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Nurse Staffing and Leadership Support on In-Patient Hospital Safety

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

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MA, Walden University, 2016

BA, University of Missouri – Kansas City, 2013

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

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Abstract

In-patient hospital safety relates to healthcare facilities protecting patients from medical errors. The “problem of many hands” exists, where there is a gap in understanding who is responsible for in-patient hospital safety, nurse staffing, or leadership support. The purpose of this quantitative study was to determine the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) as well as the association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the 2018 Agency for Healthcare Research and Quality survey. This study incorporated the theory of the transformational leadership, a behavior-based approach. The database consists of information from 568,524 hospital respondents. Only data from nurses surveyed were included in the analyses, making the study sample size 382,834. From a chi square analysis, it was found that nurse staffing had a statistically significant association with in-patient hospital safety, specifically the nurse-to-patient ratio. Nurses who reported working longer hours did not indicate concern with in-patient hospital safety, and this result was statistically significant. The findings of this study also showed that leadership support was significantly associated with in-patient hospital safety. Recommendations include further research surrounding in-patient hospital safety and the association between patient safety culture and interventions on an organizational level. Implications for social change encourage promoting the idea that leadership, along with nurses, should have a hands-on approach to ensure in-patient hospital safety in healthcare organizations.

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Dedication

I dedicate my dissertation work to my family and friends. A special feeling of gratitude to my loving parents, Michelle Watson and Edward Orr, and grandmother, Mae Watson, your moral support and encouragements fueled my strengths towards completing my doctoral study. I love you.

I also dedicate this dissertation to my best friend Micaela Brown, who has supported me throughout the process. I will always appreciate all she has done, for helping me develop my writing skills and the many hours of proofreading.

I dedicate this work and give special thanks to my aunt Dionne Watson, uncle Donald Watson, and cousin Deonta Watson-Gray, for being there for me throughout the entire doctorate program. You have been my best cheerleaders.

Finally, I dedicate this work to my daughter, Phoenix. This work was to show you that anything is possible, as long as you continue to strive for excellence in everything you do.

Acknowledgments

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Section 1: Foundation of the Study and Literature Review

Introduction

In the past 15 years, the concern for patient safety has been a priority, motivating healthcare policy proposals and leading to joint efforts of institutions, health professionals, and patients in order to reduce and effectively control the adverse events in healthcare services (Mitchell et al., 2016). However, many healthcare organizations worldwide still lack notifying the public of in-patient hospital safety issues within their organizations. Research has shown that 9.2% of hospitalized patients experience adverse events, and 7.4% of these adverse events are lethal (Kristensen et al., 2016). Healthcare providers try to do the right thing, but because they work in a complex, imperfect system with many variables, at times, in-patient hospital safety is compromised. Efforts to ensure in-patient hospital safety involves the multifaceted collaboration among multi - entity organizations, electronic health technologies, and specialty care departments. Therefore, the question remains of who holds the responsibility of in-patient hospital safety. Responsibility is defined as “the state or fact of being accountable or to blame for something” (Merriam-Webster', 2011). While there have been studies conducted examining the relationship of nurse staffing and patient safety and studies on leadership support and patient safety, there has not been a study that included both nurse staffing and leadership support and patient safety. In this study, I explored the relationship of nurse staffing and leadership support on in-patient hospital safety.

Researchers have stated that the tradition and culture of healthcare provision is one that suggests that error is unacceptable, and acknowledgement of mistakes is an

admission of lack of skills (Slade et al., 2018). This approach has deterred the development of a culture that supports learning, improvement, and accepting responsibility to minimize, if not avoid, errors (Slade et al., 2018). With research showing that 7.4% of adverse events are lethal (Schwendimann et al., 2018), this research has the potential to promote positive social change in in-patient hospital safety by discovering the relationship of nurse staffing and leadership support on in-patient hospital safety. This may lead to understanding the problem of many hands by highlighting the need to discuss and address the issue of responsibility for in-patient hospital safety.

Problem Statement

In-patient hospital safety is related to how healthcare facilities protect their patients from medical errors and hospital acquired injuries and infections. Medical error is the third leading cause of death, with an estimated 251,000 deaths annually in the United States (Anderson & Abrahamson, 2017). Medical error rates are significantly higher in the United States compared to other developed countries (Anderson & Abrahamson, 2017). Medical errors compromise in-patient hospital safety and decrease trust in health care institutions (Padgett et al., 2017).

Nurse staffing, including workload, has been linked to in-patient hospital safety (Liu et al., 2018). For each additional patient added to a nurse's workload, it decreases the nurse’s time to focus on patients’ needs and likely increases the patient's odds of morbidity and mortality (Aiken et al., 2002). Nursing workload measurement systems were developed to measure patients’ needs for nursing care and to determine the time required to meet those needs. This system, however, does not account for the nonpatient-

focused workload (e.g., time spent waiting for work orders, tracking down equipment, or finding a policy that is needed for a care decision) that impacts nurse staffing (Griffiths et al., 2020). Time that nurses spend on nonpatient-focused workload reduces the time spent on patient care.

Although the perception of leadership support has been conventionally used to mention upper management of an organization, bedside registered nurses and their immediate supervisors play a crucial leadership role in acting as change agents and in promoting in-patient hospital safety in a hospital organization. Leadership support in healthcare has a moral and legal responsibility to strive to improve delivery of care and ensure a high quality of in-patient hospital safety (Ghanem & Castelli, 2019). Leadership support is in a primary position to mandate policy, systems, procedures, and organizational climates (Ghanem & Castelli, 2019). Leadership support tends to have a more positive perception about in-patient hospital safety than nurses, and the larger this perception gap, the more likely errors will be made in regards to in-patient hospital safety (Kristensen et al., 2016). Leadership support is critical to ensuring in-patient hospital safety. Health organization leadership should prioritize, focus, and promote in-patient hospital safety and generate the organizational framework in which in-patient hospital safety can be consistently and effectively delivered (Ghanem & Castelli, 2019). Effective leadership support that supports the nurse staffing on in-patient hospital safety improvement efforts is vital to achieve in-patient hospital safety.

Consequently, the “problem of many hands” exists, where there is a gap in understanding who is responsible for avoiding medical errors, thereby ensuring in-patient

hospital safety (Dixon-Woods & Pronovost, 2016). Those in leadership roles look to the clinical staff to ensure that in-patient hospital safety initiatives are being implemented, while the clinical staff look to leadership support to ensure that they have the proper tools, policies, and programs to achieve in-patient hospital safety. In this study, I examined this gap by looking at the relationship of nurse staffing and leadership on in-patient hospital safety.

Purpose of Study

The overall purpose of this quantitative study was to address the research gap in understanding who is responsible for avoiding medical errors, thereby ensuring in-patient hospital safety. The gap in the literature is that there is a "problem of many hands," where healthcare is such a complex field that involves many elements that there is not a clear understanding of who holds the responsibility for in-patient hospital safety (Dixon-Woods & Pronovost, 2016). In this study, I conducted quantitative analyses of survey data from The Hospital Database Report of the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture User Database Report 2018. The data were collected from participating hospitals between the years of 2016 and 2017 (see AHRQ, n.d.).

The purpose of this research was to describe the relationship of nurse staffing and leadership support on in-patient hospital safety and to address the "problems of many hands" (i.e., understanding who is responsible for patient safety). In this study, I determined the relationships between three variables – nursing staff and leadership support (independent variables) and in-patient hospital safety (dependent variable).

Specifically, I conducted a quantitative study using a retrospective review of data to describe the relationship between nurse staffing and in-patient hospital safety and between leadership support and in-patient hospital safety.

Research Questions and Hypotheses

In this study, I aimed to describe the relationship of nursing staffing and leadership support on in-patient safety in a hospital setting through answering the following research questions:

Research Question 1: What is the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018?

$H_0$1: There is no association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

H_a1: There is an association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

Research Question 2: What is the association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018?

$H_0$2: There is no association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top

priority) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

H_a2: There is an association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018.

