53 hospital

transfusion services across the U.S. and Canada. The second, by the Veterans Heath

Administration (VHA), which consisted of a 120-item data set gathered from 6,161 participants

from 160 analyses conducted by VHA hospitals nationwide. The data sets were analyzed

independently and the psychometric analyses were written as specialized reports that had

significant influence on the safety culture dimensions and types of items that were included in

the pilot version of the HSOPSC (Sorra & Nieva, 2004). Cognitive testing was conducted to

better assess the respondents comprehension and interpretation of the terms used and the items

being asked to determine how they arrived at their answers in order to identify potential

problems with the items and/or survey instructions. The cognitive interviews were conducted

with a variety of healthcare workers from several U.S. hospitals and included nurse managers,

nurses, physicians, dieticians, etc. Based on findings, additional changes were made to the

survey dimensions resulting in amending the pilot survey to 79 items measuring 14 dimensions

of safety culture. The pilot primarily contained 5-point Likert response scales of agreement (1 =

"Strongly Disagree" to "Strongly Agree") or frequency ("Never" to "Always"). The pilot

included two single item outcome measures used as validity checks and 14 multiple item

dimensions of patient safety. The pilot survey was administered to 21 hospitals in the U.S. The

sample of the hospitals varied by geographic region, hospital size, teaching or non-teaching

hospital to ensure a diverse sample. A total of 4,983 surveys were administered in the 21

hospitals with a 29% response rate (1,437 responses). The survey administration method varied

hospital to hospital from random to purposive sampling. The average response rate within each

hospital was 37% and the average number of respondents per hospital was 68. To maintain

confidentiality, the survey contained demographic questions including gender, direct or indirect

contact with patients, age, years of service, and tenure in specific hospital or work area.

Analysis and Results of Pilot Survey

The goal of Sorra & Nieva's research (2004) was to eliminate items that were highly

skewed or items that had high amounts of missing data in efforts to provide a shorter revised

survey instrument based on conceptually meaningful, independent, and reliable safety culture

dimensions with three to five items measuring each dimension. First an exploratory factor

analysis was conducted to explore the dimensionality of the survey data. The analysis found 14

factors with eigenvalues greater than or equal to 1.0 and the total variance explained by the 14

factors was 64.5%. A confirmatory factor analysis was conducted to take into consideration the

a priori safety culture dimensions. Following the analyses of several confirmatory factor

models, the final survey features 12 dimensions and two outcome dimensions. Three or four

items measure each dimension, for a total of 42 items. Most of the survey items ask respondents

to answer using 5-point response categories in terms of (Strongly agree, Agree, Neither,

Disagree, Strongly disagree) or frequency (Always, Most of the time, Sometimes, Rarely,

Never). The survey also includes two questions that ask respondents to provide an overall grade

on patient safety for their work area/unit and to indicate the number of events they reported over

the past 12 months. Table 1 displays the HSOPSC dimensions, items, and response categories.

Table 1

Hospital Survey on Patient Safety Culture Dimensions, Items and Response Categories

Dimensions	Number of Items	Response Categories
Hospital wide dimensions		
Management support for patient safety	3	Strongly disagree to strongly agree
Teamwork across units	4	Strongly disagree to strongly agree
Handoffs and transitions	4	Strongly disagree to strongly agree
Unit level dimensions		
Teamwork within units	4	Strongly disagree to strongly agree
Supervisor/management expectations	4	Strongly disagree to strongly agree
Organization learning	3	Strongly disagree to strongly agree
Feedback and communication about error	3	Never to always
Communication openness	3	Never to always
Staffing	4	Strongly disagree to strongly agree
Non-punitive response to error	3	Strongly disagree to strongly agree
Frequency of events reported	3	Never to always
Overall perceptions of safety	4	Strongly disagree to strongly agree
Outcome dimension		
Patient safety grade	1	A (excellent) to E (failing)
Number of events reported	1	No events reported to 21 event reports or more

Reliability and Validity

Confirmatory factor analysis was used to examine internal consistency reliabilities for each of the 12 final safety culture dimensions identified. Negatively worded items were reverse coded so a higher score would indicate a more positive response in all cases. All 12 of the safety culture dimensions were found to have an acceptable reliability as defined by Cronbach's alpha greater than or equal to .60, with reliability coefficients ranging from .63 to .84 (Sorra & Nieva, 2004).

The construct validity of each of the safety culture dimensions was conducted indicating correlations between the safety culture composites or scales ranging from .23 to .60. All the correlations fell within the expected moderate to high range and none were exceptionally high indicating that no two safety culture dimensions appeared to measure the same construct (Sorra & Nieva, 2004). A one-way analysis of variance (ANOVA) was conducted on each of the 12 safety culture dimensions, and on the two single-item outcome measures (number of events reported and patient safety grade), in order to determine the extent to which composite scores on the safety culture scales were differentiated across the hospitals. The results showed that different hospitals have different composite scores on safety culture outcomes and dimensions. Considering that hospitals have different levels of patient safety culture, some units should score high while other units should score low on the safety culture dimensions and the results indicated this, supporting that hospitals have differentiated scores on each dimension (Sorra & Nieva, 2004). Based on all the psychometric analyses it was determined that the final survey provided solid evidence supporting the final HSOPSC instrument.

The HSOPSC has been utilized in many research studies. Although developed in the U.S., the HSOPSC has been used internationally to study and evaluate patient safety culture in

hospital settings (AHRQ, 2004; El-Jardali et al., 2011). The HSOPSC has been found to have very well established psychometric properties including factor analysis, reliability and item analysis (Ammouri et al., 2014; Hellings et al., 2007). El-Jardali et al., (2011) conducted a cross section research design using the HSOPSC in 68 hospitals and 6,807 respondents using bivariate and mixed model regression analysis to examine the association between the patient safety culture predictors and outcomes. Sorra & Dyer (2010) conducted a study to examine the multilevel psychometric properties of the HSOPSC examining 331 U.S. hospitals with 2,267 hospital units and 50,513 respondents. The results provided overall evidence to support the HSOPSC survey as acceptable psychometric properties with the exception of the staffing composite where Coefficient alpha fell slightly below the cutoff number of .60. Because staffing is conceptually important given its impact on patient safety culture, it was included in the survey (Sorra & Dyer, 2010). In another study the HSOPSC instrument was used in a cross-sectional research study across three countries, the U.S. (45 hospitals), Netherlands (622 hospitals), and Taiwan (74 hospitals), which included 210, 387 participants (Wagner et al., 2013). The study's objective was to examine the similarities and differences in patient safety culture in three countries using descriptive statistics (Wagner et al., 2013). Overall, there is much support that the HSOPSC can be used at the unit and hospital level to analyze patient safety culture.

Additional Questions

In order to examine the variables in this study, three questions were added to the HSOPSC by the primary investigator, which can be seen in Appendix C. The three questions added to the survey were:

1. On a typical workday, how often do you see your supervisor/manager?

    Never   Rarely   Sometimes   Most of the time   Always

2. Typically, what shift do you work?

    Day   Night   Both Day and Night   Weekends

3. My supervisor/manager makes daily safety rounds that include spending time with patients and staff discussing safety.

    Never   Rarely   Sometimes   Most of the time   Always

The first question was added to understand the frequency the staff have contact with their nurse manager in their work unit. The question was worded supervisor/manager since other staff besides nursing staff took the survey. The second question was added to capture what typical shift the staff normally works as this is not a part of the demographic questions on the survey. Nurse manager contact could potentially vary dependent upon time of day the staff work. The third question was adopted with permission from a recent study from the last HSOPSC survey conducted in 2014 (Drake, 2015). In this study, this question was utilized to establish how frequently the nurse manager is conducting daily safety rounding and spending time with patients and staff discussing safety on their units. These three questions are not part of the standard HSOPSC.

Data Collection

The database used for the study included the HSOPSC survey data and de-identified unit identifiers. Each de-identified unit included codes identifying the units as a member of the tertiary or community hospital and type of unit (medicine, surgery, emergency, etc.). The data was entered into SPSS version 22 to analyze the data. All the instrument items and the additional questions were entered into SPSS. The negatively worded (reverse worded) questions were recoded to align with the entire survey to avoid confusion when interpreting results. The additional questions were re-coded into numeric data. All values were clearly defined, non-

overlapping or mutually exclusive as only one response was allowed. To ensure internal consistency Cronbach's coefficient alpha was conducted.

Data Analysis

Data analysis was conducted on the following research questions:

1. What are the characteristics of the study sample with regard to individual characteristics (hospital tenure and work area/unit tenure), organizational characteristics (shift worked, hours worked per week, contact with nurse manager, unit-level safety dimensions, hospital-wide safety dimensions), process variable of frequency of nurse manager safety rounding, and patient safety culture outcome variables (overall perception of safety, frequency of event reporting, patient safety grade, number of events reported)?

