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Policy Knowledge Communication in Nursing

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This is to certify that the doctoral dissertation by

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2019

Abstract

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MSN, Walden University, 2008

MBA, Baker College, 2005

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Abstract

Evidence-based practices in nursing improve patient outcomes, decrease healthcare costs, and can be implemented with policies and procedures. However, there is limited literature describing how nurses acquire policy knowledge, the dissemination of which may require a significant investment of resources by a hospital. The purpose of this study was to learn more about how nurses obtain policy knowledge. Rogers's diffusion of innovations theory guided the examination of communication channels and how they relate to the formation of policy knowledge. The research questions were designed to gather information on the relationship of policy communication channels, demographic factors, and the frequency of document access in policy knowledge formation. This correlational study, using select subscales of the Policy Communication Index, was conducted to examine how nurses create and communicate policy knowledge. The sample included 22 nurses who practice at the bedside in a small hospital. Data sources included an anonymous online survey and frequency of policy access data. Data analyses included multiple regression, Pearson's *r* correlation, and Spearman's correlation of the data. The results showed that nurses report meeting discussions are the primary source of policy knowledge rather than written documents. A subset of participants who supplied an employee identification number showed a strong correlation with electronically distributed. Based on these results, nursing leaders can concentrate policy knowledge dissemination through meetings and safety huddles. The positive social change implication of this study includes better practices to convey evidence-based policy knowledge to nurses practicing at the bedside.

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Dedication

For the person who has stood by me for my entire doctoral journey, fixing countless meals, watching hours of movies alone, his understanding, love and unwavering support, I dedicate my dissertation to my wonderful husband, Keith.

I also dedicate this to my parents, George and Emily, for teaching me to value lifelong learning from an early age.

Acknowledgments

“Nursing is a progressive art in which to stand still is to have gone back.”

–Florence Nightingale.

I would like to acknowledge the nurses who taught me so much about nursing. Jean Cluck and Fran Barbee who taught me nursing under fire in the operating room. Sr. Lori Groh who taught me about compassion for my fellow nurse. Laurie Bigham and Debra Werner who taught me how to survive in a modern-day hospital.

I cannot thank the chairperson of my committee, Dr. Deborah Y. Bauder for her amazing support and endless encouragement! You have made this journey an amazing experience. I also must thank Dr. Shereeza Mohammed as well for helping me to get things organized and on track. I would also like to thank my third committee member, Dr. Jennifer Lapin who assisted me in refining and finalizing my dissertation.

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Chapter 1: Introduction to the Study

Hospitals in the United States are continually seeking ways to implement evidence-based practices in their facilities in a timely and effective manner (Corey et al., 2016; Dols et al., 2017; Melnyk, Fineout-Overholt, Giggleman, & Choy, 2017; Salmond & Holly, 2012; Squires et al., 2012). Evidence-based practices, which describe the incorporation of research in health care practices, lead to better patient outcomes and safety (Al Mutair, 2015; Long, Burkett, & McGee, 2009; Melnyk, Fineout-Overholt, & May, 2008). For example, research has shown the use of a style of dressing on invasive central venous catheters results in a dramatic decrease in central line-associated blood stream infections and better outcomes for the patient (Marschall et al., 2014). This decrease in infections means that hospitals receive their full reimbursement under the U.S. Centers for Medicare & Medicaid Services Hospital Acquired Conditions Initiative (Centers for Medicare & Medicaid Services, 2016; Waters et al., 2015) and have more resources available for other projects (Miller et al., 2011).

Policies and procedures can be effective methods for the implementation of evidence-based practices (Dols et al., 2017; Ehrhart, Aarons, & Farahnak, 2014; Squires et al., 2012; Titler, Wilson, Resnick, & Shever, 2013). A factor in implementation is the timely distribution of policies and procedures to end users such as nurses or patient care technicians (St-Pierre, Davies, Edwards, & Griffin, 2007). Rapid implementation is crucial when patient safety is at risk or there are potential financial penalties for a hospital. However, there is a lack of evidence regarding the effectiveness of one policy delivery method over another (May, Sibley, & Hunt, 2014; McCormack et al., 2013;

Squires et al., 2012). Although specialized document distribution software or policy distribution software is gaining in popularity as a method to convey documents to end users (Leahy, 2015), the cost of policy distribution software is significant with one estimate of up to $35,000 per year (Juman, 2014). Further, there is often a need to demonstrate the return on investment to secure funding for such an expense (Botchkarev, 2014). The return on investment should address the user experience and best practices for implementation (Wise, 2011).

To address the need to show which policy delivery methods are effective, I examined the process of policy knowledge development, policy implementation in hospital settings, and distribution using policy distribution software. I used the Policy Communication Index (PCI; Canary, Riforgiate, & Montoya, 2013), which is used to determine the primary source of policy knowledge in an organization. Determining the primary source of policy knowledge will help nursing leaders make decisions about the best practices to incorporate technology into the policy distribution process.

Chapter 1 provides a description of the research problem as well as the rationale for the study, purpose of the study, and theoretical framework. The research questions and hypotheses are addressed next. Definitions, assumptions, the scope of the study, limitations, and significance are addressed to complete Chapter 1.

Background

Health care has undergone a gradual change from using expert opinions to drive the provision of care to the use of research evidence to support the care provided (Houser, 2013). However, the culture of individualized, autonomous practice contributes to

variation and error (Al Mutair, 2015; Ryan et al., 2015), which can contribute significantly to increased health care costs. With this shift in the health care system in the United States, there has been increasing emphasis on the use of evidence-based practices to improve patients' outcomes (Corey et al., 2018; Dols, et al., 2017; Squires et al., 2012). For instance, the Institute of Medicine have set a goal of accelerating the incorporation of the best clinical knowledge into health care decisions (Smith, Saunders, Stuckhardt, & McGinnis, 2012).

Creation of an evidence-based culture is a multifaceted process involving building support for the method among nursing leadership, establishing supporting processes, and developing assessment tools and processes (Baker, 2014; Squires et al., 2012). Nursing practices that are based on evidence, especially published-peer reviewed research, are accepted as the most effective for use with patients. Evidence-based practices are reflected in the policies, procedures, and other health care-related documents that guide a nurse's practice (Squires et al., 2012). The use of policies and procedures is one type of evidence-based practice implementation with multiple methods of distribution (Hauck et al., 2013). Although there is literature regarding the best methods to conduct evidence-based practice projects (Melnyk & Overholt, 2015), there is little information regarding dissemination of evidence-based policies and procedures (Squires et al., 2012). A complete discussion of policy and procedure distribution is included in Chapter 2.

Smaller or for-profit hospitals with limited resources or limited capacity to conduct original research may desire to focus only on the implementation of evidence-based practices (Melnyk et al., 2016). Evidence regarding the locus of policy knowledge

development in nursing would help nursing leaders to align available resources for the most effective outcomes. Nursing leaders might pursue research evidence to support policy delivery software as a method to more easily implement evidence-based practices. The findings of this study can help hospital leadership make decisions on how best to incorporate technology into the policy distribution process.

Policy Communication

Canary, Riforgiate, and Montoya (2013) postulated that a policy is not just the written document but includes other factors such as discussions in staff meetings or interactions with coworkers in the workplace culture that affect the incorporation of policy into practice. However, there is no evidence to support whether the method of policy and procedure delivery (i.e., a paper copy or electronic delivery) is used in hospitals or by nurses (Miller & Kearney, 2004; Squires et al., 2012). The availability of bedside electronic access to documents can have a positive impact on nursing practice (Corey et al., 2018). However, it is essential to understand the role the actual policy document plays versus other aspects of the policy communication process in the building of policy knowledge (Canary et al., 2013). This study was conducted to address this lack of knowledge with the PCI, which measures different aspects of the policy communication process to help understand the communication processes that occur in the formulation of policy knowledge (Canary et al., 2013). Examination of the policy communication processes in a nursing context can aid nursing leaders in understanding the source of policy knowledge and the implications on the allocation of resources such as time or financial resources.