Theoretical Foundation

In this study, I incorporated the theory of the transformational leadership to encourage clinicians to find better ways to achieve in-patient hospital safety. Transformational leadership is a behavior-based approach to achieve performance beyond the simple expectations of workers and to make every effort to achieve excellence (Bass & Avolio, 1994). Transformational leadership is comprised of four dimensions: inspirational motivation, idealized influence, individualized consideration, and intellectual stimulation (Eberly et al., 2017). Inspirational motivation is the communication of the organization's vision and the use of positive appeals to motivate followers to work toward the vision, where the leader also exhibits positivity and interest to overcome challenges (Bass, 1985). Idealized influence represents a leader who is essentially a role-model, which shows extraordinary levels of ethical standards and competence (Bass, 1985). Individualized consideration is shown by recognizing and attending to each follower's weaknesses and strengths, while training and evolving their future potential (Bass, 1985). Lastly, intellectual stimulation is revealed when leaders include followers in resolutions and challenge them to think of new viewpoints for

pinpointing solutions to problems (Bass, 1985). Applying the theory of transformational leadership to the misunderstanding of responsibility of in-patient hospital safety may provide insight into the ways in which leadership can influence in-patient hospital safety to include encouraging the healthcare worker population to strive for positive patient outcomes and including the healthcare workers in the creation of in-patient hospital safety initiatives and implementation.

Transformational leadership has regularly been connected to employee behaviors and attitudes in nursing and management settings (Boamah et al., 2018). Researchers have proposed that the four dimensions of transformational leaders may serve as qualifications to construct an essential empowerment work environment (Boamah et al., 2018). Transformational leaders are known to convert the organization by inspiring followers through stimulating motivation efforts and inspiring innovation. These characteristics are mandatory for creating in-patient hospital safety within an organization and implementing new in-patient hospital safety initiatives (McFadden et al., 2015). In this study, I focused on exploring and identifying the responsibility of in-patient hospital safety. With the charismatic inspirational element of the transformational leader, an organization can transform into an organization that provides consistent and effective in-patient hospital safety.

Nature of the Study

A quantitative approach using a retrospective review of data was used for this study to determine the relationship between inadequate nurse staffing and inadequate leadership support (independent variables) on in-patient hospital safety (dependent

variable). Quantitative research represents the best choice to compare variables to one another using numerical values and statistically based analysis techniques (Frels & Onwuegbuzie, 2013). By using transformational leadership theory, I provide information that can be helpful in improving the nurse's workload design for hospital units through exploring its role in in-patient hospital safety. By defining the responsibility of in-patient hospital safety, I provide information to leadership support to work towards improving their support of the clinical staff. This approach aligned with the problem statement because it showed the relationship of nurse staffing and leadership support to in-patient hospital safety.

I conducted a nonexperimental test to examine the relationship between variables at a single point in time. The test chosen for this research was a chi-square test. A chi-square analysis was conducted to determine whether there was an association between the independent and dependent variable. The primary use of the chi-square test is to study if two variables are independent. To be independent means that the two variables are not related. By ruling out an association of the two variables, the chi-square can be used to evaluate whether two variables are dependent of each other (Turhan, 2020). Because this study was nonexperimental and thus cannot infer cause and effect, the study design and analysis demonstrated relationships between the independent variables and dependent variable, which were appropriate to answer the research questions.

Literature Search Strategy

The purpose of this study was to describe the relationship between nurse staffing and leadership support on in-patient hospital safety to help address the gap in literature on

who holds the responsibility for in-patient hospital safety. A wide-ranging literature search was performed using the Cumulative Index of Nursing and Allied Health Literature and PUBMED databases through the Walden University library. Research articles were geared towards peer-reviewed articles published between 2014 and 2020. In addition, The Joint Commission, World Health Organization, and the AHRQ websites were searched to achieve additional knowledge concerning research opportunities and current trends related to in-patient hospital safety. Key words used in the literature search were *nurse to patient ratios and in-patient hospital safety, nurse staffing and in-patient hospital safety, leadership support and in-patient hospital safety, leadership styles in healthcare and in-patient hospital safety,* and *transformational leadership and in-patient hospital safety.*

Literature Review Related to Key Variables

This review of literature provides a synthesis of information in the literature related to this study's key concepts. I begin the literature review with information on patient safety, leadership support, and responsibility. With a clear definition of responsibility, I then assess the essential concepts and characteristics of responsibility for in-patient hospital safety that motivates organizational culture of ensuring patient safety. The literature review also provides information on nurse-to-patient ratios, nurse staffing, leadership styles in healthcare, transformational leadership, and in-patient hospital safety.

Patient Safety

In-patient hospital safety is related to how hospitals and other health care organizations protect their patients from errors, injuries, accidents, and infections. While

many hospitals are good at keeping their patients safe, some hospitals are not. Hall et al. (2016) stated that 3.7% of hospital errors have led to harmful adverse events. Based on this research, there are many factors and human contributors that play into in-patient hospital safety incidents. Well-being can be looked at from two different ends. At one end, there is a level of happiness, and at the other end is anxiety and depression. The well-being of staff plays a significant role in patient safety. For example, poor well-being of staff and high levels of burnout is associated with poor in-patient hospital safety, such as medical errors (Hall et al., 2016).

In-patient hospital safety is vital to healthcare quality and is one of the main constraints supervised by all healthcare organizations worldwide. Evaluating perceptions of in-patient hospital safety implies the consideration of a number of factors and characteristics pertaining to the hospital setting. Successful and sustainable in-patient hospital safety improvement rests heavily on an organizational culture of patient safety, in which the leadership supports systemwide attitudes, actions, teamwork, and technology to reduce the risk of patient harm (Okuyama et al., 2018).

Avoiding patient harm is essential to the work of healthcare professionals. Hippocrates (ca. 460–377 BCE), known as the Father of Modern Medicine, helped set this standard when he said, “The physician must have two special objects in view with regard to disease, namely, to do good or to do no harm” (as cited in Evans, 2016, p. 1). Modern day medicine, however, still struggles to realize its primary mission. Today, researchers have estimated that one in three hospitalized patients experiences preventable harm, and over 400,000 individuals per year die from these injuries (Wears et al., 2016).

Despite the discouraging statistics in today's era of data-driven healthcare, the industry can turn around decades of lost ground in in-patient hospital safety and make much needed improvement in preventable errors.

Nurse Staffing

Nurses hold the burden of the majority of care in the hospital setting, representing 30 to 40% of the hospital staffing. Additionally, nurses are the main contributors towards ensuring there are limited adverse events and continuous monitoring of patients during their hospital stay, which contributes to the patient's outcome (Rochefort et al., 2015). Nursing workloads are usually associated with nurse-to-patient ratios. The nurse-to-patient ratio describes the number of patients assigned to each nurse. An organized assessment of 102 studies established that improved nursing staffing levels were connected to reduced numbers of adverse events in a healthcare setting (MacPhee et al., 2017). Due to high workloads, nurses have reported not completing many patients care tasks during their shifts. Ball et al. (2014) suggested that when care is "missed," it is possible that in-patient hospital safety may be compromised. Moreover, nurses have stated that they lack workforces to give adequate nursing care and undergo fatigue due to extreme workloads (Aslan et al., 2016). Although there has been much research shown to be "compelling" and "overwhelming," there are areas that existing studies have yet to address (Griffiths et al., 2016). One of the areas that lacks research is who holds the responsibility of in-patient hospital safety. Because healthcare is such a multifaceted system, everyone points the finger elsewhere for who holds responsibility. The ability to

achieve quality in-patient hospital safety would ensure a balance of skilled and qualified nursing staff.

Leadership Support

Both nursing and evidence-based medicine are the instruments for instituting high productivity and quality of care in healthcare organizations (Sfantou et al., 2017). Leadership has been defined as "the relationship between the individual/s who lead and those who take the choice to follow, while it refers to the behavior of directing and coordinating the activities of a team or group of people towards a common goal" (Sfantou et al., 2017, p. 1). Leadership support plays a vital role in acting as change representatives and promoting in-patient hospital safety in their organizations. With the advancement of safety, this can increase the need for leadership to ensure that the skilled clinical professionals are well trained in tasks that will ensure safety. A few of the safety tasks include responding to patient and staff concerns, supporting efforts to improve patient safety, establishing a culture of safety, and monitoring progress. Past research has noted that the relationship between leadership support and in-patient safety has exposed essential organizational behaviors (AHRQ, 2019).