All the HSOPSC response data and unit information was entered into SPSS version 22. Response frequencies were run on the data to look for out-of-range values, missing values, or other data anomalies. The negatively worded (reverse worded) questions were recoded so that high scores indicated a positive response to each survey item. Dimension composite scores were computed by averaging the item responses comprising each dimension. Dimension level percent positive responses were also computed by averaging the positive response (strongly agree/agree or most of the time/always) to dimension items. Internal consistency reliability was computed using Cronbach's alpha for each of the dimensions.

Descriptive statistics were utilized to summarize the sample individual characteristics, organizational characteristics, process variable, and outcome variables. Means, standard deviations, and percent of positive responses were computed for all the dimension items. Frequency of responses was computed for the single-item measures of individual characteristics (hospital tenure and work area/unit tenure), organizational characteristics (shift worked, hours

worked per week, contact with nurse manager), frequency of nurse manager safety rounding,

patient safety grade, and number of events reported. Pearson correlations were used to describe

the intercorrelations of the dimension scores and patient safety grade for the total study sample.

2. How does the frequency of nurse manager safety rounding influence patient safety culture

outcome variables (overall perception of safety, frequency of events reporting, patient safety

grade, number of events reported) and the hospital patient safety culture dimensions, and is the

relationship moderated by organizational characteristics (shift worked and contact with nurse

manager) and individual characteristics (hospital tenure and work area/unit tenure)?

The chi-square test for independence was used to investigate the relationships of

frequency of manager contact and frequency of manager safety rounding with the potential

confounders of unit tenure, hospital tenure, and shift worked, and the relationship of frequency

of manager contact and frequency of manager safety rounding. To investigate the joint effect of

manager safety rounding and manager contact on patient culture dimensions and patient safety

grade, four subgroups of nursing staff were created. One group consisted of staff who reported

infrequent manager contact and infrequent manager safety rounding, a group who reported

frequent manager contact and infrequent manager safety rounding, a group who reported

infrequent manager contact and frequent manager safety rounding, and a group who reported

frequent manager safety rounding and frequent manager contact. Percent of positive responses

were computed for each dimension and for patient safety grade, and comparisons between the

groups were made using a 5-percentage point difference as a rule of thumb for indicating a

meaningful difference (AHRQ, 2016). Multiple regression was used to investigate the relative

importance of contact manager frequency and manager safety rounding frequency in predicting

patient safety grade. The chi-square test for independence was also used to compare the association of manager contact and manager safety rounding groups with events reported.

3. At the unit level, how does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and unit-level patient safety culture dimensions and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

Descriptive statistics were used to describe the unit percent of positive responses for the HSOPSC dimensions, patient safety grade, frequency of manager contact, and frequency of manager safety rounding. Pearson correlations were used to investigate associations of unit manager safety rounding frequency, manager contact frequency, and patient safety grade with the HSOPSC dimensions. Table 2 describes the data analysis conducted related to the variables associated with each research question.

Table 2

Summary of Research Questions, Variables, and Data Analysis

Research Questions	Variables	Data Sources	Data Analysis
Question 1: What are the characteristics of the study sample with regard to individual characteristics, organizational characteristics, process variable of frequency of nurse manager safety rounding, and patient safety culture outcome variables?	Individual (person) characteristics Organizational characteristics Frequency of nurse manager safety rounding Outcome variables	HSOPSC	Descriptive statistics, Cronbach's alpha, and Pearson correlations
Question 2: How does the frequency of nurse manager safety rounding influence patient safety culture outcome variables and the hospital patient safety culture dimensions, and is the relationship moderated by organizational characteristics and individual characteristics?	Individual (person) characteristics Organizational characteristics Frequency of nurse manager safety rounding Outcome variables	HSOPSC	Chi-square and multiple regression
Question 3: At the unit level, how does the frequency of nurse manager safety rounding influence patient safety culture outcome variables and unit-level patient safety culture dimensions and is the relationship moderated by organizational characteristics and individual characteristics?	Organizational characteristics Frequency of nurse manager safety rounding Outcome variables	HSOPSC	Descriptive statistics and Pearson correlation

Chapter IV: Results

The purpose of this chapter is to present the results. The chapter is organized by the three research questions posed in Chapter 1. The chapter includes descriptions of the sample and results of the data analysis for each of the three research questions. SPSS version 22 was utilized to compile data from the AHRQ HSOPSC into one database.

Research Question 1

What are the characteristics of the study sample with regard to individual characteristics (hospital tenure and work area/unit tenure), organizational characteristics (shift worked, hours worked per week, contact with nurse manager, unit-level safety dimensions, hospital-wide safety dimensions), process variable of frequency of nurse manager safety rounding, and patient safety culture outcome variables (overall perception of safety, frequency of event reporting, patient safety grade, number of events reported)?

Characteristics of Hospitals

Table 3 describes the study hospitals, number and type of units included in the study and the number of nursing staff in those units. Most of the nursing staff (N = 1080) were from the tertiary academic hospital and of those staff 889 (82%) worked in inpatient units. Of the 31 total units from the tertiary hospital, 23 (74%) were inpatient units. There were 22 units from the six community hospitals and 16 (73%) of the units were inpatient units. Of the 407 nursing staff from the community hospitals, 275 (68%) worked in inpatient units. The proportion of inpatient to outpatient units in the two types of hospitals was similar, 75% and 73% respectively. Of the total sample of nursing staff (N =1487), 73% worked at the tertiary hospital. The average number of nursing staff in the tertiary hospital inpatient units was 38.6 staff per unit ranging from 21 to 64 while in the outpatient units the average was 23.9, ranging for 11 to 40 staff. In

the smaller community hospitals, the average number of staff per inpatient unit was 17.2 per unit

ranging from 7 to 30 while in the outpatient units the average was 22, ranging from 8 to 39 staff.

Table 3

Characteristics of Hospitals (N = 7), Hospital Units (N = 53) and Nursing Staff (N = 1487)

	Units		Staff	
Hospitals and Units	*n*	%	*n*	%
Tertiary academic hospital				
Inpatient units	23	74	889	82
Outpatient units	8	26	191	18
Total	31	58	1080	73
Community Hospitals				
Inpatient units	16	73	275	68
Outpatient units	6	27	132	32
Total	22	42	407	27

Characteristics of Survey Participants

The characteristics of the 1487 survey participants are summarized in Table 4.

Registered nurses (72%) and the nursing assistants (20%) are the largest participant subgroups.

About 12% of the nursing staff have less than one year of professional experience with 32% with

one to five years of experience. Approximately 18% of the staff have less than one year of

tenure at their hospital and 22% have less than one year of experience on their work unit.

Approximately 58% of the nursing staff reported between one to ten years of experience on their

current work unit. Approximately 93% of staff reported working 20 to 59 typical hours per

week. Ninety-nine percent of the staff reported having direct patient contact.

Table 4

Characteristics of Survey Participants (N = 1,487)

Characteristic	*n*	%
Staff position		
Registered nurse	1072	72
Licensed practical nurse	4	<1
Unit secretary	120	8
Nursing assistant	291	20
Staff years of service within current profession		
Less than one year	171	12
1 to 5 years	474	32
6 to 10 years	289	19
11 to 15 years	181	12
16 to 20 years	143	10
21 years or more	211	14
Missing	18	1
Staff years of service at the hospital		
Less than one year	266	18
1 to 5 years	513	35
6 to 10 years	298	20
11 to 15 years	187	13
16 to 20 years	89	6
21 years or more	125	8
Missing	9	1
Staff years of service on the nursing unit		
Less than one year	331	22
1 to 5 years	578	39
6 to 10 years	281	19
11 to 15 years	151	10
16 to 20 years	63	4
21 years or more	72	5
Missing	11	1
Staff typical hours per week worked		
Less than 20 hours per week	40	3
20 to 39 hours per week	885	60
40 to 59 hours per week	494	33
60 to 79 hours per week	40	3
80 to 99 hours per week	23	2
100 hours per week or more	4	<1
Missing	1	<1
Staff with direct patient contact	1474	99
Missing	13	1

Internal Consistency Reliability

Table 5 shows the internal consistency reliabilities as assessed with Cronbach's alpha coefficient for the twelve dimensions measured by the HSOPSC. All the dimensions consisted of either three or four 5-point Likert type items. The computed Cronbach alphas were all above the .70 criterion, except for the staffing dimension. The alpha values for the study survey were consistent with the original values published by Sorra & Nieva, (2004).