Problem Statement

The problem addressed in this study is that little is known about how nurses obtain policy knowledge. As health care continues to make the transition from an expert-based model to an evidence-based model (Salmond & Holly, 2012), evidence-based policies and procedures are becoming increasingly important. The health care industry continues to expand with the implementation of the Affordable Care Act (Pulcini, 2013), and with the impending retirement of many older, experienced nurses (Bishop, 2013; Dotson, Dave, Cazier, & Spaulding, 2014; Uthaman, Chua, & Ang, 2016), the expert-based model will have even less application. The implementation of policies and procedures presents a significant investment of resources on the part of an organization (Squires, Moralejo & LeFort, 2007). Research has shown that a policy or procedure is more than just the document (Canary et al., 2013). However, little is known about how nurses obtain policy knowledge, and the literature does not address the communication of policy knowledge among nurses in empirical terms. Thus, this study can show how nurses communicate policy knowledge, which might help justify the investment of resources in the implementation of policy distribution software.

Purpose of the Study

The purpose of this quantitative study was to learn more about how nurses obtain policy knowledge. To accomplish this, I examined the association between policy communication processes (independent variable) and two dependent variables: policy knowledge and the frequency of accessing the reference policy via policy distribution software. Policy knowledge was assessed using the Policy Knowledge Measure (PKM), a

separate variable of the PCI originally used to assess the predictive validity of the PCI instrument (Canary et al., 2013). I also examined the association between demographic variables (age of the nurse, the educational level, and the years of experience in nursing practice) and the two dependent variables. The goal of this study was to understand and advance knowledge of policy communication processes among nurses to aid hospital leadership in making decisions on how best to incorporate technology into the policy distribution process.

Research Questions and Hypotheses

This study answers five questions regarding policy knowledge generation.

Research Question 1: What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index, and the Policy Knowledge Measure score (Canary et al., 2013)?

$H_0$1: There is no relationship between the Policy Communication Index and the Policy Knowledge Measure score.

H_a1: There is a relationship between the Policy Communication Index and the Policy Knowledge Measure score.

Research Question 2: How many Policy Communication Index factors indicate a predictive value on the Policy Communication Index score (Canary et al., 2013)?

$H_0$2: There are no predictive factors among the Policy Communication Index subscales.

H_a2: There are one or more predictive factors among the Policy Communication Index subscales.

Research Question 3: What is the nature of the relationship between demographic factors (age, nursing education level, and years of experience in nursing practice) and the Policy Knowledge Measure subscale score (Canary et al., 2013)?

$H_0$3: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the Policy Knowledge Measure subscale score.

H_a3: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the Policy Knowledge Measure subscale score.

Research Question 4: What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index (Canary et al., 2013), and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$4: There is no relationship between the Policy Communication Index and the frequency of policy access through policy distribution software.

H_a4: There is a relationship between the Policy Communication Index and the frequency of policy access through policy distribution software.

Research Question 5: What is the nature of the relationship between demographic factors (age, nursing education level, years of experience in nursing practice) and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$5: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

H_a5: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

Theoretical Framework

The theoretical framework used in this study was Rogers's (2003) diffusion of innovations theory. The diffusion of innovations theory can help explain why the adoption of evidence-based policies and procedures is successful in some hospitals and not in others According to Rogers, there are five variables that influence the rate of adoption of an innovation: perceived attributes of innovations, type of innovation decision, communication channels, nature of the social system, and extent of change agent's promotion efforts. Communication channels likely have a greater impact on the policy knowledge creation than the other variables.

Rogers's (2003) theory served as a guide to discern the communication channels in use by nurses in their adoption of evidence-based policies and procedures. The PCI (Canary et al., 2013) is centered on organizational communication and the emphasis placed by the organization on the communication channels used in the organization. Rogers defined communication as how people share information to reach an understanding, and communication channels are the means by which information is transmitted from one person to another. Different communication channels are used at

different stages of adoption (Rogers, 2003). Underutilized or misaligned communications channels may lead to failure to adopt the policy or procedure. Parallels between the function of communication channels in adoption and their use in policy communication is further discussed in Chapter 2. Though the adoption of policy distribution software is influenced by Rogers's perceived attributes, the measurement of these attributes and their influence on the successful adoption of the policy distribution software was outside the scope of this study.

Nature of the Study

A quantitative nonexperimental approach was used to determine what influences how policy knowledge is developed among nurses. The selection of a quantitative model helped to minimize the impact of personal bias in the questions, responses, and analysis because I used a survey that provides a true reflection of the participant's responses (Queirós, Faria, & Almeida, 2017; Yilmaz, 2013). I used the PCI, which is a quantitative survey tool that measures factors governing implementation of policies and procedures in an organization. There are many factors that influence the implementation of a policy in an organization in addition to written documents (supervisor/coworker written instructions) such as meeting discussions, human resources communication, coworker interactions, and personal expressions (Canary et al., 2013). All are part of the process of policy knowledge development; however, each hospital's culture determines the role each factor plays. Information regarding nurses' policy knowledge acquisition was gathered using the PCI instrument. Additionally, information regarding the nurse's knowledge regarding the reference policy was gathered using the PKM (Canary et al.,

2013). Lastly, demographic information was collected to examine if demographic factors (age, nursing education level, time in nursing practice) influence the policy knowledge development in nurses.

A correlational approach was used to compare the results from the PCI communication process subscales and demographic data with the PKM subscale (Canary et al., 2013) and the frequency of policy document access to examine potential relationships that might influence the way nurses obtain and interpret policy information. The independent variable is the PCI with the subscales of Supervisor/Coworker Written Instructions, Meeting Discussions, Human Resources Communications, Coworker Interactions, and Personal Expressions, which were collected and analyzed concurrently (Canary et al., 2013).

There were two dependent variables in this study, the first being PKM and the second being the frequency of policy access. The PKM is a subscale of the PCI with nine Likert-type questions to quantify policy knowledge (Canary et al., 2013), which were related to the reference policy used in the study. The second dependent variable is the frequency of nurses accessing the reference policy via the policy distribution software. The frequency data was obtained from the policy distribution software in use at the target hospital.

Definitions

Evidenced-based practice: In nursing, a conscientious approach to problem-solving using the best available research evidence, combining the nurse's experience and the patient's wants and needs to achieve optimal patient outcomes (Melnyk, Gallagher-

Ford, Long, & Fineout-Overholt, 2014; Renolen, Høye, Hjälmhult, Danbolt, & Kirkevold, 2018).

Implementation: Implementation can be used to describe the incorporation of an idea, system, or device into practice (Rogers, 2003). Implementation can also refer to the incorporation of an evidence-based practice within a health care setting. Every attempt was made to ensure when the term is used that its meaning is clear to the reader (Grinspun, Melnyk, & Fineout-Overholt, 2015).

Knowledge synthesis: Used in a nursing context refers to a summary of all the available studies on a topic (Whittemore, Chao, Jang, Minges, & Park, 2014).

Policy: Several definitions exist. Policy is a dynamic process that might include text, practices, and decisions that organize action across contexts (Cal Poly, 2019; Canary, 2010). A policy can also be a document that defines an organization's stand on a subject and authorizes the actions that might be taken (Campbell, 1998; Osher & Quinn, 2003). Unless otherwise specified, policy in this document follows the second definition of a document, which defines an organization's stand on a subject.

Policies and procedures: These terms may be used together to describe a single document or group of documents, or policies and procedures may represent a collective idea. In this study, the two terms were used together to describe documents used to guide the provision of nursing care unless otherwise noted.