For positive in-patient hospital safety to exist, theoretical as well as empirical research has addressed that strong, trustworthy, and noticeable support for in-patient hospital safety initiatives by organization leaders is essential to positive in-patient hospital safety (Castel et al., 2015). To reinforce skills and knowledge among the leadership, a multicomponent program would need to be implemented. This multicomponent program would consist of academic input, exercises, reflections and

discussions, networking, and action learning. The multicomponent program is intended to optimize individual leadership, advance the current leadership and quality management skills and knowledge, and bring the leaders and the hospital departments to a higher performance level of in-patient hospital safety (Kristensen et al., 2016). A training interventions study completed by Castel et al. (2015) noted that leadership support needs modifications for ensuring staffing support. This study revealed that many nurses are in fear of reporting safety issues due to the fear of repercussions (Castel et al., 2015). With this research, it is understood that leadership must have the correct arrangement of clinical expertise and organizational awareness. They must be able to build strong and collaborative interprofessional relationships and lead multifaceted in-patient hospital safety change. Their leadership style should promote interprofessional teamwork, transform the team, inspire them to want to do more, and support innovative ideas. This leadership style is addressed by transformational leaders. Transformational leaders are known to convert the organization by inspiring the followers through stimulating motivation efforts and inspire innovation. These characteristics are mandatory for creating in-patient hospital safety within an organization and implementing new in-patient hospital safety initiatives (McFadden et al., 2015).

Leadership Style in Healthcare

The healthcare industry is adapting to rapid changes in patient safety, requiring organizations to revisit their leadership styles. In this section, I outline leadership styles and the different ways that leadership styles drive change in quality in-patient hospital safety. Nursing leadership has an essential role in hospital management. This includes

facilitating care, ensuring patient safety, enhancing the quality of work life of nurses, and championing change processes that serve these ends (Asiri et al., 2016). This requires a leadership style that will empower the nursing staff to perform their obligations using best practices. Nurse empowerment is not only an essential requirement but it also affects work performance to achieve these outcomes. Effective leadership styles from healthcare providers are vital for increasing in-patient hospital safety. The effective leadership styles are known for positive outcomes in regards to delivery of care from both the patients and the nursing staff. Positive leadership styles have been known to increase the levels of patient satisfaction, increase the nursing staff's stability, and decrease burnout (Sfantou et al., 2017).

A noted topic in leadership research concerns the influence of leadership style, the array of attitudes that leaders should hold and behaviors that should be exhibited. Ulrich et al. (2019) acknowledged that unhealthy work environments lead to stress of healthcare employees, ineffective delivery of care, and medical errors. Understanding that a healthy work environment is vital to guarantee in-patient hospital safety and to increase nurse recruitment and retention in healthcare organizations, the American Association Critical Care Nurses designed six standards for creating and upholding a healthy work environment. These standards are characterized by evidence-based and relationship-centered principles and include "skilled communication, true collaboration, effective decision making, appropriate staffing, meaningful recognition, and leadership" (Ulrich et al., 2019). While all six standards are crucial, having a leader who is engaged in those they are leading is the foundation for a healthy work environment.

Leadership styles that balance adequate ideas and perspectives from employees allow the staff members that they have a say in their jobs and that they are a part of the team. This type of leadership shows the employees that the leaders have an open-door policy and allows the employees an opportunity to be open about ideas, opinions, and challenges. Leaders who use a leadership style that exhibits these qualities provide their employees with the ability to trust them and also provide quality in-patient hospital safety (Regan et al., 2016).

Transformational Leadership

Creating work environments for nurses that are most favorable to patient safety requires essential changes throughout the hospital healthcare organizations. These changes require a leadership style capable of transforming not just the environment but also the beliefs and practices of nursing staff in the hospital environment and those in the hospital healthcare organization who establish the policies and practices that affect the environment. Researchers have shown that hospital transformational leadership style can help create an environment conducive to in-patient hospital safety (McFadden et al., 2015). Transformational leadership is described as a “higher order exchange” based on a mutual relationship that creates a fundamental shift in orientation, with both long- and short-term implications for development and performance (Bass, 1985). Higgins (2015) found that transformational leaders improve the quality of in-patient hospital safety by creating supportive practice environment and organizational citizenship behaviors. Transformational leadership embodies many of the attributes deemed essential for effective leadership, such as trusting leader-follower relationships; awareness of self,

context, and the needs of others; and ability to inspire/motivate others in adopting a similar vision and high-performance expectations (Higgins, 2015).

Researchers have continued to demonstrate the need for transformational leadership in nursing environments, and the evidence has helped improve in-patient hospital safety in multiple settings when this type of leadership is practiced (Fischer, 2017). Transformational leadership leads to greater safety, improved patient outcomes, and higher motivation and job satisfaction for staff members (Fischer, 2016). It is the "golden child" of leadership styles. This is why the American Nurses Credentialing Center (n.d.) has identified transformational leadership as one requirement for hospitals achieving Magnet designation. Nurses play vital roles in health care organizations. How they are managed by their leaders can drastically affect their performance and influence in-patient hospital safety.

Summary and Gap in Literature

The one area that has yet to be addressed is a lack of research that has indicated who is responsible for ensuring in-patient hospital safety. There is presently a "problem of many hands," where healthcare providers and nurses are not sure who holds the burden of responsibility for in-patient hospital safety. The literature contains research that surrounds nurse staffing and in-patient hospital safety, along with additional information in regards to leadership's role in in-patient hospital safety. However, healthcare is a multifaceted organization where the responsibility of in-patient hospital safety cannot be solely placed on a group of people who are only partially being guided towards doing no harm. Nurses can only do so much with a lack of leadership. In this study, I provide

information on the relationship on nurse staffing and leadership support on patient safety, which may help understand who holds the responsibility of patient safety.

Definitions

For this study, the following terms were defined.

Adverse event: Injuries caused by healthcare providers, instead of the underlying condition of the patient (Rochefort et al., 2015).

Healthy employment: The American Federation of Teachers defined the term of healthy employment as "continuous existence of adequate number of personnel at different knowledge and skill level that would enable meeting patient care requirements and safe working conditions" (as cited in International Council of Nursing, 2006).

Leadership support: "The relationship between the individual/s who lead and those who take the choice to follow, while it refers to the behavior of directing and coordinating the activities of a team or group of people towards a common goal" (Sfantou et al., 2017, p. 2).

Near miss: This type of event is defined as an event or situation that could have resulted in harm, but did not, either by chance or timely intervention (Sheikhtaheri, 2014).

Patient outcome: The measure of health and well-being of patients associated with medical care (Porter et al., 2016).

Patient safety: The prevention from harm to patients (Erickson et al., 2003), which is also tied into the perception of patient safety.

Patient safety event: An event or situation that either did or could have impacted a patient negatively (AHRQ, 2019).

Preventable adverse events: Harm to a patient caused by their medical care rather than their underlying medical issue (Lewis et al., 2015).

Transformational leadership: This leadership style is defined as a relational leadership style in which followers have trust and respect for their leader, have participative decision-making practices, and are motivated to go above and beyond normal work expectations to achieve organizational goals (Bass, 1985).

Assumptions

Assumptions are made regarding circumstances beyond the control of the researcher that are accepted as true throughout a study (Barnham, 2015). The following assumptions were made in the study. The participants provided honest feedback during the interviews. The participants' desire to provide safe care to patients and not to harm them intentionally or unintentionally by making errors. Registered nurses and leadership who participated in the survey were comfortable with expressing their thoughts and ideas about in-patient hospital safety.

These assumptions were believed to be true, but could not be verified. For the study results to have value, it necessary to assume that the research subjects were honest in their responses and that their experiences yielded new insights regarding the study topic. It was also assumed that employees had basic in-patient hospital safety knowledge regarding error reporting. The assumptions also included management support for

employee participation and application of information learned during the interventional workshop in their work areas.

Scope and Delimitations

The scope of this doctoral study is exploratory and descriptive with information obtained from the Hospital Database Report of the AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018. The research is limited to only the nurses due to the nurses having the most interaction with in-patients and direct access and interaction with hospital leadership. In-patient hospital safety is provided in multiple hospital units (emergency department, acute care, intensive care unit, medical/surgical, neurology units, etc.) relying on hospital personnel with varied expertise and training. In-patient hospital safety is a multifaceted approach that requires tackling challenges on several levels of the organizational structure (i.e., nurses and hospital leadership) and eliminate the culture of blame.

The primary data gathering was conducted by AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018. The data was collected from participating hospitals between the years of 2016 and 2017 (AHRQ, n.d.). The AHRQ Hospital Survey on Patient Safety Culture presents data from 630 U.S. hospitals, as well as a chapter on trending that presents results showing change over time for 306 hospitals that administered the survey and submitted data more than once. The data that will be used in this study will include nurse staffing, leadership support, and in-patient safety.

Significance

Contribution to Healthcare Practice

Many years after the implementation of the Affordable Care Act, patient safety remains a major challenge for the United States healthcare organizations (Adler, Yi, Li, McBroom, Hauck, Sammer, Jones, Shaw, & Classen, 2015). This study can contribute to an effective and improve healthcare administrative practice by providing healthcare organizations with information relevant to improving existing administrative processes for in-patient hospital safety. The study findings may influence healthcare organizations to continue seeking strategies to improve in-patient hospital safety, by looking beyond the frontline nursing staff. This study in addition to nurse staffing also describes the relationships of specific leadership style that would be effective in decreasing in-patient safety adverse events that healthcare leadership can evaluate and consider implementing in their healthcare organizations.