Table 5

Hospital Survey on Patient Safety Culture Internal Consistency Reliability (N = 1,487)

		Cronbach's α	
Dimension	Number of Items	Current Sample (N = 1487)	Published Results (N = 1437)
Management support for patient safety	3	.77	.83
Teamwork across units	4	.79	.80
Handoffs and transitions	4	.81	.80
Teamwork within units	4	.85	.74
Supervisor/manager expectations	4	.80	.75
Organizational learning	3	.75	.76
Overall perception of safety	4	.71	.74
Feedback and communication about error	3	.81	.78
Communication openness	3	.71	.72
Frequency of event reporting	3	.88	.84
Staffing	4	.64	.63
Non-punitive response to error	3	.81	.79

Note: Published results from original results Sorra & Nieva, 2004.

Patient Safety Culture Dimension Characteristics

The percent of respondents reporting positive responses to the items comprising the HSOPSC dimensions and assigning grades of A or B to the patient safety grade items is shown in Table 6. In addition, the means and standard deviations of the each dimensions score, along with the overall patient safety grade is included in Table 6. The lowest positive responses were reported for non-punitive response to error dimension's items (44%), items related to staffing and workload and the effect of workload on potential safety in the staffing dimension (50%),

items related to transferring patients from one unit to another and to information lost during shift change in the handoffs and transitions dimension (53%), and to items in the teamwork across units dimension (56%). The highest average positive responses were to items in the teamwork within units dimension (81%) and items in the supervisor/managers expectations dimension (80%).

Number of events reported in the past twelve months and the individual patient safety grade assigned by the nursing staff to the unit they work in are presented in Table 7. Overall, 43% of the nursing staff did not report any safety event over the past year. Of the 840 who reported one or more safety events, 56% reported 1-2 events, 27% 3 to 5 events and 17% more than five events. Of the total sample of 1487, 61 (4%) did not report any unit patient safety grade. For those staff reporting a patient safety grade, 25% reported a grade of A and 23% a grade of C. Almost 5% of the reported grades were D or E.

Table 6

Average Positive Responses and Means and Standard Deviations of the Likert Scale Scores for the HSOPSC Dimensions and Patient Safety Grade (N = 1487)

Dimension/Patient Safety Grade	Positive Responses %	*M*	*SD*
Hospital dimensions			
Management support for patient safety	68	3.64	0.82
Teamwork across units	56	3.97	0.78
Handoffs and transitions	53	3.33	0.79
Unit dimensions			
Teamwork within units	81	3.97	0.78
Supervisor/manager expectations	80	4.00	0.75
Organizational learning	77	3.87	0.64
Overall perceptions of safety	63	3.56	0.74
Feedback and communication about error	70	3.56	0.74
Communication openness	71	3.93	0.81
Frequency of event reporting	61	3.68	0.81
Staffing	50	3.24	0.77
Non-punitive response to error	44	3.18	0.92
Outcome dimensions			
Patient safety grade	71	3.18	0.92

Note: Patient safety grade positive response is the percent of respondents reporting grades of A or B.

Table 7

Hospital Survey on Patient Safety Culture Number of Events Reported and Patient Safety Grade (N = 1,487)

Outcome Variable	n	%
Number of Events Reported in Past 12 Months		
None	641	43
1-2 events	476	32
3 to 5 events	226	15
6 to 10 events	76	5
11 to 20 events	39	3
21 or more events	10	1
Missing	19	1
Patient Safety Grade		
A	378	25
B	642	43
C	338	23
D	60	4
E	8	1
Missing	61	4

Note. Excellent =A; Very good = B; Acceptable = C; Poor = D; Failing =E

Investigator Additional Survey Questions

The three investigator added survey questions are summarized in Table 8. The first added question is about the frequency that each nursing staff member sees his or her supervisor/manager on a typical workday. Twenty-four percent reported never or rarely seeing their managers while 30% reported seeing their manager only sometimes. Forty-six percent reported seeing their manager either most of the time or always. There is a similar pattern of reporting on the frequency of their manager's daily safety rounding. Fifty-five percent report their manager makes daily safety rounding most of the time or always, while 16% report daily safety rounding happen never or rarely. Half of the survey respondents work days and 15% report working both days and nights. Overall, 30% work primarily nights.

Table 8

Investigator Additional Questions (N = 1,487)

Investigator Additional Questions	*n*	%
On a typical workday, how often do you see your supervisor/manager?		
Never	69	5
Rarely	284	19
Sometimes	451	30
Most of the time	464	31
Always	219	15
My supervisor/manager makes daily safety rounds that include spending time with patients and staff discussing safety.		
Never	69	5
Rarely	166	11
Sometimes	436	30
Most of the time	475	32
Always	341	23
Typically, what shift do you work?		
Day	744	50
Night	452	30
Both day and night	227	15
Weekend	64	4

Correlations for HSOPSC Dimensions and Patient Safety Grade

The intercorrelations of the thirteen variables, twelve dimensions scores and patient safety grade, resulting in 78 individual Pearson correlation coefficients are presented in Table 9. All of the correlations are statistically significant, with three (4%) small correlations ($r < .30$), 44 (56%) medium correlations (r from .30 to .49) and 31 (40%) large correlations (r .50 or larger). The largest correlations were between feedback and communication about error and supervisor/manager expectations ($r = .60$), communication and openness and supervisor/manager expectations ($r = .62$), feedback and communication about error and communication openness ($r = .67$) feedback and communication about error and organizational learning ($r = .62$), teamwork across units and handoffs and transitions ($r = .63$), and overall perception of safety and patient

safety grade (r = .65). In addition to overall perception of safety, the largest correlations with

patient safety grade included organizational learning (r = .56) and communication openness (r =

.56). The smallest correlation with patient safety grade was teamwork across units (r = .39). The

smallest correlations were between frequency of event reporting and teamwork across units (r =

.29), staffing (r = .22), and non-punitive response to error (r = .26).

Table 9

Intercorrelations for Hospital Survey on Patient Safety Culture Dimensions (N = 1,487)

Dimensions	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Teamwork within units	-												
2. Supervisor/manager expectations	.58**	-											
3. Organizational learning	.56**	.59**	-										
4. Management support for patient safety	.37**	.52**	.53**	-									
5. Overall perceptions of safety	.54**	.53**	.59**	.59**	-								
6. Feedback and communication about error	.46**	.60**	.62**	.52**	.54**	-							
7. Communication openness	.56**	.62**	.58**	.49**	.55**	.67**	-						
8. Frequency of event reporting	.30**	.35**	.37**	.38**	.40**	.48**	.42**	-					
9. Teamwork across units	.39**	.39**	.41**	.56**	.50**	.44**	.44**	.29**	-				
10. Staffing	.43**	.43**	.40**	.42**	.59**	.39**	.44**	.22**	.43**	-			
11. Handoffs and transitions	.35**	.35**	.36**	.46**	.50**	.40**	.42**	.33**	.63**	.44**	-		
12. Non-punitive response to error	.46**	.48**	.43**	.34**	.47**	.41**	.51**	.26**	.35**	.48**	.35**	-	
13. Patient safety grade	.55**	.53**	.57**	.52**	.65**	.54**	.56**	.39**	.44**	.48**	.44**	.42**	-

Note: ** correlations are significant at $p \le .01$; * correlations are significant at $p \le .05$.

Research Question 2

How does the frequency of nurse manager safety rounding influence patient safety

culture outcome variables (overall perception of safety, frequency of events reporting, patient

safety grade, number of events reported) and the hospital patient safety culture dimensions, and

is the relationship moderated by organizational characteristics (shift worked and contact with

nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

Table 10 and 11 examine the relationships of frequency of manager contact and

frequency of manager safety rounding with the potential confounders of staff years of service at

the hospital, staff years of service on the nursing unit and shift worked. In addition, the

relationship of frequency of manager contact with frequency of manager safety rounding is

shown. There is a statistically significant relationship between hospital tenure and unit tenure

with both frequency of manager contact and frequency of manager safety rounding however, the

effect size for those relationships are small. There is also a statistically significant relationship

between frequency of manager safety rounding and shift worked, but the effect size is also small.

When considering frequency of manager contact and shift worked, there is a large effect size

between these two variables. Over 80% of the nursing staff who work nights or weekends report

infrequent manager contact. There is also a large effect size in the relationship between

frequency of manager contact and frequency of manager safety rounding. Of the nursing staff

who report infrequent manager contact, 66% also report infrequent manager safety rounding,

while those who report frequent manager contact, over 79% report frequent manager safety

rounding. Since manager safety rounding and manager contact frequency are strongly related,

and since frequency of manager contact is strongly related to shift worked, shift worked will not

be used for further analysis. Hospital tenure and unit tenure will also be excluded from further

analysis because of their weak associations with frequency of manager contact and frequency of manager safety rounding.