Policy Communication Index (PCI): A quantitative method to measure the factors that influence the communication of policy knowledge within an organization (Canary et al., 2013). The PCI consists of five subscales (Meeting Discussions, Human Resources

Communication, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions), the scores of which are combined to form the PCI. Additional detailed information can be found in Chapter 2.

Policy knowledge: "An array of symbolic and/or practical routines, resources, and affordances used to coordinate action" (Canary, 2010, p. 245).

Policy Knowledge Measure (PKM): A designation for a measure based on nine Likert-type questions from the PCI survey tool (Canary et al., 2013). These nine items, along with others, were used to assess predictive validity of the original survey instrument. The items are used here to assess nurses' knowledge of the reference policy. The PKM serves as a dependent variable in this study. This is discussed in greater detail in Chapter 2.

Procedure: A document that outlines the steps needed to implement a policy or perform a task (Cal Poly, 2019)

Assumptions

My first assumption was that hospitals would not implement evidence-based practices that are not required for their patient population. Organizations are obligated to institute best practices for patient care practices, thereby improving patients' outcomes (Friesen et al., 2017). I also made two additional assumptions regarding nurses. First, nurses are motivated to acquire knowledge to perform their job (American Nurses Association, 2015). In wanting to provide safe, effective care, nurses want to learn exactly what is required to carry out a task. Second, nurses have reasonable access to

policies and procedures regardless of the delivery method. Employers make some effort to provide access to documents required for nurses to complete their assigned tasks.

There are two additional assumptions regarding the conduct of this study. First is that the research design was appropriate to answer the research questions. Without previous studies to support this model, I had to assume that the methods chosen were appropriate to answer the proposed research questions. The second assumption was that the survey tool would provide reliable, valid data to answer the research questions. The PCI survey tool was applied in a different situation than the original study; this should not alter the validity but was considered during data analysis. The tool, originally designed to be administered to all employees in an organization, was administered only to nurses who practice at the bedside. The PCI measurement uses a reference policy as part of the measurement process (Canary, et al., 2013). I used the hospital's evidence-based pressure injury policy, as this should be consistent with pressure injury policies at other similar type hospitals, supporting generalization of the study's findings. Bedside nurses are likely to be the only hospital staff required to read the reference policy. This difference in the target population from the original study was also considered in the data analysis.

Scope and Delimitations

I focused on nurses practicing hands-on nursing on patients in an acute care hospital setting. Acute care hospitals admit patients for treatment, anticipating they will be discharged within 24 hours to a few weeks. This group was chosen due to hospitals across the United States being required to implement certain practices under the Centers

for Medicare & Medicaid Services Hospital Acquired Conditions Initiative (Waters et al., 2015). Other hospital settings such as long-term care, rehabilitation hospitals, nursing homes, and ambulatory surgery centers are not included in this study. The different regulatory and accreditation requirements of these other hospital types introduced a level of complexity that was outside the scope of this study. Nurses working in other areas of nursing such as management or in an ambulatory clinic setting may not need to learn these common required practices and were therefore excluded from the study. They may not have the same incentives or requirements to learn the policy as a nurse practicing at the bedside.

Limitations

An important limitation was the inability to study the problem of how nurses acquire policy knowledge with a controlled experimental study. The limitations on time, resources such as money, and access to a suitable experimental group are some of the factors that precluded the ability to conduct a controlled experimental study. The time to design a controlled experimental study, locate a suitable site, and conduct the experiment was outside the timeframe available. The funds to design and set-up this type of study were also not available. Access to a suitable group with which to conduct the experimental study on was challenging and time intensive as well. These factors made the selection of a controlled experimental study impractical.

An area of potential weakness in this study was the lack of consistency in policies and procedures from one organization to the next. As there is no required or recommended format, content, or writing style in policies and procedures, this may

influence the outcome of the PCI (Canary et al., 2013). Caution should be exercised in generalizing the findings of this study in other health care settings such as nonprofit hospital settings or academic health care institutions. The motivating factors underlying implementation of policies may be different with different hospital operational models. The findings should not be generalized outside of health care, as the motivations for acquiring policy knowledge are likely to be very different from those in health care settings.

An additional limitation was the use of a single policy, *Pressure Injury Prevention Policy*, as the reference policy for the study. The pressure injury policy was chosen because pressure injury is a significant problem in the United States with the costs associated with treatment of pressure injuries of $9.1 billion to $11.6 annually (Bauer, Rock, Nazzal, Jones, & Qu, 2016). Approximately 169,000 patients are diagnosed with a pressure injury annually (Bauer et al., 2016). This is a significant incentive for all hospitals to institute evidence-based preventive programs. However, although pressure injury prevention is widely practiced among hospitals in the United States, caution should be used in generalizing policy distribution software efficacy based on this study. The intent of this study was not to determine how effective policy distribution software is in conveying pressure injury prevention knowledge. The intent was to measure the locus of policy communication in a hospital and correlate this with other factors to determine how likely nurses are to utilize the software as intended. There are likely many other factors that also influence the formation of policy, which are outside the scope of this study.

However, the evidence provided by this study could be used as an adjunct in the development of a comprehensive technology implementation program.

As a final potential limitation, my oversight of the policy delivery process and software at my workplace, as well as my role in the writing and implementation of policies and procedures, could have resulted in bias. Therefore, this study was not conducted at the hospital where I am currently employed, as my interactions with the staff might influence the answers they would provide on the survey tool.

Significance

There is a need for nursing to transition from the expert-oriented model of practice that has been the basis of nursing care and health care to an evidence-driven model (Dols et al., 2017; Renolen et al., 2018; Salmond & Holly, 2012). Nursing often focuses on barriers to implementation (Struik et al., 2014), but an organization needs to build a culture that emphasizes the use of evidence-based practices in the provision of safe, effective care and increased patient satisfaction. Hospitals have incentives for nurses to learn evidence-based practices and incorporate them into their care routines (Kavanaugh, Cimiotti, Abusalem, & Coty, 2012; Waters et al., 2015). Analysis of patient outcomes can determine if an evidence-based practice is effective, but this does not necessarily indicate that a nurse has learned a specific evidence-based practice. Therefore, this study can provide necessary information on effective methods of implementing evidence-based practices with the examination of the policy knowledge acquisition process in nursing.

Advancing Knowledge

Policy knowledge creation has been studied recently but in relation to policies that apply to all employees in an organization (Canary et al., 2013). To date, no studies have been conducted regarding how nurses create policy knowledge. Thus, in this study, I examined the policy knowledge development process using the PCI to determine what factors have the greatest influence.

Potential Contributions

There is limited literature that mentions the method of dissemination of evidence-based practices in nonresearch settings. Policies and procedures are the most economical and efficient method for implementation of evidenced-based practices in nursing (Squires, Moralejo, & LeFort, 2007). Understanding the ways in which nurses acquire policy knowledge is an important part of advancing evidence-based practice through policies and procedures that have received scant attention in the literature. The use of electronic policy distribution software may facilitate the delivery of policies and procedures through timely notification of staff of new documents or updates.

Expertise driven practices might become entrenched as part of the nursing care with nurses being resistant to change (Hanrahan et al., 2015). Overcoming this resistance is crucial to successful implementation of evidence-based practice. Evidence-based practices have been shown to improve patient outcomes and to decrease the cost of health care (Kahn, Gunn, Lorenz, Alvarez, & Angus, 2014; Melnyk et al., 2016; Titler et al., 2009). The overall cost of health care in the United States has gone from $1.4 trillion to over $3 trillion dollars per year between 2004 and 2016 (Lee, 2017; Obama, 2016). A

better understanding of how nurses acquire policy knowledge could potentially advance the implementation of evidence-based practices.