Implications to Social Change

Strengthening relationships between managers and employees will help to achieve a more committed workforce (Lam, O'Donnell & Robertson, 2015). A committed workforce could stabilize the work environment, which has a significant influence on improving patient care, increasing patient satisfaction, and the experiences shared with their families, and improve job satisfaction for nurses (Burke, Dolan, Fiksenbaum, 2014). This study's implications for social change are infinite, to include, creating awareness of the benefits of quality in-patient hospital safety amongst leadership and healthcare workers, providing critical information in-patient hospital safety responsibility, and

promoting the idea that leadership along with nurses should have a hands-on approach to ensure in-patient hospital safety in healthcare organizations.

Summary

Pertinent literature has been able to recognize the relationship between nurse staffing, leadership support, and in-patient hospital safety. That research indicated that nurses hold the burden of the majority of care in the hospital setting. Nurses also are the main contributors towards ensuring there are limited adverse events, and continuous monitoring of the patients during their hospital stay, which contributes to the patient's outcome (Rochefort et al., 2015). Nursing workloads are usually associated with patient-nurse ratios. Nurses state that they lack workforces to give adequate nursing care and undergo fatigue due to extreme workloads (Aslan et al., 2016). An adequate nurse-to patient ratio must include staff that are able to ensure correct clinical knowledge and skills are needed.

Current literature also states, leadership support plays a vital role in acting as change representatives and promoting in-patient hospital safety in their organizations. For positive in-patient hospital safety to exist, theoretical as well as empirical research debate that strong, trustworthy and noticeable support for in-patient hospital safety initiatives by organization leaders is essential (Castel et al., 2015). A training interventions study completed by Castel, Ginsburg, Zaheer, and Tamim noted that leadership support is in need of modifications for ensuring staffing support (2015). This study showed that many nurses were in fear of reporting safety issues due to the fear of repercussions (Castel et al., 2015).

With information on the relationship on nurse staffing and leadership support on patient safety and trying to understand who holds the responsibility of patient safety, there is a clear gap that there is a problem of many hands. Nurses are the largest component of care in the hospital workforce. Research has described a relationship between low nurse staffing levels and patient safety and although the research is widespread, there are areas that current research has yet to address (Griffiths et al., 2016). The most important area of research that has not been addressed it the "problem of many hands." With in-patient hospital safety being a multifaceted area of healthcare, leaders will face challenges creating high-performing teams and a safe healthcare experience, including staff shortages, work hours, workloads, and staffing ratios that affect patient safety (O'Donovan et al., 2019). Lack of staff engagement, staff burnout, rapidly changing work environments, and a culture of blame also can complicate the effort (McSherry & Pearce, 2018). Which leads to the transformational leader, who understands that a healthy work environment is vital to guarantee patient safety (Frankel & PGCMS, 2019). In essence, a leader who is committed to prioritizing and making in-patient hospital safety visible through every day actions is a critical part of creating a true culture of safety (Fischer, Jones, & Verran, 2018). Leaders must commit to creating and maintaining a culture of safety; this commitment is just as critical as the time and resources devoted to revenue and financial stability, system integration, and productivity (Fischer et al., 2018). Maintaining a safety culture requires leaders to consistently and visibly support and promote everyday safety measures (Fischer et al., 2018).

Conclusion

Although there is much research and support towards in-patient hospital safety, the healthcare organizations do not work together to determine functional protocols to achieve in-patient hospital safety. The research has shown that nurses are the biggest component of healthcare, those nurses cannot and do not have the authority to develop protocols to enforce a patient safety climate. This is where a leadership style that would not only provide an effective environment, but also help to ensure that the staff members have a clear understanding of a patient safety climate. Strategies that dynamic and respected leadership support use must be creative and innovative. Some key strategies are to be visible on the clinical units, communicate effectively the importance of a patient-centric environment, and share their vision for excellence. As in-patient hospital safety field evolves, there is a growing recognition of the role that organizational leadership plays in prioritizing in-patient hospital safety, through actions such as establishing a culture of safety, responding to patient and staff concerns, supporting efforts to improve safety, and monitoring progress.

Section 2: Research Design and Data Collection

Introduction

The purpose of this study was to explore and describe the relationship of nurse staffing and leadership support on in-patient hospital safety that can provide information to address the gap of whose responsibility is it to ensure in-patient safety. For this study, the independent variables were nurse staffing and leadership support, and the dependent variable was in-patient hospital safety. I applied a nonexperimental exploratory and descriptive research design to determine the relationship of nurse staffing, leadership support, and in-patient safety. This section addresses the study design and rationale, methodology, and threats to validity and data analyses.

Research Design and Rationale

In this study, I determined relationships between three variables – nursing staffing and leadership support (independent variables) and in-patient hospital safety (dependent variable). Specifically, I determined the relationship between the independent variable of nurse staffing measured as the nurse-to-patient ratio and nurse's hours worked and the dependent variable of in-patient hospital safety. I also determined the relationship of another independent variable, leadership support, measured as the work climate that promotes patient safety and actions of hospital management that show that patient safety is a top priority, and the dependent variable of in-patient hospital safety. A quantitative design was used with the statistical packages for social sciences (SPSS). I used data from The Hospital Database Report of the AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018. A chi-square analysis was conducted testing the

relationships between the variables. Results of these chi-square analyses established the association of the variables.

Hwang et al. (2019) conducted a study to examine patient participation in patient safety activities in hospitals and to investigate their relationships with nurses' patient-centered care competency, teamwork, and safety climate. The used a cross-sectional study design. This study was part of a project over multiple years (2014 – 2016) on patient-centered care and patient experiences of patient safety and quality care. They used questionnaires from health care practitioners in Seoul, Korea healthcare. Chi-square tests were used in this study to identify differences in degrees of patient participation by participants' general characteristics (Hwang et al., 2019). Hwang's study is relates to the current study because it takes a look into patient safety in hospital settings and how the nurses play a role in ensuring safety.

Methodology

Population

The Hospital Database Report of the AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018 consists of information from 568,524 hospital respondents across 630 hospitals. The data were collected from participating hospitals between the years of 2016 and 2017 (AHRQ, n.d.). Most database hospitals ranged from 25 to 290 beds. The hospitals included in the data were nonteaching, nongovernment not for profit. The hospitals represented all geographic regions in the United States. The South Atlantic/Associated Territories region had the most hospitals. These characteristics

of the hospitals included in the database are consistent with the distribution of hospitals registered with the American Hospital Association.

The average hospital response rate was 54%, with an average of 608 completed surveys per hospital (AHRQ, n.d.). Most hospitals (80%) administered web surveys, which resulted in lower response rates compared with response rates from both paper and web (61%) and paper only survey administration (57%; AHRQ, n.d.).

Sampling and Sampling Procedures

An exploratory and descriptive quantitative design was used to determine relationships between nurse staffing, leadership support, and in-patient safety. The Hospital Database Report of the AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018 covers all workers within a healthcare organization; for the purpose of this study, only data from nurses surveyed were included in the analyses. Only questions in the survey that pertained to in-patient safety research questions was used.

The above-mentioned database presented data from 630 U.S. hospitals. The report contained data voluntarily submitted by participating hospitals. Many hospitals using the AHRQ Hospital Survey on Patient Safety Culture have expressed interest in comparing their results to other hospitals. In response, the AHRQ established the Hospital Survey on Patient Safety Culture database. This database is a central repository for survey data from hospitals that have administered the AHRQ patient safety culture survey. For confidentiality purposes, the hospitals listed by AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018 is not listed in the references list. Although the

AHRQ survey included many staffing members of a hospital facility, the inclusion criteria for the study included nurse staffing.

In response to requests from researchers interested in using data from the AHRQ Surveys on Patient Safety Culture for research purposes, AHRQ has established a process for researchers to request de-identified and hospital-identifiable data files from the AHRQ Surveys on Patient Safety (SOPS) databases. Researchers interested in obtaining de-identified SOPS survey data from the SOPS database must submit a completed De-Identified Research Abstract Form and signed Data Release Agreement and email completed forms. Upon questions and review of the SOP researchers, the researcher receive an acceptance/denial email. The approval email includes information on how to access the Hospital SOPS De-identified Datasets through Westat.