Table 12 shows the mean percent of positive responses to the items comprising each HSOPSC dimension and the mean percent of patient safety grades of A or B in four subgroups for nursing staff based on their reported frequency of manager contact and frequency of manager safety rounding. Of the total 1487 study participants, 531 (36%) reported infrequent manager contact and infrequent manager safety rounding and 36% reported both frequent manager contact and frequent manager safety rounding. The two smallest groups included 140 (9%) who reported frequent manager contact but infrequent manager safety rounding and 273 (18%) who reported infrequent manager contact and frequent manager safety rounding. There is an upward trend across the four groups with the smallest composite percent average in those reporting both infrequent manager contact and rounding, next highest composite average in the smallest group reporting frequent manager contact and infrequent rounding, followed by the group with frequent manager safety rounding and infrequent manager contact. The highest composite average was in the largest group, those reporting both frequent manager contact and frequent manager safety rounding, on each of the composites and patient safety grades of A or B. The smallest group average (30%) was computed for the positive responses to the three items in the dimension of non-punitive response to errors, and the composite percent increased to 58%, the average percent of positive response to the three items by the 543 staff who reported frequent manager contact and frequent manager safety rounding. The largest increase was for feedback and communication about error, which went from an average composite positive response of 52% in the infrequent manager safety rounding and infrequent manager contact group to a composite average of 88% in the frequent manager safety rounding and frequent manager contact group.

For the assignment of A or B patient safety grades, the average increased from 55% A or B's in the infrequent manager contact and infrequent manager safety rounding group to 86% A or B's in the frequent manager contact and frequent manager safety rounding group. The two intermediate groups did not differ much in the percentage of A or B's reported, 72% and 74% respectively. Using the 5% rule of thumb to indicate meaningful differences, all the differences in percent of positive response between groups exceeded the 5% criterion except for a difference of 2% in patient safety grade and a 4% difference in non-punitive response to error.

To further investigate the joint effects of frequency of manager safety rounding and contact, a multiple regression was conducted in which patient safety grade was regressed on rounding frequency and contact frequency. Preliminary analyses were conducted to ensure no violations of assumptions of normality, linearity, multicollinearity, and homoscedasticity. The two predictor variables explained 15.6% of the variance in patient safety grade, $F(2, 1423) = 132.43$, $p < .001$. The two-predictor variables were statistically significant with manager safety rounding frequency recording a higher beta value (beta = .251, $p < .001$) than frequency of manager contact (beta = .194, $p < .001$).

Table 10

Relationship of Years of Service at Hospital, Years of Service on Nursing Unit, Shift Worked, and Frequency of Manager Safety Rounding with Frequency of Manager Contact

Variable	Manager Contact Infrequent		Manager Contact Frequent		χ^2	p	Phi
	n	%	n	%			
Staff years of service at the hospital							
< 1 year	129	48.5	137	51.5			
1 to 5 years	303	59.1	210	40.9			
6 to 10 years	170	57.0	128	43.0			
11 + years	194	48.4	207	51.6	14.74	.002	.10
Staff years of service on the nursing unit							
< 1 year	170	51.4	161	48.6			
1 to 5 years	334	57.8	244	42.2			
6 to 10 years	153	54.4	128	45.6			
11 + years	138	48.3	148	51.7	8.08	.044	.074
Shift Worked							
Day	278	37.4	466	62.6			
Both day and night	107	47.1	120	52.9			
Night	363	80.3	89	19.7			
Weekend	56	87.5	8	12.5	242.10	<.001	.404
Manager rounding							
Infrequent	531	66.0	140	20.5			
Frequent	273	34.0	543	79.5	309.38	<.001	.456

Note: Phi value small .01- .059, medium .06 -.137, large >.138

Table 11

Relationship of Years of Service at Hospital, Years of Service on Nursing Unit, Shift Worked with Frequency of Manager Rounding

Variable	Manager Rounding Infrequent		Manager Rounding Frequent		χ^2	p	Phi
	n	%	*n*	%			
Staff years of service at the hospital							
< 1 year	99	37.2	167	62.8			
1 to 5 years	244	47.6	269	52.4			
6 to 10 years	146	49.0	152	51.0			
11 + years	179	44.6	222	55.4	9.78	.021	.081
Staff years of service on the nursing unit							
< 1 year	122	36.9	209	63.1			
1 to 5 years	283	49.0	295	51.0			
6 to 10 years	121	43.1	160	56.9			
11 + years	137	47.9	149	52.1	8.08	.044	.074
Shift Worked							
Day	298	40.1	446	59.9			
Both day and night	97	42.7	130	57.3			
Night	240	53.1	212	46.9			
Weekend	36	56.3	28	43.7	23.05	<.001	.125

Note: Phi value small.01- .059, medium .06 -.137, large >.138

Table 12

Composite Percent Positive Responses of HSOPSC Dimensions and Patient Safety Grades of A or B for Groups Formed From the Crosstabulation of Frequency of Contact and Frequency of Rounding

Dimensions and Grades	Contact Infrequent Rounding Infrequent (n = 531) %	Contact Frequent Rounding Infrequent (n = 140) %	Contact Infrequent Rounding Frequent (n = 273) %	Contact Frequent Rounding Frequent (n = 543) %
Outcome variables				
Overall perceptions of safety	51	57	67	75
Frequency of events reported	56	67	78	84
Patient safety grade	55	72	74	86
Unit level dimensions				
Teamwork within units	71	80	85	90
Supervisor/management expectations	63	80	87	94
Organization learning	63	73	82	89
Feedback and communication about error	52	64	76	88
Communication openness	44	56	65	78
Staffing	40	42	50	61
Non-punitive response to error	30	40	44	58
Hospital wide dimensions				
Management support for patient safety	53	64	75	81
Teamwork across units	44	54	59	67
Handoffs and transitions	43	51	56	62

Research Question 3

At the unit level, how does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and unit-level patient safety culture dimensions and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

Table 13 presents the mean positive responses to the HSOPSC dimensions, patient safety grade, frequency of manager contact, and frequency of manager safety rounding averaged over the nursing staff in each unit. The average percent of A or B grades awarded by the unit nursing staff was 72%, with one unit where 36 of the nursing staff awarded A or B's and one unit where all the staff awarded A or B's. The highest unit average of positive responses was for teamwork within units (81%), supervisor/manager expectations (79%), and organizational learning (76%). The lowest means were for non-punitive response to error (44%) and staffing (50%). The average percent of frequent manager contact was 47% with scores ranging from 14% to one unit where all the staff reported frequent manager contact. Similarly for frequent manager safety rounding the average was 55% with a low of 19% to one unit where all the staff reported frequent manager safety rounding.

Table 13

Descriptive Statistics for Percent Positive Hospital Unit Variables (N = 53)

Variables	M	SD	Range Low	Range High
Outcome variable				
Overall perceptions of safety	62	11.8	35	82
Frequency of events reported	71	10.7	43	88
Patient safety grade	72	16.1	36	100
Unit level dimensions				
Teamwork within units	81	10.7	55	98
Supervisor/management expectations	79	10.9	57	100
Organization learning	76	10.5	53	94
Feedback and communication about error	69	13.0	40	92
Communication openness	61	12.8	33	86
Staffing	50	14.7	21	84
Non-punitive response to error	44	15.0	11	72
Hospital wide dimensions				
Management support for patient safety	66	11.1	43	87
Teamwork across units	56	14.0	19	81
Handoffs and transitions	53	13.0	25	81
Manager contact and rounding				
Frequent manager contact	47	17.2	14	100
Frequent manager rounding	55	20.6	19	100

Table 14 describes the correlation of frequent manager safety rounding and frequent manager contact with HSOPSC dimensions and patient safety grades of A or B among the 53 units in the study. Since the correlations between rounding and contact frequency is so high (r = .73, p < .001), the correlation between rounding and contact frequency with the HSOPSC dimensions and patient safety grade is similar. Safety rounding has large correlations with dimensions of frequency of events reported (r = .55), supervisor/manager expectations (r = .69), organizational learning (r = .57), feedback and communication about error (r = .60), and communication openness (r = .51). The lowest correlations were observed between manager safety rounding frequency and hospital wide dimensions of teamwork across units (r = .03) and handoffs and transitions (r = .22). Table 14 also displays the correlations of patient safety grades with the HSOPSC dimensions. It is interesting that the highest correlation of patient safety grade is with the dimension teamwork across units (r = .93), while the correlation of frequency of manager safety rounding with teamwork within the unit is small (r = .26). In addition to the very high correlation of patient safety grades with teamwork, patient safety grades are also strongly correlated with the unit-level dimensions of supervisor/management expectations (r = .69), organizational learning (r = .75), feedback and communication about error (r = .68), and communication openness (r = .79).