Social Change Implications

Evidence-based practices improve health care through higher quality care, consistency, and better patient outcomes (Kahn et al., 2014, Manchikanti, Helm, Benyamin, & Hirsch, 2017; Melnyk et al., 2014; Melnyk et al., 2016). These factors affect a hospital's ability to implement evidence-based practices; therefore, it is essential to support any efforts in implementation (Stokke et al., 2014). The effective implementation of software to aid in the distribution of evidence-based policies and procedures can play a part in the overall implementation of evidence-based practices in a hospital. The social change that might result from this study is hospitals having an evidence-based method to disseminate research findings to nurses in a timely and practical manner, resulting in faster improvement in patient outcomes. Evidence-based policies and procedures are becoming increasingly important as health care continues the transition from an expert-based care model to an evidence-based model (Salmond & Holly, 2012) and more experienced nurses are retiring (Bishop, 2013).

Summary

In Chapter 1, I presented an overview of the importance of evidence-based practices and how policies and procedures can be used to convey this information to nurses. I presented the problem of understanding policy knowledge development and the importance of the method of distributing policies and procedures for nursing. The social

change implications of evidence-based practices and their impact on health care were addressed as well.

In Chapter 2, I present an in-depth discussion of the theoretical foundation of the study, a review of available literature on policies and procedures, evidence-based practice, and research methods. Chapter 3 describes the research methodology. Chapter 4 presents a quantitative analysis of the data collected. In Chapter 5, I present the results of the data analysis and make recommendations according to literature findings, study results, and analysis.

Chapter 2: Literature Review

Introduction

The purpose of this quantitative study was to learn more about how nurses obtain policy knowledge by examining the association between policy communication processes (independent variable) as well as demographic variables (age of the nurse, the educational level, and the length of time as a nurse) and two dependent variables: policy knowledge and the frequency of accessing the reference policy via policy distribution software. Policy documents are multi-purpose in that they can define requirements, provide instruction, reflect research-based best practices, and can act as a reference tool (Corey et al., 2018; Squires et al., 2012). The government has mandated the expanding role of information technology for the collection of patient data. This expanded role has provided the information system infrastructure for other applications as well (Alexander, Firth, & Hoy, 2014). By understanding how nurses acquire policy knowledge, hospitals can more effectively evaluate whether the benefits gained from policy distribution software justify the commitment of resources associated with implementation.

Chapter 2 includes a review of available literature summarizing current research while identifying areas for further study. I also provide are a more detailed analysis of Rogers's (2003) diffusion of innovation theory and how this helped to provide structure to this study. The literature review is focused on three main areas: the role and importance of evidence-based practice in health care, policy communication processes, and the justification for the variables selected. These topic areas provide the necessary foundation upon which this research was built. The analysis shows areas in which

research has been performed and the gaps in the literature some of which are addressed in this study.

Literature Search Strategy

The literature explored for this study was obtained using an evolving search strategy. Early in the process, searching was based on keywords or terms such as *policy and procedure*, *evidence-based practice*, or *implementation*. The first online searches used the Walden University Library primarily focusing on nursing related sources such as the Cumulative Index to Nursing & Allied Health Literature (CINAHL) and Proquest Nursing. Later search subject areas included Business, Management, Information Systems, and Technology, although these did not reveal as many results. Google Scholar (configured to integrate with the Walden Library) was used, as it provided easy access to full-text copies of articles. A thorough review of pertinent articles revealed additional sources and articles for review. Some of the focus areas identified tended to appear more frequently in journals such as *World Views on Nursing*, *Management Communication Quarterly,* and *Implementation Science*. Review of these journals yielded additional useful articles. LearnTechLib and EBSCO searches using terms related to the PCI revealed few additional useful articles; most of the pertinent articles had been previously identified using other search criteria. My search strategy focused on articles published in the last 5 years but was later expanded to include older articles about select subjects. There is some controversy surrounding limiting article age to the last 5 years (Vance, Talley, Azuero, Pearce, & Christian, 2013); however, newer articles are still preferred over older.

This literature review covered policy communication, evidence-based practices, diffusion of innovation, and implementation science. The literature search targeted peer-reviewed articles, primary research papers, information from software vendor websites, and books related to nursing evidence-based practices. Search results yielded more than 2,083 articles on these topics: *policies and procedures, Rogers, Diffusion of Innovation, evidence-based practice, policy communication practices* and *implementation science.* The resulting articles were further narrowed to 225. The broad nature of terms such as *policy* or *evidence-based practice* resulted in many articles that I decided were not appropriate for inclusion in this literature review. An effective strategy for finding more recent articles uses the "Cited by" link in Google Scholar references. The link returns articles that have cited the original article. Some of the newer articles identified are more appropriate than the older original article.

Theoretical Foundation

Rogers's (2003) diffusion of innovation theory was used as the theoretical foundation for this study. One other theoretical framework was examined, May's (2013) implementation theory, as this theory describes the implementation of evidence-based practices.

Diffusion of Innovation

Rogers's (2003) diffusion of innovation theory was used to describe the forces influencing the individual nurses' acquisition of policy knowledge in a hospital setting. Although the adoption of the policy distribution software is an organizational decision, the success of the implementation is dependent on the individual's adoption of the

technology (Ingebrigtsen et al., 2014). Rogers discussed five variables that influence the rate of adoption of an innovation, two of which likely have a more significant impact on the software adoption. These five variables are perceived attributes of innovation, type of innovation-decision, communication channels, nature of the social system, and change agents' promotion efforts (Rogers, 2003). However, communication channels and perceived attributes of innovations are likely to have more of an influence on policy knowledge communication than the other variables.

According to Rogers (2003), the construct of the social system in an organization with its norms and the intricacy of the communication network affect the rate of adoption of an innovation. I examined, with the PCI, the impact organizational communication channels have on a nurse's learning of a policy or procedure. I examined the Supervisor/Coworker Written Instruction subscale to determine what impact this communication channel has on the implementation of evidence-based policies and procedures. The PCI consists of four other factors that influence the perception of a policy by an individual: meeting discussions, human resources communication, coworker interactions, and personal expressions (Canary et al., 2013). Personal expressions is the only factor that is not as directly related to communication. However, Rogers (2003) stated that an individual's personal experiences and perceptions, conveyed by interpersonal networks, drive the diffusion process. The degree of influence of each of the PCI factors is indicative of how policies are learned within an organization (Canary et al., 2013). The PCI factors are the communication channel by which Rogers's perceived attributes of innovations are communicated within an organization and therefore

influence the adoption of an innovation such as policy distribution software. How each of the PCI factors influence the formation of policy within an organization are discussed later in this chapter in an in-depth analysis of the PCI.

Rogers's (2003) diffusion of innovations was used to aid in the examination of the adoption of the policy distribution software because of its use to describe the adoption of many types of innovations including technology such as nursing simulation labs (Kleinheksel & Ritzhaupt, 2017) and software. Employees within organizations endure several stages in deciding on when to adopt. It is important to understand the dynamics at work, the information employees require, and the experiences that validate their decision. The advantages of new technology must be directly experienced by the adopter, or it is likely that diffusion will fail. Although the focus of my study was addressing the development of policy knowledge within a hospital, the process is somewhat dependent on the adoption of policy distribution software, which is why I address adoption of software in this the following paragraphs even though it is outside the scope of my study.

Within one of the variables relevant to this study—perceived attributes of innovation—there are five other variables (Kapoor, Dwivedi, & Williams, 2014; Rogers, 2003). Adoption of an innovation is more successful if all five attributes are addressed in the course of the adoption process. First, relative advantage is how the innovation is perceived as being better than the idea it is intended to replace. The relative advantage would need to be recognized by the end user to be perceived as advantageous. With this variable, the nurse would need to perceive the use of the policy delivery software as being better or having some attribute that is better than the paper delivery method.