For the quantitative questionnaire data, ordinal measurement was appropriate, as it provided measurement of the 5 categories or responses with labels on a Likert scale (*strongly agree* to *strongly disagree*; Boamah et al., 2018). All of the AHRQ survey dimensions were pilot tested by the developers and found to have acceptable reliability and validity with each dimension (AHRQ, n.d.). The dimensions of safety culture that were included in this dataset were overall perception of safety, nonpunitive response to error, communication openness, teamwork, feedback and communication, hospital management support for patient safety, and frequency of event reporting (AHRQ, n.d.).

Sample size influences the accuracy of research findings. The adequate sample size is a crucial determinant of generalization (Dumitrascu et al., 2018). Small sample size may diminish validity and weaken conclusive findings, thereby posing a significant

threat to statistical power. The sample size for this study was dependent on a power analysis to determine the sample size needed to detect relationships between groups, given a specific power, effect size, and level of significance (see Malterud et al., 2016). Based on a 90% confidence level calculation and a 5% margin for error, the desired sample size was 269 participants or more.

Instrumentation and Operationalization

In 2004, the AHRQ developed the Hospital Survey on Patient Safety Culture Database as an essential source for survey data from hospitals and has continued to present data every 2 years since 2004 (AHRQ, n.d.). The year of the publication used for this study was 2018. This database was appropriate to the current study because it serves as a significant resource for patient safety culture improvement. Hospitals choose to administer the AHRQ patient safety culture survey and choose to submit their survey data to the AHRQ Hospital SOPS database (AHRQ, n.d.).

Researchers interested in obtaining de-identified SOPS survey data from the SOPS database must submit a completed De-Identified Research Abstract Form and signed Data Release Agreement and email completed forms (permission email for this study located in appendix). After receiving permission, AHRQ sends information needed for access.

Reliability and Validity

The survey results presented in the SOP report represent the largest known compilation of hospital survey data on patient safety culture publicly available and therefore provide a useful reference. However, several limitations to these data should be

kept in mind. First, hospitals voluntarily submitted their data to the database; therefore, only hospitals that administered the survey and were willing to submit their data for inclusion in the database are represented. Estimates based on the self-selected group may produce biased estimates of the population, and it is not possible to compute estimates of precision from such a self-selected group (see Famolaro et al., 2018). However, the characteristics of the database hospitals are fairly consistent with the distribution of hospitals registered with the American Hospital Association.

Second, hospitals that administered the survey were not required to complete any form of training. The hospitals also administered the survey in different ways (paper only, web-based, and a combination of the two). It is possible that these different modes could lead to differences in survey responses (Famolaro et al., 2018). In addition, some hospitals conducted a census, surveying all hospital staff, while others administered the survey to a sample of staff.

Finally, the data hospitals submitted were scrubbed for out-of-range values (invalid response values due to data entry errors), straight-lined records in Sections A, B, C, and F, and blank records (survey items were missing; Famolaro et al., 2018). Otherwise, data are presented as submitted. No additional attempts were made to verify or audit the accuracy of the data submitted.

Operationalization for Variables

The report from the AHRQ consists of a narrative description of the findings and four appendixes, presenting data by hospital characteristics and respondent characteristics for the database hospitals overall. The nursing staff were asked a series of questions on

their opinion about patient safety issues, medical error, and event reporting in the hospital. Some hospitals used a paper-only survey, others used web-only surveys, and others used a combination of these two methods to collect the data. Most of the survey items asked respondents to answer using 5-point response categories in terms of agreement (*strongly agree, agree, neither, disagree, strongly disagree*) or frequency (*always, most of the time, sometimes, rarely, never*). Three of the 12 patient safety culture composites use the frequency response option (Feedback and Communication about Error, Communication Openness, and Frequency of Events Reported) while the other nine composites use the agreement response option.

For the purpose of this study, nursing staff (independent variable) was defined as the population of nurses with their primary point of employment as a nurse within the data studied. The independent variable nurse staffing was measured as a nurse-to-patient ratio and hours worked. The nursing staff were asked questions in the survey that pertained to nurse staffing: "We have enough staff to handle the workload" and "Staff in this unit work longer hours than is best for patient care." These two questions assessed nurse-to-patient ratio and hours worked respectively. These questions were answered on a Likert scale (*strongly agree* = 5, *agree* = 4, *neither* =3, *disagree* = 2, and *strongly disagree* = 1). Through these questions being answered by the nursing staff, I was able see if there is a relationship of nurse-to-patient ratios and hours worked on in-patient hospital staffing.

Leadership was defined as "the relationship between the individual/s who lead and those who take the choice to follow, while it refers to the behavior of directing and

coordinating the activities of a team or group of people towards a common goal" (Sfantou et al., 2017). For the purpose of the survey, the nursing staff were asked questions about leadership support (independent variable): "Hospital management provides a work climate that promotes patient safety" and "The actions of hospital management show that patient safety is a top priority." These two questions assessed if work climate promotes patient safety and actions of hospital management to show patient safety respectively. These questions were answered on a Likert scale (*strongly agree* = 5, *agree* = 4, *neither* = 3, *disagree* = 2, and *strongly disagree* = 1). Through the above questions, I was able to determine if there is a relationship between the nursing staff leadership support on in-patient hospital safety.

Patient safety (dependent variable) was defined as being free from harm or risk (NCPS, n.d.). In the AHRQ data. This variable was measured as the perception of patient safety. For the purpose of this study, the nursing staff were surveyed on their overall perception of patient safety. The question asked if the nurses had "patient safety problems in this unit." These questions were answered on a Likert scale (*strongly agree* = 5, *agree* = 4, *neither* = 3, *disagree* = 2, and *strongly disagree* = 1. This question allowed me to determine if there was a relationship between nurse staffing, hospital leadership support, and nurses' perception of in-patient safety.

Data Analysis Plan

Data for this study were sent from the AHRQ developers using the Statistical Analysis System (SAS) data format and then exported to SPSS. The data were then exported to SPSS Version 24 for analysis. Data hospitals submitted were scrubbed for

out-of-range values (invalid response values due to data entry errors) and blank records (survey items were missing; see Famolaro et al., 2018). Otherwise, data are presented as submitted. No additional attempts were made to verify or audit the accuracy of the data submitted.

The purpose of the study was to determine the relationships between nurse staffing and leadership support on in-patient hospital safety. Information from this study may help understand who holds the responsibility of patient safety. Therefore, the research question and hypotheses directing the research study follow.

Research Question 1: What is the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018?

$H_0$1: There is no association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

H_a1: There is an association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

Research Question 2: What is the association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018?

$H_0$2: There is no association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

H_a2: There is an association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018.

For this research study, a chi-square test was conducted to analyze data. A chi-square test tests the null hypothesis that the variables have a relationship or association to each other (Kim, 2017). To perform this analysis, I conducted four analyses to determine the association of the variables. Results of these chi-square analyses established the association of the variables.

For Research Question 1, I conducted two chi-square analyses. First, I analyzed the association of the nurse-to-patient ratio (i.e., “We have enough staff to handle the workload”) and in-patient safety (i.e., “We have patient problem in this unit”). Second, I analyzed the association of hours worked and in-patient hospital safety. For Research Question 2, I conducted two chi-square analyses. The first analysis tested the association of if work climate promotes patient safety and in-patient safety. The second analysis tested the association of the actions of hospital management, showing that in-patient safety is a top priority.

The response on all of these variables was on a 5-point Likert scale (strongly agree, agree, neither disagree and, strongly disagree). For this study, the 5-point Likert scale was dichotomized into strongly agree/agree and strongly disagree/disagree, and responses under "neither" were coded as "missing" and were not included in the analyses.

Due the data being categorical and needing to be dichotomized, I was limited to the type of statistical analysis that could be used. For the dichotomized data, the only analyses that could be used was chi – square.

Threats to Validity

The researcher does acknowledge that the co-occurrences of the variables does not prove that they are truly related (Bleske-Rechek, Morrison, & Heidtke, 2015). The association may only be by chance that because of the high rate of occurrences in the population of interest. Even though a non-parametric study may show a high rate of coexistence of variables and intuitive logic may indicate that one variable could be the cause of the other, this design cannot prove causality (Bleske-Rechek, et al., 2015). The design review will be strengthened with the discussion of the methodology used and identifying the relevant body of literature. This will allow for significant contributions to the scientific literature if performed properly and being used to support evidence-based recommendations.

Another limitation is whether the sample was a true representation of the targeted population of nurse staffing. It is not possible to randomize the population of nurse staffing, not to include LPN/LVN. Lastly, the absence of a control group did not establish a cause and effect, it also did not control other finding factors.