Table 14

Pearson Correlations of Positive Response HSOPSC Outcome Variables, Unit Dimensions, and
Hospital Wide Dimensions with Frequent Manager Safety Rounding, Frequent Manager
Contact, and A or B Patient Safety Grades Among Hospital Units (N = 53)

HSOPSC Variables	Manager Safety Rounding	Contact with Manager	Patient Safety Grade
Outcome variables			
Overall perceptions of safety	.43**	.42**	.78***
Frequency of event reporting	.55***	.47***	.60***
Patient safety grade	.43**	.46**	
Unit level dimensions			
Teamwork within units	.26	.33*	.93***
Supervisor/manager expectations	.69***	.62***	.69***
Organizational learning	.57***	.43**	.75***
Feedback and communication about error	.60***	.59***	.68***
Communication openness	.51***	.50***	.79***
Staffing	.45**	.42**	.61***
Non-punitive response to error	.45**	.57***	.61***
Hospital wide dimensions			
Management support for patient safety	.32*	.33*	.36**
Teamwork across units	.03	.12	.31*
Handoffs and transitions	.22	.29*	.46***

Note. ***p < .001, **p < .01, *p < .05

Chapter V: Summary, Findings, and Implications

Introduction

Chapter V provides a summary of significant study findings and a discussion of how those findings compare to previous research on patient safety. Limitations to the study will be provided. This chapter concludes with implications for nursing practice, education, and research.

Summary of Study

The purpose of this study was to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting. This study utilized a cross-sectional design with retrospective data analysis of pre-existing survey and staff demographic data in nursing units within tertiary and community hospitals in a large healthcare system in the southeastern U.S. The study participants voluntarily completed the HSOPSC, between March 14th, 2016 and April 4th, 2016. The HSOPSC data including the three additional investigator questions were entered into SPSS version 22 to analyze the data. All data was de-identified. The sample included 53 units and 1487 participants from the regional healthcare system. Inclusion criteria included participants who completed the survey on inpatient nursing units (medicine, surgery, obstetrics, pediatrics, intensive care units, psychiatry, rehabilitation) and outpatient units (emergency department and observation) within the regional healthcare system. The study sample included registered nurses, nursing assistants, and unit secretaries who work on the units selected in the inclusion criteria.

Discussion of Findings

Three research questions were designed to examine the influencing characteristics on the process variable of nurse manager safety rounding and outcome variable of patient safety culture.

Research Question 1

What are the characteristics of the study sample with regard to individual characteristics (hospital tenure and work area/unit tenure), organizational characteristics (shift worked, hours worked per week, contact with nurse manager, unit-level safety dimensions, hospital-wide safety dimensions), process variable of frequency of nurse manager safety rounding, and patient safety culture outcome variables (overall perception of safety, frequency of event reporting, patient safety grade, number of events reported)?

Characteristics

Of the total sample, a majority of the nursing staff worked at the tertiary academic hospital in inpatient units (82%). In the community hospitals, a majority worked in inpatient units (74%). The ratio of inpatient to outpatient units in the two types of hospitals was similar. The average number of nursing staff in the tertiary hospital for inpatient and outpatient units was greater than the community hospitals. A majority of the survey respondents in the total sample were registered nurses. Sixty-one percent of the nursing staff have less than six years of tenure on their unit nursing, 63% less than six years of tenure at their hospital, and 44% less than six years of experience within their current profession. All of these characteristics were higher in this study when compared to the AHRQ comparative database where 52% reported less than six years of tenure on their unit nursing, 44% less than six years of tenure at their hospital, and 32% less than six years of experience within their current profession (AHRQ, 2016). Several studies have reported higher overall perceptions of patient safety with greater years of nursing experience (Ammouri et al., 2014; El-Jardali et al., 2011; Khater et al., 2014). Conversely, the findings in this study indicate a more novice nursing staff. Several studies have reported there is an association with greater number of years of nursing experience and decreased risk for patient

safety events (Beigen, Vaughn, & Goode, 2001; Kanai-Pak, Aiken, Sloane, & Poghosyan, 2008). Nursing experience was not a variable of interest in this study, although due to these findings it should be explored in a future study.

Ninety-nine percent of the survey respondents provide direct patient care. A majority of the survey respondents work twenty to fifty-nine hours per week (93%). This is similar to the results published in the 2016 AHRQ user comparative database, where a majority work twenty to fifty-nine hours (88%) (AHRQ, 2016).

Investigator Additional Questions

The three investigator added survey questions included the respondents report of their typical work shift, frequency of contact with their unit's manager, and frequency of their manager's daily safety rounding. The majority of the nursing staff reported their usual shift was either day or both day and night (65%) followed by night (30%), and weekend (4%). On a typical workday, 46% of survey respondents reported frequent (most of the time or always) contact with their manager, 24% reported no or rare contact with their manager, while 30% reported contact with their manager sometimes. A majority (55%) reported frequent daily safety rounding by their manager while 30% reported rounding frequency as sometimes and 16% reported a frequency of never or rarely. Fifty percent of the survey respondents typically work the day shift while 30% work the night shift.

Unit-level and Hospital-wide Patient Safety Dimensions

In the HSOPSC survey there are nine dimensions, which measure different aspects of patient safety at the unit-level and three dimensions that assess hospital-wide aspects of patient safety. The dimensions with the highest average positive responses include unit-level dimensions of teamwork within units (81% positive), supervisor/manager expectations (80%

positive), organizational learning (77% positive), communication openness (71% positive), and

feedback and communication about error (70% positive). These findings are consistent with the

AHRQ's user comparative database, where these unit-level dimensions also received the highest

positive responses. Like many other studies, this study showed teamwork within the unit has the

highest positive responses (Chen & Li, 2010; El-Jardali et al., 2014; Hellings et al., 2007; Khater

et al., 2014; Sammer et al., 2010; Singer & Tucker, 2014; Smiths et al., 2009; Top &

Tekingunduz, 2014; Wagner et. al., 2013). Teamwork within the unit indicates the nursing staff

support and respect each other at the unit-level. A majority of nursing staff also positively

reported that their supervisor/manager addressed patient safety concerns or errors that occur on

their units to improve patient safety. The dimensions with the lowest average positive responses

were two unit-level dimensions of non-punitive response to error (44% positive) and staffing

(50% positive). This is also similar to the AHRQ comparative database, where non-punitive

response to error (45% positive) and staffing (54% positive) were two of the lowest scoring unit-

level dimensions (AHRQ, 2016). Just like the findings in this study, several earlier studies

reported non-punitive response to error as the lowest scoring dimension indicating staff may be

afraid of reporting errors and safety concerns in fear that mistakes will be held against them

(Hellings et al., 2007; Khater et al., 2014). Nursing staff continue to report they feel like

mistakes are held against them, that it feels like the person is being written up but the problem

not addressed, and that mistakes are kept in their personnel file. There continues to be a problem

with nursing staff reporting a blame free environment. In order to openly discuss patient safety

concerns, nursing staff must feel the environment is safe. In the staffing dimension, the

perception of the nursing staff would indicate that they do not have enough staff to handle

workload and they work longer hours than is best for patient care. Many studies have associated

staffing workload to patient outcomes. A recent systematic literature review concluded that there

is evidence to support a link with nursing work environment factors, such as staffing patterns and

workload, to patient safety outcomes (Shekelle, 2103). Yet there continues to be a perception

from nursing staff that they do not have enough staff to take care of patients.

The two hospital-wide dimensions with the lowest average percent positive responses

were handoffs and transitions (53% positive), and teamwork across units (56% positive). These

were slightly different to the AHRQ comparative database, where handoffs and transitions (48%)

were lower and teamwork across units (61%) was higher. Just like this study, several other

studies have reported the hospital-wide dimension of handoffs and transitions as the lowest

scoring positive responses indicating that important patient care information is lost during

transfer of patients to another unit and during shift changes (Chen & Li, 2010; Wagner et. al,

2013). Overall, this study's findings related to the hospital-wide and unit-level patient safety

dimensions are fairly consistent with the national AHRQ comparative database.

Correlations Between HSOPSC Dimensions and Patient Safety Grade

As noted in Chapter IV due to the lack of staff reporting any events, this variable was not

used for further analysis. Forty-three percent of the respondents did not report a safety event in

the previous twelve months and 24% reported six or more events during the same time period.

When comparing to the AHRQ comparative database, 55% of respondents reported no safety

events in the previous twelve months. Sixty-one percent of the nursing staff reported they

strongly agree or agree that there should be reporting of mistakes caught and corrected before

affecting the patient, mistakes with no potential to harm the patient and mistakes that could harm

the patient but were not reported in their unit. It is concerning that 61% of staff reported that it is

important to report events while 43% reported no events over previous 12 months. These results

also reflect similar findings with the lowest positive percent responses found in the dimension of non-punitive response to error. Lack of event reporting continues to be an area of concern for many hospitals.