Hospital leadership might perceive attributes such as ease of updating, better document control, and searchability important in the decision to implement the policy delivery software. However, if nurses deem that being able to locate a paper document in a notebook is integral to their nursing practice, the relative advantage may be lost.

The next perceived attribute, compatibility, is the degree to which the innovation is perceived to be compatible with existing values or the needs of the adopter (Rogers, 2003). The nurse would need to have confidence that the policy delivery software would meet their needs for providing policies the way the paper system did or that the electronic system would provide a current, valid policy when they needed to access one. The policy delivery software would need to reliably provide documents in the amount of time the nurse expects, with a minimum of searching, and to be secure from vandalism.

Third, complexity is the degree to which the innovation is perceived as relatively more complex than the item being replaced (Rogers, 2003). The nurse would need to perceive the complexity of the new electronic system as being relatively easy to learn and navigate to achieve the same outcome as the paper delivery method. The differences between the two different types of systems can be difficult to reconcile. Nurses may have widely differing experiences in the use of software programs, which may influence their perception of complexity. The software interface design, function, and integration into the workflow can also be a factor in the perception of complexity. A simple activity such as logging in to a software program could have an impact. A nurse might deem the system as too complex when attempts at logging in fail, even though it might be a user error.

The fourth variable is trialability, which is the degree to which the innovation can be experimented with on a limited basis (Rogers, 2003). The policy distribution software should be trialed with each nurse before the system is fully implemented. This way nurses can practice using realistic patients and data and become more comfortable with the software before they use it. This can be particularly useful for nurses who work shifts outside of the regular workday when technical support is often less accessible.

Finally, observability is the degree to which the results of the innovation are observable (Rogers, 2003). Some aspects of the electronic delivery method can be measured such as frequency of accessing the system or whether the nurse has acknowledged reading a document. What is lacking is the ability to observe the effectiveness of the system in conveying knowledge to the user. However, an in-depth study of the effectiveness of the policy distribution software to effectively convey knowledge to the user is outside the scope of this study.

Rogers's (2003) five attributes are often seen in studies as an explanation for the success or failure of an innovation or program. Although there are no specific studies that address the implementation of policy distribution software, there are other studies in which Rogers's theory is used as a theoretical foundation or in conjunction with other theories to inform a study (Bish, Newton, & Johnston, 2015; Doyle, Garrett, Currie, 2014; Hadorn, Comte, Foucault, Morin, & Hugli, 2016; Pashaeypoor, Ashktorab, Rassouli, & Alavi-Majd, 2016). Further, Rogers's theory has been used to describe the adoption of other types of innovations in health care settings (Mohammadi, Poursaberi, & Salahshoor, 2018; Ryan et al., 2015). For example, Ryan et al. (2015) examined

implementation of sustainable, evidence-based quality initiatives, viewing the nurse leader in a change agent role. Ryan et al. identified three strategies that drive sustainable change: communicating why change is needed, the creation of a tipping point for support of the initiative, and beginning with the end in mind with a clear plan. These strategies are aligned with Rogers's (2003) stages of innovation. Ryan et al. determined that these strategies would provide nursing leaders the best practices to implement evidence-based quality improvement initiatives.

Despite the application of Rogers's (2003) theory to the health care setting, some researchers have concluded that there is no single theory that describes the adoption and implementation of health information technology, but that several theories are interrelated in the process (Cresswell & Sheikh, 2013). Cresswell and Sheikh (2013) described three dimensions technical, social, and organizational that must be closely aligned to meet adoption and implementation goals, which they related to Rogers's concepts of relative advantage, demonstrable benefits, costs, interoperability with existing systems, and trialability. They claimed that although there is research available regarding the technological, social, and organizational dimensions, because of the complexity of health information technology implementation, further research on the interrelationship of the three dimensions is needed.

Although Rogers's (2003) theory is widely used in many disciplines, including nursing, it is not always the theory of choice for implementation. For example, Mitchell (2013) evaluated three change theories to determine which theory for the implementation of planned change would best inform the process. The theories evaluated include Rogers'

diffusion of innovations, Lewin's field theory, and Lippett's dynamics of planned change (Mitchell, 2013). Mitchell compared the different aspects of each implementation theory, grouping them by similar traits and found that Lippett's dynamics of planned changed was more suitable to address the barriers to implementation in a proactive manner rather than a reactive manner. However, the analysis was not in-depth for each of the theories.

Implementation Theory

The implementation of evidence-based practices is another important process to address because it can affect the formation of policy knowledge. Evidence-based practice implementation can be examined using May's (2013) implementation theory, which can describe the integration of evidence-based practices into nursing practice. May's implementation theory consists of four constructs: capability, capacity, potential, and contribution. Capability is the ability of the nurse to integrate a new process into practice; this is dependent on the workability of the new practice and its integration into social practices among the health care team. Capacity is the ability of nurses to cooperate and coordinate their actions with other members of the health care team and be willing to change their practices in conjunction with other health care team member's changes in practice. Potential is the commitment of the individual nurse and nurses collectively to put an intervention into practice and to sustain the new practice until it becomes normalized. Contribution is the effort in committing to putting an intervention into practice.

Although May's implementation theory can help to explain the integration of evidence-based policies into current nursing practice, a thorough examination of this

theory is outside the scope and purpose of this study. I looked at how policy knowledge is generated and conveyed within an organization. Policy knowledge generation is a part of the implementation of evidence-based practices in the form of policies and procedures. However, examining the entire process of implementation of evidence-based practices is complex and does not fit within the purpose of my study examining policy communication processes among nurses.

Key Concepts and Variables

The development of policy knowledge in nursing practice is influenced by several factors discussed earlier in Chapter 1. Key concepts discussed here include evidence-based practice, policies and procedures, policy knowledge construction, policy communication, policy delivery and interpretation, methods of policy delivery, and common pitfalls of policy distribution. The independent variables from the PCI and the dependent variables of PKM and software access frequency are also discussed.

A thorough search of the available literature revealed almost no reference to the development of policy knowledge in nursing. Searches of the literature regarding policy knowledge development in nursing resulted in multiple articles regarding nursing involvement in health policy formation and a distinctly separate use of the term *policy*. Searches also returned the term *knowledge synthesis,* which in nursing generally refers to a summary of all the available studies on a topic (Whittemore et al., 2014). This is a different type of knowledge development and is not the subject of this study. Literature regarding the distribution of policies and procedures as a process is limited, often describing the process as the distribution of documents or other vague description

(Blankenship, Lucas, & Sayre, 2013, Irving, 2014). Jeffries et al. (2010) described an educational program to implement a new documentation process but did not describe how the policies from the project were deployed. Friesen et al. (2017) described implementation as a very complicated step in the delivery of evidence-based care. The lack of explicit information in the literature drove the exploration of other factors that influence the process of how policies and procedures move from a document to incorporation into nursing practice. One factor, the policy communication process, appeared to be a very significant aspect of the process. Research into the process of how a concept becomes a policy has shown it to be a cultural phenomenon (Canary, et al., 2013) where each organization has a unique policy communication process (Manojlovich, Squires, Davies, & Graham, 2015). Canary et al. (2013) developed a measurement for describing the process in use in an organization, the PCI.

The policy communication process, as described by Canary et al. (2013), was chosen as an independent variable as the type of processes in place at an institution influences how policy is created within that organization. The type of process, as determined by the PCI (Canary et al., 2013) might influence the effective adoption of policy distribution software. A discussion of organizational and policy communication processes, as well as a discussion of the PCI (Canary et al., 2013), follows.