Ethical Considerations

There was minimal risk in ethical considerations for this study. The research was fully voluntary and anonymous, and participant responses to questionnaires were considered to be consent. Nurses were asked to complete the survey by their organization and given an explanation of the purpose of the research, an explanation of the involvement required by participants, a commitment to confidentiality and anonymity, and my contact information.

Summary

As an overview, this study was conducted utilizing quantitative design in a hospital. The focus of this project is to examine data from The Hospital Database Report of the AHRQ Hospital Survey on Patient Safety Culture User Database Report 2018. This data included survey questionnaires from U.S. hospitals who voluntarily submitted responses from their employees. In order to use the data, the researcher had to obtain permission from the Agency for Healthcare Research and Quality. The agency provided de-identified and hospital-identifiable data files from the database to conduct research. Although AHRQ is a replicable organization there is limited confidence in the denominators provided by hospitals and the response rates provided on these datasets. The research would caution that any relationships found between response rates and patient safety composites may not be reliable.

The variables included the independent variables of nurse staffing and leadership support and the dependent variable in the study is in-patient hospital safety. For this research study a chi-square test was used to analyze data. Chi-square test was used to

determine the if there is a relationship or association between nurse staffing and leadership support on in-patient hospital safety.

Section 3: Presentation of the Results and Findings Section

Introduction

The overall purpose of this quantitative study was to address the research gap in understanding who is responsible for avoiding medical errors and for ensuring in-patient hospital safety. There were five variables used in the analyses of the data: nurse staffing measured as nurse-to-patient ratio (independent variable), hours worked (independent variable), leadership support measured as hospital management provides a work climate that promotes patient safety (independent variable), hospital management makes patient safety a top priority (independent variable), and in-patient hospital safety (dependent variable). The response on all of these variables was on a 5-point Likert scale (*strongly agree, agree, neither disagree,* and *strongly disagree*). For this study, the 5-point Likert scale was dichotomized into *strongly agree/agree* and *strongly disagree/disagree*, and responses under *neither* were coded as "missing" and were not included in the analyses. Table 1 describes the variables and the questions asked, response categories, and how they were dichotomized. Table 2 describes the variable question frequency table, with the number of respondents to each question.

Research Question 1: What is the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018?

$H_0$1: There is no association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

H_a1: There is an association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

Research Question 2: What is the association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018?

$H_0 2$: There is no association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018.

$H_a 2$: There is an association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018.

This section addresses the data collection of secondary data set and the results.

Table 1

Variable Questions Dichotomized Table

Variable	Question	Response categories	Dichotomized
Nurse to patient ratio	We have enough staff to handle the workload	Strongly agree Agree Disagree Strongly disagree	Strongly agree = Yes Agree = Yes Disagree = No Strongly disagree = No
Hours worked	Staff in this unit work longer hours than is best for patient care	Strongly agree Agree Disagree Strongly disagree	Strongly agree = No Agree = No Disagree = Yes Strongly disagree = Yes
Leadership support	Hospital management provides a work climate that promotes patient safety	Strongly agree Agree Disagree Strongly disagree	Strongly agree = Yes Agree = Yes Disagree = No Strongly disagree = No
Leadership support	The actions of hospital management show that patient safety is a top priority	Strongly agree Agree Disagree Strongly disagree	Strongly agree = Yes Agree = Yes Disagree = No Strongly disagree = No
Patient safety	We have patient safety problems in this unit	Strongly agree Agree Disagree Strongly disagree	Strongly agree = No Agree = No Disagree = Yes Strongly disagree = Yes

Table 2

Variable Questions Frequency Table

Variable	Question	Yes (*N*/%)	No (*N*/%)	Total (*N*/%)
Nurse to patient ratio	We have enough staff to handle the workload	181595 47.4%	201239 52.6%	382834 100%
Hours worked	Staff in this unit work longer hours than is best for patient care	166240 43.4%	99600 26.0%	265840 100%
Leadership support	Hospital Management provides a work climate that promotes patient safety	282580 89.4%	33607 10.6%	316187 100%
Leadership support	The actions of hospital management show that patient safety is a top priority	258533 87.8%	36035 12.2%	294568 100%
Patient safety	We have patient safety problems in this unit	227954 77.2%	67435 22.8%	295389 100%

Data Collection of Secondary Data Set

In response to requests from hospitals interested in comparing their results with those of other hospitals on the Surveys on Patient Safety Culture Hospital Survey, AHRQ established the Hospital Survey on Patient Safety Culture database. The submission period for the hospital database occurs every 2 years. The data were collected from participating hospitals between the years of 2016 and 2017 (AHRQ, n.d.). Most database hospitals ranged from 25 to 290 beds. The AHRQ asks healthcare providers and other staff in hospitals, medical offices, nursing homes, community pharmacies, and ambulatory surgery centers about their organizational culture's support for patient safety.

There were no discrepancies in regards to the data. However, the data were dichotomized (i.e., *strongly agree/agree* and *strongly disagree/disagree*), and the responses of *neither* in the response categories were taken out in the analyses.

Each participating hospital submitted individual-level survey data. Once the data were submitted, response frequencies were run on each hospital's data to look for out-of-range values, missing variables, or other data anomalies (see Famolaro et al., 2018). When data problems were found, hospitals were contacted and were asked to make corrections and resubmit their data. In addition, each participating hospital received a copy of its data frequencies to verify that the dataset received was correct (see Famolaro et al., 2018). There were 630 hospitals that administered the survey, 568,524 providers and staff respondents, with the average percent positive across all 12 areas at 65%. These hospitals' states and territories are categorized into AHA-defined regions as follows:

- New England: CT, MA, ME, NH, RI, VT

- Mid-Atlantic: NJ, NY, PA
- South Atlantic/Associated Territories: DC, DE, FL, GA, MD, NC, SC, VA, WV, Puerto Rico, Virgin Islands
- East North Central: IL, IN, MI, OH, WI
- East South Central: AL, KY, MS, TN
- West North Central: IA, KS, MN, MO, ND, NE, SD
- West South Central: AR, LA, OK, TX
- Mountain: AZ, CO, ID, MT, NM, NV, UT, WY
- Pacific/Associated Territories: AK, CA, HI, OR, WA, American Samoa, Guam, Marshall Islands, Northern Mariana Islands

Because these voluntary submitters are not a random sample of U.S. hospitals, and only about 10% of all hospitals chose to participate, the submitting hospitals are not representative of all U.S. hospitals. Estimates based on this self-selected group may produce biased estimates of the population, and it is not possible to compute estimates of precision from such a self-selected group (see Famolaro et al., 2018). However, the characteristics of the database hospitals are fairly consistent with the distribution of hospitals registered with the American Hospital Association (Famolaro et al., 2018).

Results

Statistical Analysis

The following sections detail the analyses. Results are broken down by research questions. The following tables are represented below:

- Table 3: Results of crosstabulation of nurse to patient ratio and in-patient hospital safety
- Table 4: Results of crosstabulation of hours worked and in-patient hospital safety
- Table 5: Results crosstabulation of leadership support that provides a work climate that promotes in-patient hospital safety and patient safety
- Table 6: Crosstabulation of leadership support patient safety is a top priority and in-patient hospital safety

Research Question 1

Research Question 1: What is the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018?

A chi-square test was performed to examine the relationship between the nurse-to-patient ratio and patient safety. I found a statistically significant relationship, $\chi 2(1, N = 255,221) = 29,784, p = \leq .00$. This result shows that those who reported that they do not have enough nurses to complete the workload are more likely to perceive a problem with an in-patient hospital safety issue or that in-patient hospital safety is an issue (88.8%) compared to nurses who reported that there are enough nurses to complete the workload (59.4%; see Table 3).

A chi-square test was also performed to examine the relationship between hours worked and patient safety. Result showed a significant relationship between hours worked and patient safety ($\chi 2(1, N = 220,244) = 10,823, p = \leq .00$). Results showed that

nurses who reported that they work longer hours than is best for patient safety are also more likely to perceive that there is no patient safety issue (84.3%) compared to the nurses who stated that they do not work longer hours than is best for patient safety (64.9%; see Table 4).

Table 3

Results Crosstabulation Nurse to Patient Ratio and In-Patient Hospital Safety

Independent Variable	Response Category	We have patient safety problems in this unit (in-patient hospital safety)		
We have enough staff to handle the workload (nurse to patient ratio)		Disagree to strongly disagree	Strongly agree to agree	Total
	Strongly agree to agree	133,273 88.8%	16,838 11.2%	150,111 100%
	Disagree to strongly disagree	62,477 59.4%	42,633 40.6%	105,110 100%
Total		195,750 76.7%	5,9471 23.3%	255,221 100%

Note. $\chi 2(1, N = 255{,}221) = 29{,}784, p = \leq .00$.