Since the twelve HSOPSC dimensions measure different aspects of patient safety, all dimensions are positively related to each other. When looking at the pairs of dimensions with the smallest correlations, they were all correlated with frequency of event reporting, which included teamwork across units ($r = .29$), staffing ($r = .22$), and non-punitive response to error ($r = .26$).   Although these dimensions influence each other, the relationship is weaker. In one study, staffing showed the weakest correlation with frequency of event reporting (El-Jardali et al., 2014). Perhaps nursing staff who perceive less teamwork across units, staffing challenges and a punitive environment are less likely to report events. It was surprising that non-punitive response to error and frequency of event reporting did not have a high correlation although this is consistent with other studies.

The pairs of dimensions with the largest correlations include feedback and communication about error with supervisor/manager expectations ($r = .60$); organizational learning ($r = .62$) and communication and openness ($r = .67$); supervisor/manager expectations and communication openness ($r = .62$); and teamwork across units and handoffs and transitions ($r = .63$). These relationships are consistent with other findings in studies which show the important role in supervisor/manager expectations with providing positive feedback on safety concerns, initiating open communication, and actively identifying and improving patient safety (Ammouri et al., 2014; El-Jardali et al., 2011). These findings also indicate nursing staff who notice steps taken to improve patient safety are more likely to report concerns and/or speak up when something does not seem right. The dimensions of teamwork across units and handoffs

and transitions are important in the way the nursing staff perceive whether patients are transferred safely from one unit to another with good cooperation among the units. Also important is that vital patient care information is carried over shift to shift in order to provide the best care. Studies have found that the higher level of teamwork across units influences the frequency of event reporting (El-Jardali et al., 2011; Top & Tekingunduz, 2014).

Seventy-one percent of nursing staff graded their unit an A or B for patient safety grade, which is slightly below the AHRQ comparative database at 76% A or B (AHRQ, 2016). Seven dimensions have large correlations with patient safety grade. The strongest correlations to patient safety grade were organizational learning (r = .57), overall perceptions of safety (r = .65), and communication openness (r = .56). This is similar to a study that found handoffs and transitions to be the only composite that was not significantly associated with patient safety grade (El-Jardali et al., 2014). Similarly in another study, four dimensions that were significant predictors of patient safety grade were feedback and communication about error, organizational learning, hospital management support for patient safety, and supervisor/manager expectations (Top & Tekingunduz, 2014). The strongest relationships in this study to patient safety grade reinforce the importance of open communication and continuous improvement in patient safety.

Research Question 2

How does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and the hospital patient safety culture dimensions, and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

As noted in Chapter IV several of the research variables were excluded from the study because the effect size was small. There were some interesting findings with the relationship between shift worked and frequency of manager safety rounding and frequency of manager contact. Manager safety rounding was relatively frequent on all shifts, with 60% of those working days reporting frequent manager safety rounding and 47% reporting frequent manager safety rounding on nights. Of the staff who worked both days and nights 57% reported frequent manager safety rounding. When looking at manager contact, the findings are quite different. Of those working days, 63% report frequent contact with their manager in contrast of those working nights or weekends the percentage of staff reporting frequent manager contact falls to 20 and 13 percent respectively. Of those working both days and nights, 53% report frequent manager contact. The relationship is stronger for shift worked with manager contact. These findings indicate that nursing staff who work only nights or weekends never or rarely have contact with their manager.

There is also a strong relationship between frequency of manager contact and frequency of manager safety rounding. Of the staff reporting infrequent manager contact, 66% also report infrequent manager safety rounding. Similarly, of the staff reporting frequent manager contact 79% also report frequent manager safety rounding. This is important because the nursing staff perceive rounding similarly to contact with the manager.

The most significant finding in this study was the strong relationship between frequency of manager contact and frequency of manager safety rounding. As previously discussed, to further understand the joint relationship of manager contact frequency and manager safety rounding frequency, four subgroups of the study participants were created based on their reported frequency of manager contact and frequency of manager safety rounding. An equal

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number of nursing staff reported frequent manager contact and manager safety rounding and infrequent manager contact and manager safety rounding. This indicates that nurse managers are not performing safety rounding consistently and some nursing staff do not see their manager frequently. The two middle groups were mixed, a portion reported frequent manager contact and infrequent manager rounding while others reported infrequent manager contact and frequent manager rounding. This suggests some of the staff see their manager rounding with staff and patients, although they do not have any contact with their manager. The night and weekend shift reported less contact and rounding. Some of the respondents could learn from their unit team members that the manager rounds during the day shift, but the staff member does not have contact with them. Perhaps the manager spends more time with some staff and less with others. These two groups need to be explored further.

The results are significant for the patient safety dimensions and outcome variables when comparing the positive percent responses for those who reported infrequent manager contact and infrequent manager safety rounding compared to the group who reported frequent manager contact and frequent manager safety rounding. Every dimension and outcome variable is higher when the manager has frequent contact with staff and conducts safety rounding. The nursing staff clearly perceived higher patient safety with both frequent manager contact and frequent manager safety rounding. The patient safety grade (A or B) average increased from 55% to 86% when frequent manager contact and frequent manager safety rounding was occurring, while the two groups in between did not differ much in reporting of patient safety grade, 72% and 74% respectively. This could indicate that when the manager has either frequent contact or frequent safety rounding the patient safety grade is about the same but when both are frequent the patient safety grade substantially improves.

In the SEIPS model, changes to the work system depend upon how the change or improvement is designed and implemented and may negatively or positively affect the work and process and the consequent outcomes (Carayon et al., 2006). As the frequency of contact with the nurse manager varies, the patient safety outcomes vary. The frequency of process of nurse manager safety rounds also affects the patient safety outcomes.

The largest differences in mean positive responses were on the dimensions related to the manager and staff interactions regarding patient safety (supervisor/manager expectations, feedback and communication about error, communication and openness, patient safety grade, and frequency of event reporting). These findings indicate that the more there is frequent manager contact and safety rounding the greater the nursing staff perceive that there is open communication, feedback on patient safety concerns, and discussion about preventing error to improve patient safety culture. In a recent dissertation, nursing staff reporting manager safety rounding occurring on their unit also reported a higher patient safety grade (Drake, 2015). Thus staff consider the nurse manager as contributing to their perceptions of patient safety culture.

Which of these two independent variables (manager contact or manager safety rounding) are the most important? To answer that question, a multiple regression was conducted in which patient safety grade was regressed on manager safety rounding frequency and manager contact frequency. These two predictor variables explained 15.6% of the variance in patient safety grade ($p < .001$), in which both manager safety rounding frequency and manager contact frequency made a unique statistically significant contribution. Manager safety rounding frequency had a higher beta value (beta = .251) than manager contact frequency (beta = .194) however, both variables were important predictors of patient safety grade. This confirms that both manager contact and rounding are significant in how the nursing staff graded patient safety. The higher

beta weight for manager safety rounding could be explained by when the nurse manager is conducting patient safety rounding, the nurse manager is making contact with staff.

Research Question 3

At the unit level, how does the frequency of nurse manager safety rounding influence patient safety culture outcome variables (overall perception of safety, frequency of events reporting, patient safety grade, number of events reported) and unit-level patient safety culture dimensions and is the relationship moderated by organizational characteristics (shift worked and contact with nurse manager) and individual characteristics (hospital tenure and work area/unit tenure)?

This research question focuses on the 53 hospital inpatient and outpatient units in terms of the average reporting by the unit nursing staff of manager contact frequency, manager safety rounding frequency, HSOPSC dimension scores, and patient safety grades. The mean positive responses were very similar for all patient safety dimensions and patient safety grade when comparing aggregate data from the participants with the unit-level data. It is noteworthy that at the unit-level the ranges varied greatly with the dimensions patient safety grade and frequency of manager contact and frequency of manager safety rounding. For example, with frequent manager contact on one unit 14% reported they had frequent manager contact indicating the nursing staff never or rarely have contact with their manager. Also, with frequency of manager safety rounding, one unit reported their manager conducted safety rounding 19% of the time. Approximately half of the units reported having contact with their manager and over half reported their manager conducted safety rounding. Again this is consistent with the aggregate participants data that nursing staff neither see their manager consistently nor making safety rounds.

At the unit-level the means of manager safety rounding frequency and manager contact frequency were correlated with the HSOPSC dimensions and patient safety grade. The two highest correlations of both unit-level manager safety rounding frequency and manager contact frequency were with the dimensions of supervisor/manager expectations and feedback and communication about error. These two dimensions were also much higher at the individual reporting level with both frequent manager contact and frequent manager safety rounding. The nursing staff perceive both of these to be important in communication from their manager with providing feedback about errors and changes from staff suggestions that are put into place based upon events and listening to staff about suggestions for improving patient safety. The nursing staff perceive that they are informed about errors that happen on the unit and involved in discussing ways to prevent errors from happening with their manager. The lowest correlations at the unit-level were with the dimensions regarding teamwork across units and handoffs and transitions. This is not surprising considering teamwork across units and handoffs and transitions are both hospital-wide dimensions and manager contact and manager patient safety rounding is occurring at the unit-level.