Evidence-Based Practice

Evidence-based practice is a broadly used term to describe the incorporation of current best research evidence in making decisions regarding health care (Davidson & Brown, 2014; Grinspun et al., 2015; Kahn et al., 2014; Melnyk & Overholt, 2015). For

this study, I focused on evidence-based practice as it applies to nursing. Evidence-based practice is a multi-faceted problem-solving approach to finding and evaluating relevant research to address an important clinical question. This evidence is combined with one's clinical expertise and judgment, internal evidence gathered from such sources as outcomes management, quality improvement projects or patient assessments and patient preferences and values (Melnyk & Overholt, 2015).

The process of implementing evidence-based practice has six general steps (Stokke, 2014). The first step is formulating a clinical research question. A common format for the question uses patient population, issue of interest, comparison group, outcome, and timeframe and is referred to as PICO or PICOT (Melnyk, & Fineout-Overholt, 2015). The second step is to search for evidence to help answer the clinical question(s) (Stokke, 2014). The evidence is rated against a hierarchy assigning a relative value to the evidence. There are many hierarchies of evidence available; the researcher selects the scale that is most appropriate to the PICOT question. Evidence hierarchies are a scale from anecdotal information to meta-analyses (Melnyk, & Fineout-Overholt, 2015).

The third step, critical appraisal of the evidence, is a key step in the evidence-based practice process (Melnyk, & Fineout-Overholt, 2015; Stokke, 2014). Evidence is evaluated to answer three general questions regarding the validity, reliability, and applicability of the evidence. The first question asks if the evidence is examined to determine the validity of the study results. Factors such as whether the researchers used the best methods possible, if study methods such as randomness of groupings, or

selection of variables were appropriate are included in this question. The second question is regarding the reliability of the results determining such factors as how well the intervention worked and whether others can expect the same results if the study is repeated (Heale & Twycross, 2015). The third question examines the applicability of the results in other clinical settings by determining if the patients are similar to those in the study population. Additionally, determining if the benefits outweigh the risks or whether the treatment feasible to implement in one's setting are examined (Melnyk, & Fineout-Overholt, 2015). According to Melnyk and Fineout-Overholt (2015), there are three additional key concerns in this step; evaluating the *level* of the evidence (e.g., anecdotal, randomized controlled studies), the *quantity* or number of studies published, sample size, or magnitude of a treatment effect, and *consistency* of finding, i.e., studies are similarly constructed and produce similar results (Stevens, 2015).

The fourth step in the implementation of evidence-based practices process described by Stokke (2014) is the incorporation of the evaluated research into a change in clinical practice. The integration of research evidence is undertaken with the use of clinical judgment and with patient preferences and values (Long et al., 2015). The fifth step is the incorporation of patient preferences and values into the new clinical process (Long et al., 2015; Stokke, 2014). A patient-centered approach combines evidence-based knowledge with the "patient's values, concerns, and choices" (Long et al., 2015, p. 180) in determining the best possible course for a patient's care. The sixth and final step, after implementation, is to evaluate outcomes to ensure the clinical research question(s) are addressed, and patient needs and values have been met (Stokke, 2014). These six steps

are used in evaluating current, applicable research and formulate a plan of action to solve a pressing issue. The result is a structured method to utilize scientifically produced evidence to solve a problem.

Policies and Procedures

In nursing, policies are a set of guidelines that nurses use to help determine the care, patient and family education, and evaluation of care (Long et al., 2009). Nursing leaders use *policies* to establish parameters by which decisions are made regarding care. *Procedures* in nursing are a set of step-by-step instructions for a given task. These terms may be used together to describe a single document or group of documents, or policies and procedures may represent a collective idea. In my study, the two terms were used together to describe documents used to guide the provision of nursing care unless otherwise noted.

Nursing is a research-based, academic discipline and as such, there is an almost overwhelming amount of high-quality research data available to inform nurses in their practice (Bucknall & Rycroft-Malone, 2010). This large amount of information is challenging for nurses to sort through to find information that is appropriate for their patients. Bedside nurses may not have the time to find and evaluate research, and may lack the skills to distill down large volumes of research data, some of which may be contradictory, into useful information for application in a patient care setting (Melnyk et al., 2016).

Nursing leadership uses policies and procedures to direct nurses as to the type of care they provide consistently from nurse to nurse. Policies and procedures describe the

circumstances in which the nurse is to act. For instance, the application of restraints for patient safety is outlined in Federal regulations (Centers for Medicare & Medicaid Services, 2012) leaving some parameters for the hospital to determine based on nursing leadership's judgment and community standards. Consistency in restraint application is accomplished through a policy, which dictates the requirements for application such as what constitutes restraint, who may authorize the application of restraints, duration of restraints, and documentation of restraints. The regulation does not provide the direction necessary for the nurse to apply restraints safely to a patient, only the conditions or circumstances under which they may be applied.

Pressure injuries are another example where Federal regulations require action but do not specify how the actions are to be implemented. Under the Centers for Medicare & Medicaid Services Hospital Acquired Conditions Initiative (Waters et al., 2015), a hospital receives its full Medicare reimbursement if the hospital keeps the rate of severe pressure injuries below a specific threshold. Hospitals consider severe pressure injuries to be those that are Stage 3 or Stage 4 per the National Pressure Ulcer Advisory Panel guidelines (2018). The advisory panel creates and publishes guidelines regarding pressure injuries and makes recommendations on prevention and treatment of pressure injuries, but it is up to each hospital to create a plan for the prevention and treatment of pressure injuries (Palfreyman, & Stone, 2015).

Policies and procedures also assist in providing consistent, evidence-based education to patients and their families (Long, Burkett, & McGee, 2009). Patient and family education is an essential nursing function (American Nurses Association, 2015).

Peplau's nursing theory, the Theory of Interpersonal Relationships (Peplau, 1991), states that nurses ensure patients and their families understand how and what they need to do to become well and stay well. Nurses provide education so that patients and their families can assume their own care. Policies and procedures on patient education help to ensure the instructions provided to the patient are in alignment with the prescribed medical treatments (Long et al., 2009).

Policies and procedures allow for the evaluation of care by establishing parameters used to evaluate patient outcomes. The evaluation of care is essential in determining if a particular course of care or procedure results in the desired outcome for the patient (Friesen et al., 2017). The evaluation also helps to ensure that care is effective and not harmful to the patient. Ensuring that care is effective from a cost perspective is becoming increasingly important as well.

Policies and procedures are often the most important knowledge source for nurses (Squires, et al., 2012). Policies and procedures help to establish a uniform standard of care, with a focus on safety, throughout all areas of a hospital (Cullen, 2018; Long et al., 2009,). According to Canary, "policies have an authoritative function that both controls and coordinates action, and that both proscribes and prescribes the behavior of policy implementers…" (2010, p.24). Policies and procedures are established by leadership to direct employees' actions when leadership is not available to provide instruction in person (Melnyk, et al., 2016). Policies and procedures also contribute to efficient hospital fiscal management. Consistency in the performance of care results in consistent outcomes with fewer costly adverse events and cost savings through shorter hospital stays (May et

al., 2014). Policies and procedures have long been used to direct the care of patients. Evidence-based policies and procedures help ensure patients receive consistent care based on the best available research evidence resulting in better patient outcomes and reduced costs to both the patient and the health care system.

Distribution of Policies and Procedures

There are several methods to distribute policies and procedures to the nursing staff (Squires et al., 2012). Some systems are passive delivery methods where a document is made available, but a user must actively locate the document. Paper originals or copies of documents for employees to read are one method of passive delivery. Emailed documents for review or posted memos are another method. While emailing a document could be considered an active form of delivery, a better description is a static form of delivery. The nurse must locate the particular email to open and read or reread the attachment and acknowledge receipt of the document. However, many people might not have the skills to manage email effectively (McMurtry, 2014) and can feel overwhelmed by the volume of email they receive. This can contribute to email becoming an ineffective method of communication. Dols et al. (2017) noted a highly desirable feature of policies and procedures delivered electronically is the ability to find the document for later reference. However, poor email management skills can compound the ineffectiveness of the email delivery method (McMurtry, 2014).