Table 4

Results of Crosstabulation Hours Works and In-Patient Hospital Safety

Independent Variable	Response Category	We have patient safety problems in this unit (in-patient hospital safety)		
Staff in this unit work longer hours than is best for patient care (Hours worked)		Disagree to strongly disagree	Strongly agree to agree	Total
	Strongly agree to agree	120,042 84.3%	22,324 15.7%	142,366 100%
	Disagree to strongly disagree	50,580 64.9%	27,298 35.1%	142,366 100%
Total		170,622 77.5%	49,622 22.5%	220,244 100%

Note. $\chi 2(1, N = 220{,}244) = 10{,}823$, $p = \leq .00$.

Research Question 2

Research Question 2: What is the association between leadership support (work climate promotes patient safety and actions of hospital management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018?

A chi-square test was performed to examine the relationship between leadership support – i.e., hospital management provides a work climate that promotes patient safety (Table 5). This result shows a statistically significant relationship between hospital management provides a work climate that promotes patient safety and patient safety ($\chi 2(1, N = 255,283) = 49,054, p = \leq .00$). Among the nurses who reported when hospital management provides a work climate that promotes patient safety, they are also more likely to perceive no patient safety issue (85.7%), compared to nurses who reported, hospital management does not provide a work climate that promotes patient safety (28.4%; see Table 5).

A chi-square test was also performed to examine the relationship between leadership support – i.e., the actions of hospital management show that patient safety is a top priority (Table 6). A significant relationship was found, $\chi 2(1, N=240,600) = 43,124, p = \leq .00$ and it shows a statistically significant relationship between leadership support – the actions of hospital management show that patient safety is a top priority. Among the nurses who reported that hospital management's actions show that patient safety is a top priority are more likely also to perceive that there is no patient safety issue (85.8%), compared to those who state hospital management actions do not show that patient safety is a top priority (33.3%; see table 6).

Table 5

Results of Crosstabulation Leadership Support Work Climate Promotes Patient Safety and In-Patient Hospital Safety

Independent Variable	Response Category	We have patient safety problems in this unit (in-patient hospital safety)		
Hospital Management provides a work climate that promotes patient safety (Leadership support)		Disagree to Strongly Disagree	Strongly Agree to Agree	Total
	Strongly Agree to Agree	195,489 85.7%	32,656 14.3%	228,145 100%
	Disagree to Strongly Disagree	7,699 28.4%	19,439 71.6%	27,138 100%
Total		203,188 79.6%	52,095 20.4%	255,283 100%

Note. $\chi 2(1, N = 255{,}283) = 49{,}054, p = \leq .00$.

Table 6

Results of Crosstabulation Leadership Support Patient Safety Is a Top Priority and In-Patient Hospital Safety

Independent Variable	Response Category	We have patient safety problems in this unit (in-patient hospital safety)		
The actions of hospital management show that patient safety is a top priority (Leadership support)		Disagree to Strongly Disagree	Strongly Agree to Agree	Total
	Strongly Agree to Agree	181,460 85.8%	30,060 14.2%	211,520 100%
	Disagree to Strongly Disagree	9,685 33.3%	19,395 66.7%	29,080 100%
Total		191,145 79.4%	49,455 20.6%	240,600 100%

Note. $\chi 2(1, N = 240{,}600) = 43{,}124$, $p = \leq .00$.

Summary

The main purpose of this study was to explore and describe the relationship of nurse staffing and leadership support on in-patient hospital safety that can provide information to address the gap of whose responsibility is it to ensure in-patient safety. The findings show that nurse staffing is associated with in-patient hospital safety and this

relationship is statistically significant, specifically nurse who reported that there are enough nurses to handle the workload also perceived less issue with in-patient hospital safety. Surprisingly, results of this study showed that nurses who preferred to work longer hours did not perceive issues with in-patient hospital safety, and this result was statistically significant.

The findings of this study also showed that leadership support was statistically significantly associated with in-patient hospital safety. This data also shows that there is a heighted risk of in-patient hospital safety with a lack of leadership support. Results of this study can provide information to show that in-patient hospital safety may not just be the sole responsibility of the staff nurses, but both the staff nurses and leadership is associated with issues related to in-patient hospital safety.

Section 4: Application to Professional Practice and Implication for Social Change

Introduction

The overall purpose of this quantitative study was to address the research gap in understanding who is responsible in avoiding medical errors, thereby ensuring in-patient hospital safety. A quantitative approach using a retrospective review of data was used for this study to determine the relationship between inadequate nurse staffing and inadequate leadership support (independent variables) on in-patient hospital safety (dependent variable). This research was conducted because the concern for in-patient hospital safety has been a priority, motivating healthcare policy proposals, and leading to joint efforts of institutions, health professionals, and patients to reduce and effectively control the adverse events in healthcare services (Mitchell et al., 2016). However, many healthcare organizations worldwide still lack notifying the public of in-patient hospital safety issues within their organizations.

Based on the findings from the analyses, it is evident that problems in in-patient hospital safety are associated with both nurse staffing, specifically nurse-to-patient ratio, and leadership support. Research Question 1 was as follows: What is the association between nurse staffing (nurse-to-patient ratios and hours worked) and in-patient safety (perception of in-patient safety by nurses) based on the AHRQ survey from 2018? From the analysis, I can conclude that the nurse-to-patient ratio adds significantly to the model. This means that problems in in-patient hospital safety are associated with nursing staffing in the nurse-to-patient ratio. Research Question 2 was as follows: What is the association between leadership support (work climate promotes patient safety and actions of hospital

management to show that patient safety is a top priority) and in-patient safety (perception of in-patient safety) based on the AHRQ survey from 2018? From the analysis, I can conclude that both the work climate promotes patient safety and actions of hospital management add significantly to the model. This means that problems in patient safety are associated with leadership support, both in work climate promoting patient safety and in actions of hospital management.

Interpretation of the Findings

When I decided to study the relationship of nurse staffing and leadership support on in-patient hospital safety, I believed that there was a "problem of many hands" that exists where there is a gap in understanding who is responsible for avoiding medical errors, thereby ensuring in-patient hospital safety (see Dixon-Woods & Pronovost, 2016). Based on the chi-square analysis, it is evident that if both the nursing staff and the leadership support worked together, in-patient hospital safety would have a positive change. However, it is noted that those who worked longer were the ones who reported that there are no issues with in-patient hospital safety.

Evaluating perceptions of in-patient hospital safety implies the consideration of a number of factors and characteristics pertaining to the hospital setting. Successful and sustainable in-patient hospital safety improvement rests heavily on an organizational culture of patient safety, in which leadership supports system wide attitudes, actions, teamwork, and technology to reduce the risk of patient harm (Okuyama et al., 2018). Research has also been limited in regards to hours worked. Haller et al. (2018) conducted a study surrounding nurses' perceptions of shift length and what the benefits were. From

this study, the researchers discovered that the longer hours the nurses work, the less they perceive there is an issue with in-patient hospital safety. In general, nurses like 12-hour shifts because they provide more continuity in patient care, as opposed to changing nurses every 8 hours (Haller et al., 2018). It was also a hinderance to in-patient hospital safety and the overall health and satisfaction of the nurses (Haller et al., 2018). Nursing leadership has not transitioned from 12-hour shifts because of perceived benefits. It is not fully understood why nurses prefer longer shifts. If nursing leadership desires to discover prospects to reduce longer work shifts, understanding nurses' perspectives is essential to beginning effective change strategies towards in-patient hospital safety. It is possible that those who prefer longer hours are of the younger generation of nurses, while the more seasoned nurses prefer to work shorter shifts. Due to this unknown factor, there is a need for more research.

A previous literature review provided information that nursing workloads are usually associated with nurse-to-patient ratios and the nurse-to-patient ratio describe the number of patients assigned to each nurse. An organized assessment of 102 studies established that improved nursing staffing levels were connected to reduced amounts of adverse events in a healthcare setting (MacPhee et al., 2017). Past research has also noted the relationship between leadership support and in-patient safety has exposed essential organizational behaviors (AHRQ, 2019). For positive in-patient hospital safety to exist, theoretical as well as empirical research debate that strong, trustworthy, and noticeable support for in-patient hospital safety initiatives by organization leaders is essential to positive in-patient hospital safety (Castel et al., 2015).