At the unit-level the results are consistent with the results for the second research question in this study. The unit nursing staff tended to give higher patient grades as their reported manager contact frequency and manager safety rounding frequency increased. This further supports that manager safety rounding and manager contact has a significant correlation to patient safety culture.

Limitations

A limitation to this study is the ability to generalize. The three investigator added questions limit the ability to compare this study's findings with the AHRQ comparative database

report because the added questions are not part of the HSOPSC.   The findings are limited to this participant group and not the population as a whole.

Implications: Practice, Education and Research

Practice

Safety rounding was one of the first strategies implemented by hospitals to develop a positive safety culture, although the focus has been on the executive level and not the nurse manager. The evidence supports the effectiveness of executive safety rounding in promoting open communication with front-line staff (Ashton, 2014; Budrevics & O'Neill, 2005; Frankel, 2008; Morello et al., 2012; Thomas et al., 2005; Sexton et al., 2014; Weaver et al., 2013). Furthermore, there is evidence to support improving patient safety culture reduces adverse events to patients (Singer & Vogus, 2013; Weaver et al., 2013). Despite the evidence that executive safety rounding improves patient safety culture, nurse manager safety rounding has not been emphasized as important. While the findings in this study found that nurse manager contact and nurse manager patient safety rounding is integral to patient safety culture, nurse manager patient safety rounding is inconsistent.

This study contributes to previous research on nurse manager safety rounding. Results from this study confirm the frequency of manager contact and frequency of manager safety rounding are a driving force in improving patient safety culture. Nurse manager safety rounding needs to be integrated into practice at the unit-level. The visibility of the nurse manager on their unit is vital. Nurse managers are in a position to influence quality of patient care through manager safety rounding. Nurse managers have the greatest influence on their units with front-line staff by supporting open communication. Manager safety rounding supports ownership and empowerment to solve patient safety concerns directly at the front-line.

Findings in this study also indicate nurse managers have more frequent contact and safety rounding with nursing staff who primarily work day shift or day and night shift. The nurse manager must have contact with staff and conduct patient safety rounding on all shifts. This needs to be taken seriously by hospital leaders and should be considered a strategic priority. In the SEIPS model, processes are influenced by the structure of the organization. The structure of the organization influences whether or not the nurse manager makes safety rounding a priority. Therefore, hospital leaders must be willing to change priorities in order to improve patient safety culture. Hospitals are open 24 hours a day staffed with nurses who care for patients. Hospital leaders must be willing to address nurse manager coverage expectations to improve patient safety culture and reduce harm to patients.

Education

The findings from this study support the need for manager safety rounding to be incorporated into nursing leadership curricula. The American Organization of Nurse Executives (AONE) developed nurse manager competencies recognizing that the nurse manager is the vital link between the front-line and administrative strategic plan (AONE, 2015). These competencies encompass three domains, which include science (managing the business), the leader within (creating the leader in yourself), and the art (leading the people) (AONE, 2015). Patient safety is in the domain of science. Within the domain of patient safety the four competencies are monitoring and reporting of events, participating in root cause analysis, monitoring incident reports, and promoting best practices (AONE, 2015). Patient safety is complex but the domain has four distinct competencies. There is nothing in the document focused on patient safety culture or safety rounding. The AONE also developed guiding principles for the role of the nurse executive in patient safety (AONE, 2007). While the guiding principles in the role of the

nurse executive in patient safety are comprehensive, there is not a focus on safety rounding. One of the methods to lead cultural change in the guiding principles is to increase interactions with staff on patient safety issues, yet the method of how is not apparent. This investigator would recommend that safety rounding be incorporated as a core competency for nurse managers and nurse executives.

Additionally, hospitals need to provide comprehensive training programs for nurse managers that focus on the core competencies of patient safety culture including nurse manager safety rounding and the importance of frequent contact with nursing staff. It is imperative for organizations to adopt patient safety competencies. Nurse managers must engage with staff in a meaningful way to improve patient safety culture.

Hospital leaders must endorse the behavior of nurse manager safety rounding into daily practice. In order for the nurse manager to adopt this behavior consistently, hospital leaders need to ensure adequate time is allocated for the nurse manager to spend on the unit interacting with front-line staff conducting patient safety rounding. Hospital leaders must evaluate the responsibilities of nurse managers in order to ensure proper resources are provided to allow adequate time on the unit for all shifts. Hospital leaders have the authority to adopt the behavior of nurse manager safety rounding as an organizational standard. Adoption of this behavior could influence patient safety culture and reduce events of harm.

Research

This study adds that the more nurse manager contact and safety rounding the higher the patient safety culture. Longitudinal studies that examine the influence of nurse manager contact and nurse manager safety rounding on patient safety culture would be beneficial using this investigator's additional questions in the HSOPSC.

It would also be beneficial to conduct studies on the process and components of nurse manager safety rounding that influence patient safety culture. What is it that the nursing staff see in nurse manager safety rounding and nurse manager contact that changes the perception about patient safety outcomes? Additional studies on how the shift worked influences the overall perception of safety by the nursing staff are needed. These studies could enhance the nursing knowledge to inform the practice of the nurse manager.

Although hospital tenure and unit tenure had a small effect size based on the findings in this study they both need to be explored further. In addition, the years of experience in this study indicated a fairly novice nursing staff. Future studies examining the years of experience and the influence on patient safety grade, manager contact and manager safety rounding would provide additional insight into the differences in novice versus experienced nurses. More research is needed to understand the differences in years of experience and overall nursing staff perceptions regarding patient safety culture.

An interesting finding was nursing staff who had more frequent contact with their nurse manager had a higher positive response to the dimension of non-punitive response to error. Further research would be beneficial to tease out the reasons for the nursing staff's perception of a blame free environment. It is well known that the dimension of patient safety scoring the lowest positive percent responses is non-punitive response to error and this continues to be a challenge nationally. Many hospitals have adopted the principles of just culture. As stated previously, just culture is one of the subcultures of patient safety culture. A just or fair culture is one that recognizes errors as system failures and not only individual failures (Kaufman & McCaughan, 2013; Sammer et al., 2010; Stavrianopoulos, 2012). It is a non-punitive environment in which staff feel free to speak up with safety concerns (Marx, 2001; Sammer et

al., 2010). It is clear front-line staff need an environment that is conducive to voicing concerns and reporting errors to improve patient safety culture.

Conclusion

The purpose of this study was to examine the influence of work systems, defined as nursing staff characteristics and organizational characteristics, on the process of nurse manager safety rounding and the outcomes of patient safety culture in the inpatient and outpatient hospital setting. This study affirms there is strong evidence to support that frequent nurse manager contact and the process of nurse manager safety rounding influences the outcome of patient safety culture. Furthermore, the joint effects of frequent nurse manager contact and frequent nurse manager safety rounding proved a synergistic effect on higher reporting of patient safety culture. It is known that hospitals have worked for decades to reduce patient harm. Many hospitals have developed and implemented various innovative processes to reduce harm to patients. Developing a highly reliable process of nurse manager safety rounding and increasing the frequency of nurse manager contact with nursing staff could have a positive impact on patient safety culture. Nurse leaders need to lead this change in their organizations. Based on the results of this study, organizations need to highly value the role of the nurse manager in patient safety culture.

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Appendix A: Institutional Review Board (IRB) Notification of Approval

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834

Office **252-744-2914**_ · Fax **252-744-2284**_ · **www.ecu.edu/irb**

Notification of Exempt Certification

From: Biomedical IRB
To: Teresa Anderson
CC: Elaine Scott
Date: 11/21/2016
Re: UMCIRB 16-001868
Patient Safety: Nurse Manager Safety Rounds and Influencing Characteristics

I am pleased to inform you that your research submission has been certified as exempt on 11/17/2016. This study is eligible for Exempt Certification under category #4.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five year period.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

Hospital Survey on Patient Safety

Instructions

This survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take about 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

> - An *"**event**"* is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.
> - *"**Patient safety**"* is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.

SECTION A: Your Work Area/Unit

In this survey, think of your "unit" as the work area, department, or clinical area of the hospital where you spend _most_ of your work time or provide _most_ of your clinical services.

What is your primary work area or unit in this hospital? Select ONE answer.