Passive policy delivery methods. Paper policy documents organized in notebooks or manuals are one type of passive policy delivery. Documents that are organized in online folder systems for access by employees are another type of passive

delivery method (Corey et al., 2018). While the system is electronic, the user must still actively search for the desired document. Electronic Performance Support Systems (EPSS) and Web-Based Content Management systems have been shown to be effective in the delivery of information to end users (Gery, 1991; Gupta, Govindarajan & Johnson, 2001). Many of these systems function in a passive role. These systems can have logic programmed that displays specific information when queried but does not actively distribute a document to a user.

Active policy delivery methods. Active policy delivery occurs through several methods. Formal in-services (Squires, et al., 2012), emails (Corey et al., 2018) computerized posters and documents, mini-tests (Dols et al., 2017, p.91) are some examples. Software systems that are programmed to perform logical or automated functions for the delivery of policy and procedure documents are another example. Some active delivery methods can be programmed to distribute and track information for specific users. The level of programming and functionality of active delivery methods varies from simple to complex. A system can be programmed to remind the user of the requirement to read a document until the task is acknowledged as completed. The system administrator or the user's supervisor can also receive overdue notifications. The acknowledgment of completion by the user implies a trust that the user has read the document and will implement the steps outlined or perform the procedure as stated (Zehra, 2015). Some systems can also link questions in various formats to assess the user's understanding of the material presented. The effectiveness of this type of assessment was not examined in this study but might be a topic for future research.

Microsoft SharePoint (SharePoint home, n.d.), is a multi-functional software platform that can be configured for document management. However, the use of Microsoft SharePoint as a document management platform requires extensive human interaction to distribute and monitor the delivery of documents. Policy delivery software (Jamieson, 2015) is a more advanced active delivery platform than a file share delivery method such as Microsoft SharePoint (n.d.). Policy delivery software is specially designed for the management, delivery, and tracking of documents such as policies and procedures. The available program's features depend on what a vendor offers and what are standard features or optionally selected for lease or purchase by the end user (Camargo, 2015).

Policy Knowledge Construction

There has been much research on communication within organizations. However, much of the research is outside the scope of this study (Hargie, & Dickson, 2007). Canary (2010) mentions one theory related to communication of policies and the associated knowledge creation within organizations. Structurating Activity Theory is a theory that describes the "communicative construction of policy knowledge within organizations" (Canary, 2010, p. 21). Structurating Activity Theory is an integration of two theories, Structuration Theory and Cultural-Historical Activity Theory (Canary, 2010; Foot, 2014). Policy knowledge is generated through communicative processes that are used to resolve the different levels of contradiction (Canary, 2010).

Policy knowledge constructed between systems is mediated by examining the common elements of intersecting activity systems (Canary, 2010). Points where, common

elements occur between two different systems help to establish the credibility of policy knowledge. Construction of policy knowledge is constrained and enabled by the structural features while at the same time constructed knowledge produces or transforms social structure (Canary, 2010). Structural features such as the nursing reporting structure or a shared or professional governance model of nursing practice (Clavelle, Porter-O'Grady, Weston, & Verran, 2016) can influence the communications that result in policy knowledge development (Hansen & Canary, 2015). Sometimes the constructed knowledge results in the transformation of the social structure such as the implementation of a shared or professional governance model in nursing (Clavelle et al., 2016). When interpreting the results of the PCI and individual subscales, it is important to consider the social structure in place as this may help to interpret the results.

Policy Communication

Many nurses think of policies solely as a document that provides parameters to follow in a given situation. In fact, policies are more than a simple document; they are often a construct that is based on collective knowledge situated within an organization (Corey et al., 2018). Canary et al. (2013) have studied policy development and communication extensively, finding that a critical feature of policy implementation is communication. Canary et al. found there are five factors that reflect the communications activities in an organization: Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Communications, and Personal Expressions. Each of these factors will be discussed in depth later in this chapter.

Policy communication index (PCI). The PCI was developed to provide a connection between qualitative research in policy communication and organizational knowledge development (Canary et al., 2013). Structurating activity theory (SAT), mentioned earlier in this chapter in the section regarding policy knowledge construction, was used as the underlying theoretical foundation for the PCI (Canary et al., 2013). Canary (2010) states that SAT better addresses the development of policy knowledge than either cultural-historical activity theory or structuration theory separately. SAT has been applied in other settings such as accounting where it is used to help understand the interaction of different aspects of accounting (Englund, & Gerdin, 2014). Cultural-historical activity theory (Foot, 2014) is similar in nature to SAT, but will not be addressed in this study.

Canary et al. (2013) cite several reasons for choosing SAT as the theoretical foundation for the PCI. First, the main proposition of SAT is that mediated activity is influenced by social structure but can also change that structure by changing the activity systems. Activity systems include groups of people, resources, and practices that produce outcomes over time (Canary et al., 2013). This mediation enables, guides, and constrains structuration both within and across activity structure.

The second reason Canary et al. selected SAT is how it addresses "human agency and material mediation of activity" (2013, p. 474). SAT makes a distinction between mediation and agency. Mediation is the use of an element such as policy text to influence activity. Agency is the ability to function and to function independently (Canary et al.,

2013). Therefore, SAT represents an applicable theory for the study of policy communication.

The third reason Canary et al. (2013) selected SAT as the theoretical foundation for the PCI is that it represents a Practical Theory according to Barge and Craig (2009). A Practical Theory in communication research is a theory designed to address a practical problem and to produce new options for action. Many aspects of the policy communication practice come into this category. For example, a written policy may mediate the interaction of two intersecting activity systems (Canary et al., 2013).

The focus of my study is to learn how nurses obtain policy knowledge. The SAT discussed by Canary et al. (2013) is used to describe the underlying mechanisms of policy knowledge construction and support the validity of the PCI. However, the SAT is not practical for use in my study. The theory presented by Canary et al. (2013) as the theoretical foundation for the PCI is likely too granular and detailed for this study of how nurses communicate policy change and practice changes based upon research evidence. Rogers's (2003) diffusion of innovation is more suited for understanding the overall dynamics of policy knowledge communication as measured by the PCI. May's (2013) theory of implementation guides the incorporation of research evidence into practice.

Policy communication index subscales. The PCI consists of five subscales representing different characteristics of the policy communication process, and how they result in policy knowledge formation and policy interpretation (Canary et al., 2013). The five subscales represent different aspects of communication within an organization; they are not weighted equally. The five subscales are *Meeting Discussions, Human Resources*

Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and *Personal Expressions*. Of the five subscales, Human Resources Communication represented the most influential factor. This may reflect the importance of formal endorsement of a policy by an organization in influencing employee attitudes regarding a policy (Canary et al., 2013).

Development of the PCI involved two studies, the first to identify and validate items for inclusion in the index and the second study was to validate the items selected for the index (Canary et al., 2013). The three authors (Canary et al., 2013) of the PCI first each compiled lists of communication behaviors and mediating factors. They compared each list and combined similar behaviors, narrowing the list to 33 communication behaviors and then changed into 62 Likert type questions. This list was then shared with five experts in policy communication to refine further the questions resulting in 54 items used in the first part of the study. The authors further stated that basing the items on previous qualitative research and the items being reviewed by content experts aided in establishing content validity of the measure (Canary et al., 2013).