This study incorporated the theory of the transformational leadership to encourage clinicians to find better ways of achieving in-patient hospital safety. Transformational leadership is a behavior-based approach to achieve performance beyond the simple expectations of workers and to make every effort to achieve excellence (Bass & Avolio, 1990). I believed that leadership support holds the foundation of in-patient hospital safety, and that if leadership supports the nursing staff in many complex ways, the nursing staff are able to ensure in-patient hospital safety. Transformational leadership has regularly been connected to employee behaviors and attitudes in nursing and management settings (Boamah et al., 2018). Researchers have proposed that the four dimensions of transformational leaders may serve as qualifications to construct an essential empowerment work environment (Boamah et al., 2018).

Transformational leaders develop the patient's care quality and employee behaviors by providing an appropriate practicing atmosphere (Asif et al., 2019). Studies have shown the significance of transformational leadership to make a work atmosphere helps and promotes a better practicing environment for nurses to be professional and enhances the desired outcomes for both the nurses and the patients (Higgins, 2015). By creating open-minded relationships, transformational managers gain the assurance of their employees and anticipate their wants by making them physically empowered in terms of information, professional support, and resources, which ultimately leads to in-patient hospital safety (Asif et al., 2019). Although it was not determined exactly who carries the responsibility of in-patient hospital safety, the transformational leadership

style would be helpful in organizations where employee morale is low, causing a decrease in in-patient hospital safety.

Limitations of the Study

The AHRQ database was appropriate to the current study because it serves as a resource for patient safety culture improvement. Limitations to these data should be kept in mind. One of the first limitations to keep in mind is that the interpretation of in-patient hospital safety and the surveys are limited by the voluntary nature of participation in these surveys. Therefore, only hospitals that administered the survey and were willing to submit their data for inclusion in the database are represented. Another limitation to consider is that hospitals voluntarily submitted their data to the database; therefore, only hospitals that administered the survey and were willing to submit their data for inclusion in the database are represented. Additionally, hospitals that administered the survey were not required to complete any form of training. The hospitals also administered the survey in different ways (paper only, web-based, and a combination of the two). It is possible that these different modes could lead to differences in survey responses (see Famolaro et al., 2018). Finally, the data hospitals submitted were scrubbed for out-of-range values (invalid response values due to data entry errors), straight-lined records in Sections A, B, C, and F, and blank records (survey items were missing; Famolaro et al., 2018). Otherwise, data were presented as submitted. No additional attempts were made to verify or audit the accuracy of the data submitted.

Recommendations

In-patient hospital safety is recognized as a priority for healthcare organizations worldwide. However, studies have shown that healthcare organizations are prone to risk of adverse events. The primary concern of any healthcare delivery organization and nursing is the achievement of positive in-patient hospital safety outcomes. In-patient hospital safety research has attributed most adverse patient outcomes to factors in and lack of nurse staffing and visible leadership. However, there has not been much research combining nurse staffing and leadership support. Much of the previous research conducted surrounding in-patient hospital safety has focused on nurse staffing.

Further research should be considered towards the nursing staff and their preference of long or short work shifts. There is a love hate relationship with the 12-hour work shifts. The 12- hour shifts have become the norm for nurses working in hospitals. Nurses may like working fewer days, and the hospital staffing may find that it makes scheduling easier because they can assign fewer shifts per nurse.

Further research of interest around in-patient hospital safety would be the direction to study the association between patient safety culture and interventions on an organizational level, for example structure in nursing schedules, staffing levels, and improvement of collaboration between nurse staffing and leadership. Other future research could also explore whether patient safety culture, nurse to patient ratios, and leadership are affected by educational interventions aiming to enhance healthcare staff's competence on patient care. Other future research should also surround the nursing staff hours worked, and if there are any issues surrounding the care of patients. Written

material is now and likely to remain an important resource in healthcare. Therefore, it is imperative to continue to conduct research that investigates both nurse staffing and leadership support to start to close the gap of who holds the responsibility of in-patient hospital safety.

Implications for Professional Practice and Social Change

Professional Practice

This research has implications for nursing staff and leadership to support patient safety practices and future inquiry. As healthcare administrators, it is imperative that within the practice, healthcare workers educate their teams and colleagues on the role of the partnership between the nursing staff and leadership and the real possibility of negative patient consequences when there is not an effective partnership. The relationship of nurse staffing and leadership support on in-patient hospital safety provides a starting point for a conversation among nursing and medical staff leadership. The findings of this study have indicated that a focus on teamwork, communication, management support, and staffing could assist to improve the environment so that nurses are able to provide better in-patient hospital safety.

Nursing leadership is in the position to improve the morale of nursing staff so that they can provide a patient safety culture. This is where the transformational leader would be a great addition to an organization that is struggling with in-patient hospital safety. Transformational leadership is an interpersonal leadership style where followers have trust and respect for the leader and, where they are encouraged to do more than what is usually expected from them to accomplish organizational objectives. Additionally, the

findings of this study indicate that nursing leadership must work towards bridging the academic preparation of the nursing staff with the organizational culture the nurses work within.

Positive Social Change

This study's implications for social change include creating awareness of the benefits of quality in in-patient hospital safety amongst leadership and healthcare workers, providing critical information about in-patient hospital safety responsibility, and promoting the idea that leadership along with nurses should have a hands-on approach to ensure in-patient hospital safety in healthcare organizations. Constructing work environments for nursing staff that are valuable to in-patient hospital safety will entail operational changes through healthcare organizations. These changes involve leadership proficient in transforming not only a physical environment but also the practices and beliefs of the nursing staff providing care. This will also establish the policies and practices that shape the environment in healthcare organizations. Thus, transformational leadership and action by an organization's senior and midlevel management are needed to fully secure the advantages of positive in-patient hospital safety.

Conclusion

In-patient hospital safety is an important part of quality care. However, the healthcare systems are susceptible to errors and can be damaging to safe patient care. In-patient hospital safety is a shared responsibility because of basic systems flaws. The nursing staff and leadership are both responsible for guaranteeing that patient care is safely provided and that no harm occurs. Much of the effort surrounding in-patient

hospital safety and practices that prevent harm have focused on negative outcomes of care, such as morbidity and mortality.

The findings of this research further suggest that transformational leadership is an important gage that can help healthcare organizations to improve in-patient hospital safety, nurse staffing issues, and the leadership support. To overcome the issue with in-patient hospital safety in healthcare, it is recommended that top management should develop transformational leadership behaviors among nurse leaders/managers and provide environments that provide empowerment to their employees and autonomy to support their nurses. This will lead to the desired outcomes and improve quality of care in in-patient hospital safety.

Organizations must start to look at the nursing staff and leadership support as important to the management, thereby reducing those adverse outcomes. The most essential impact of nursing to in-patient hospital safety is the ability to organize and put together the multiple parts of quality within the care directly provided by nursing and across the care delivered by others in the setting. First and foremost, patient safety at an institutional level starts at the top and comes down. This means that hospital leadership should be dictating rules for the nursing staff to follow and foster a culture of patient safety. Patient safety culture is no small thing to build or change, but a good starting point is a hospital's leadership truly embracing patient safety and providing positive reinforcement for behaviors that further it. Much work remains to be done in evaluating the impact of nurse staffing and leadership support on positive change of improved in-patient hospital safety.

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Appendix: Permission Letter to Use Database

Tue 4/16/2019 2:47 PM

SOPS Research Data Request Mailbox <SOPSResearchData@westat.com>

[EXTERNAL] RE: RE: RE: RE: RE: RE: SOPS De-Identified Data Request

CAUTION:

1. This EMAIL was generated EXTERNALLY and is not a secure message.

2. Please act cautiously, and do NOT click on any link unless you are 100% sure it is from someone you know.

3. NEVER enter your TeamHealth USERNAME and PASSWORD or any personal or company information.

Hi Kearia,

I am pleased to inform you that your data request has been approved. We will send you the data via a secure ftp site in the next few days. We will send you a password and login instructions so you can download all the files.

Thanks,

Kate

From: Kearia Watson-Orr <XXX@spectrumhealth.com>

Sent: Thursday, April 11, 2019 6:08 PM

To: SOPS Research Data Request Mailbox <SOPSResearchData@westat.com>

Subject: RE: RE: RE: RE: RE: RE: SOPS De-Identified Data Request

CAUTION: External Email *

Thanks you Kate.

I am requesting the data for my doctorate capstone project paper. At least, that is what my university calls it. However, looking at the layout of the process, it resembles the process of a dissertation, with a few alterations.

Should you have any other questions, please do not hesitate to contact me.