☐ a. Many different hospital units/No specific unit

☐ b. Medicine (non-surgical)

☐ c. Surgery

☐ d. Obstetrics

☐ e. Pediatrics

☐ f. Emergency department

☐ g. Intensive care unit (any type)

☐ h. Psychiatry/mental health

☐ i. Rehabilitation

☐ j. Pharmacy

☐ k. Laboratory

☐ l. Radiology

☐ m. Anesthesiology

☐ n. Other, please specify:

[   ]

Please indicate your agreement or disagreement with the following statements about your work area/unit.

Think about your hospital work area/unit…	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. People support one another in this unit	☐1	☐2	☐3	☐4	☐5
2. We have enough staff to handle the workload	☐1	☐2	☐3	☐4	☐5
3. When a lot of work needs to be done quickly, we work together as a team to get the work done	☐1	☐2	☐3	☐4	☐5

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
4. In this unit, people treat each other with respect.........	☐1	☐2	☐3	☐4	☐5
5. Staff in this unit work longer hours than is best for patient care...	☐1	☐2	☐3	☐4	☐5

SECTION A: Your Work Area/Unit (continued)

Think about your hospital work area/unit…	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
6. We are actively doing things to improve patient safety...	☐1	☐2	☐3	☐4	☐5
7. We use more agency/temporary staff than is best for patient care..	☐1	☐2	☐3	☐4	☐5
8. Staff feel like their mistakes are held against them...	☐1	☐2	☐3	☐4	☐5
9. Mistakes have led to positive changes here	☐1	☐2	☐3	☐4	☐5
10. It is just by chance that more serious mistakes don't happen around here...	☐1	☐2	☐3	☐4	☐5
11. When one area in this unit gets really busy, others help out	☐1	☐2	☐3	☐4	☐5
12. When an event is reported, it feels like the person is being written up, not the problem..............................	☐1	☐2	☐3	☐4	☐5
13. After we make changes to improve patient safety, we evaluate their effectiveness	☐1	☐2	☐3	☐4	☐5
14. We work in "crisis mode" trying to do too much, too quickly	☐1	☐2	☐3	☐4	☐5
15. Patient safety is never sacrificed to get more work done	☐1	☐2	☐3	☐4	☐5
16. Staff worry that mistakes they make are kept in their personnel file	☐1	☐2	☐3	☐4	☐5
17. We have patient safety problems in this unit	☐1	☐2	☐3	☐4	☐5
18. Our procedures and systems are good at preventing errors from happening..	☐1	☐2	☐3	☐4	☐5

SECTION B: Your Supervisor/Manager

Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report.

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	☐1	☐2	☐3	☐4	☐5
2. My supervisor/manager seriously considers staff suggestions for improving patient safety	☐1	☐2	☐3	☐4	☐5
3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts...	☐1	☐2	☐3	☐4	☐5
4. My supervisor/manager overlooks patient safety problems that happen over and over	☐1	☐2	☐3	☐4	☐5

SECTION C: Communications

How often do the following things happen in your work area/unit?

Think about your hospital work area/unit…	Never ▼	Rarely ▼	Some-times ▼	Most of the time ▼	Always ▼
1. We are given feedback about changes put into place based on event reports...	☐1	☐2	☐3	☐4	☐5
2. Staff will freely speak up if they see something that may negatively affect patient care	☐1	☐2	☐3	☐4	☐5
3. We are informed about errors that happen in this unit	☐1	☐2	☐3	☐4	☐5
4. Staff feel free to question the decisions or actions of those with more authority	☐1	☐2	☐3	☐4	☐5
5. In this unit, we discuss ways to prevent errors from happening again	☐1	☐2	☐3	☐4	☐5
6. Staff are afraid to ask questions when something does not seem right	☐1	☐2	☐3	☐4	☐5

SECTION D: Frequency of Events Reported

In your hospital work area/unit, when the following mistakes happen, *how often are they reported?*

	Never ▼	Rarely ▼	Some-times ▼	Most of the time ▼	Always ▼
1. When a mistake is made, but is *caught and corrected before affecting the patient*, how often is this reported?..	☐1	☐2	☐3	☐4	☐5
2. When a mistake is made, but has *no potential to harm the patient*, how often is this reported?..............	☐1	☐2	☐3	☐4	☐5
3. When a mistake is made that *could harm the patient*, but does not, how often is this reported?	☐1	☐2	☐3	☐4	☐5

SECTION E: Patient Safety Grade

Please give your work area/unit in this hospital an overall grade on patient safety.

☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**
Excellent	Very Good	Acceptable	Poor	Failing

SECTION F: Your Hospital

Please indicate your agreement or disagreement with the following statements about your hospital.

Think about your hospital…	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. Hospital management provides a work climate that promotes patient safety	☐1	☐2	☐3	☐4	☐5
2. Hospital units do not coordinate well with each other....	☐1	☐2	☐3	☐4	☐5
3. Things "fall between the cracks" when transferring patients from one unit to another	☐1	☐2	☐3	☐4	☐5
4. There is good cooperation among hospital units that need to work together	☐1	☐2	☐3	☐4	☐5

SECTION F: Your Hospital (continued)

Think about your hospital…	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
5. Important patient care information is often lost during shift changes	☐1	☐2	☐3	☐4	☐5
6. It is often unpleasant to work with staff from other hospital units...	☐1	☐2	☐3	☐4	☐5
7. Problems often occur in the exchange of information across hospital units...	☐1	☐2	☐3	☐4	☐5
8. The actions of hospital management show that patient safety is a top priority	☐1	☐2	☐3	☐4	☐5
9. Hospital management seems interested in patient safety only after an adverse event happens	☐1	☐2	☐3	☐4	☐5
10. Hospital units work well together to provide the best care for patients	☐1	☐2	☐3	☐4	☐5
11. Shift changes are problematic for patients in this hospital	☐1	☐2	☐3	☐4	☐5

SECTION G: Number of Events Reported

In the past 12 months, how many event reports have you filled out and submitted?

☐ a. No event reports   ☐ d. 6 to 10 event reports

☐ b. 1 to 2 event reports   ☐ e. 11 to 20 event reports

☐ c. 3 to 5 event reports   ☐ f. 21 event reports or more

SECTION H: Background Information

This information will help in the analysis of the survey results.

1. How long have you worked in this hospital?

☐ a. Less than 1 year   ☐ d. 11 to 15 years

☐ b. 1 to 5 years   ☐ e. 16 to 20 years

☐ c. 6 to 10 years   ☐ f. 21 years or more

2. How long have you worked in your current hospital work area/unit?

☐ a. Less than 1 year   ☐ d. 11 to 15 years

☐ b. 1 to 5 years   ☐ e. 16 to 20 years

☐ c. 6 to 10 years   ☐ f. 21 years or more

3. Typically, how many hours per week do you work in this hospital?

☐ a. Less than 20 hours per week   ☐ d. 60 to 79 hours per week

☐ b. 20 to 39 hours per week   ☐ e. 80 to 99 hours per week

☐ c. 40 to 59 hours per week   ☐ f. 100 hours per week or more

SECTION H: Background Information (continued)

4. What is your staff position in this hospital? Select ONE answer that best describes your staff position.

☐ a. Registered Nurse   ☐ j. Respiratory Therapist

☐ b. Physician Assistant/Nurse Practitioner   ☐ k. Physical, Occupational, or Speech Therapist

☐ c. LVN/LPN   ☐ l. Technician (e.g., EKG, Lab, Radiology)

☐ d. Patient Care Asst/Hospital Aide/Care Partner   ☐ m. Administration/Management

☐ e. Attending/Staff Physician   ☐ n. Other, please specify:

☐ f. Resident Physician/Physician in Training

☐ g. Pharmacist

☐ h. Dietician

☐ i. Unit Assistant/Clerk/Secretary

5. In your staff position, do you typically have direct interaction or contact with patients?

☐ a. YES, I typically have direct interaction or contact with patients.

☐ b. NO, I typically do NOT have direct interaction or contact with patients.

6. How long have you worked in your current specialty or profession?

☐ a. Less than 1 year   ☐ d. 11 to 15 years

☐ b. 1 to 5 years   ☐ e. 16 to 20 years

☐ c. 6 to 10 years   ☐ f. 21 years or more

SECTION I: Your Comments

Please feel free to write any comments about patient safety, error, or event reporting in your hospital.

THANK YOU FOR COMPLETING THIS SURVEY.

Appendix C: Investigator Additional Questions

1. On a typical work-day, how often do you see your supervisor/manager?
- ☐   Never
- ☐   Rarely
- ☐   Sometimes
- ☐   Most of the time
- ☐   Always

2. Typically, what shift do you work?
- ☐   Day
- ☐   Night
- ☐   Both Day and Night
- ☐   Weekends

3. My supervisor/manager makes daily safety rounds that include spending time with patients and staff discussing safety.
- ☐   Never
- ☐   Rarely
- ☐   Sometimes
- ☐   Most of the time
- ☐   Always