The first subscale described is Meeting Discussions where information is shared, and discussion regarding the policy occurs (Canary et al., 2013). This indicator is reflective of how the meeting format encourages dialogue regarding the policy among attendees that can include staff and leadership. Since leadership often sanctions meetings, meeting discussions lend some authority to the discussion, validate the attitudes, and validate perceived knowledge about the policy (Canary et al., 2013). The authors caution, however, that discussion of policies at meetings is relatively infrequent as evidenced by

the lower mean score. This is interesting given that discussion at meetings is frequently stated as a method of policy and procedure distribution (Friesen, Brady, Milligan and Christensen., 2017; Collins & Patel, 2009; Titler et al., 2013). This will be discussed in depth later in the section on Independent Variables.

The second subscale, Human Resources Communication is, stated by Canary et al. (2013) as being the most influential factor affecting policy knowledge. It represents the mediating system element of the division of labor (Canary et al., 2013). This aspect of SAT includes functional division of labor and authoritarian division of labor. Functional division of labor describes different job roles within an organization. Authoritarian division of labor describes how human resources representatives and organizational educators lend legitimacy to the policy knowledge as authorized representatives of the company. The mediating aspect of the Human Resources Communication is also reflected in handouts and other on-the-job educational materials (Canary et al., 2013). For this study, it is essential to distinguish between handouts and on-the-job materials, and written policy documents. Handouts and on-the-job materials are informal documents distributed to provide an overview of a topic, a summary of a policy, or specific step-by-step instructions (Kluge, Grauel, & Burkolter, 2013). Written policy documents are considered Supervisor/Coworker Written Instructions (Canary et al., 2013) and will be discussed in detail below.

Processes used to train employees on new or revised policy documents were described by several authors (Corey et al., 2018; Davidson and Brown, 2014; Friesen et al., 2017). However, it is difficult with each of these studies to distinguish reliably

between actions that would be considered Meeting Discussions and actions that would be considered Human Resources Communication (Canary et al., 2013). It is likely that both activities occur concurrently resulting in the generation of new policy knowledge.

The third subscale is Coworker Interactions (Canary et al., 2013) which describes the interactions between coworkers, which result in policy knowledge creation. Informal workplace discussions and interactions are an important part of the policy knowledge development process and described by several authors as important in training, acculturation, and workplace community building (Altunta, Altun, & Akyil, 2014; Barrett & Stephens, 2017; Canary et al., 2013; Myers, 2011). Canary et al. (2013) make no mention of the role of opinion leaders discussed by Rogers (2003) who are influential in diffusion programs and how their role may play a part in the formation of policy knowledge.

Informal workplace discussions are a part of the socialization process when a new employee begins work. Informal discussions regarding policies also occur when new policies are introduced, or a current policy is modified (Myers, 2011). Myers (2011) describes two types of knowledge, explicit and tacit. Explicit knowledge is associated with knowledge that is easily shared such as training manuals or policies. Tacit knowledge is more abstract and thus can be difficult to articulate. These aspects of workgroup socialization are perhaps an underlying principle of the coworker interaction as described by Canary et al. (2013). Informal workplace discussions allow employees the opportunity to articulate ideas and opinions aloud or to seek validation of an idea from coworkers.

The fourth subscale of the PCI is Supervisor/Coworker Written Instructions that Canary et al. (2013) describe as written documents such as policy documents or memos. The Supervisor/Coworker Written Instructions represent *mediating resources*; which includes communication information technologies such as policy distribution software (Canary et al. 2013). Supervisor/Coworker Written Instructions demonstrate the role of authoritarian and functional divisions of labor (Canary et al., 2013) by serving as a formal, tangible representation of instructions from organizational leadership. These formal documents have been officially sanctioned by an organization and are authoritarian. One purpose of this study was to determine how important the Supervisor/Coworker Written instructions are among nurses to determine the role documents have in policy knowledge formation. Failure to make clear in the study the difference between Human Resources Communication and Supervisor/Coworker Written instructions may negatively influence the data obtained. Determining the role this factor has in creating policy knowledge is essential in determining best practices for allocation of resources by nursing leadership.

The last subscale in the PCI is Personal Expressions, which is the influence an individual's experiences, knowledge, and values have in the policy communication process (Canary et al., 2013). This subscale specifically measures the influence people have in the interpretation and implementation of policies. McCormick et al. (2013) discuss the role of the change agent in the implementation of evidence-based practices. The authors state that one criticism of the change agent model is that the personal characteristics of the change agent introduce a variable of sorts; however, they counter

with an assertion that little research to evaluate how the personal character of the change agent affects the outcome (McCormick et al., 2013) has been conducted.

The five subscales of the PCI have characteristics, which have been explored by other authors in different settings (Buzznell & Liu, 2005; Canary &McPhee, 2009; Kirby & Krone, 2002). Canary et al. (2013) have combined them in a way to measure the construction of policy knowledge within an organization. This study used the PCI in a hospital setting to measure how nurses construct policy knowledge. The intent was to develop a set of recommendations for the incorporation of technology into the construction of policy knowledge among nurses that will help nurses to implement evidence-based practices in their work. Four of the PCI subscales are communication-based; the fifth is based on the perceptions and experiences of the individual in relationship to the reference policy (Canary et al., 2013). Rogers (2003) sees communication as a fundamental aspect of innovation through the communication of an idea and knowledge from one person to another. Canary et al. (2013) take this basic tenant of Roger's theory (2003) and break it down into five discreet facets of an overall communication process by which knowledge is shared within an organization to create standardized knowledge regarding a particular topic.

Evidence-based policies and procedures help to better align nursing practices with the best available scientific knowledge (Dols et al., 2017). Several major studies by the Institute of Medicine (Institute of Medicine, 2001; Institute of Medicine, 2011; Smith et al., 2013) have called for a transformation of health care in the United States to a health care delivery model that delivers care that is patient-centered and evidence-based which

should lead to better patient outcomes and lower costs. Several studies (Dols et al., 2017; Jeffries et al., 2010; Long et al., 2007) have advocated the incorporation of evidence-based practice into policies and procedures as a method of implementation. Some studies regarding evidence-based practice implementation discuss the difficulties related to the marginal implementation of evidence-based practices (Friesen et al., 2017). Nurses state they lack time to research concepts that could address clinical issues. Nurses have also stated they lack the ability and the authority to change policies at their facility (Corey et al., 2018). One study pointed out that literature by itself is almost never used to implement change (Cullen & Adams, 2012). Instead, a structured, evidence-based approach was much more effective in implementing change (Dols et al., 2017). Evidence-based policies and procedures are one avenue for rapid incorporation of research evidence into nursing practice while achieving good patient outcomes and cost reductions.

Methods of policy and procedure delivery. Delivery of policy documents is an important part of the life cycle of a policy (Dols et al., 2017). The distribution of policies might seem to be a straightforward process: give a document to a person to read, they read it, and the process is complete. This simplistic approach is more likely an exception to an often, somewhat complex process. According to Canary et al., (2013) communication is a key factor in the distribution, interpretation, and implementation of policies. Organizational practices are the result of translating policy into action. The involved process of translating a policy from a document into action involves

determining meaning, a person's values and experiences, and knowledge of the policy's provisions (Canary, 2013).

However, as was stated earlier in the discussion of Canary et al.'s (2013) PCI, policy documents serve a variable role in the formulation of policy in a hospital or business. Policies can be delivered using a variety of methods with little research available to guide the process (St-Pierre et al., 2007; May et al., 2014). Before the digital age, policies were often typewritten documents with copies organized in binders and placed in relevant areas. Manual processes were used to both track that employees had read the documents and to ensure new versions replaced old when a new version was created (Dols et al., 2017). Creating or revising a policy document was a very labor intensive and lengthy process. As computers became more common in the workplace, policy development and distribution followed. Policy documents could be created electronically and then shared with others in a more collaborative fashion. As digital technologies have progressed, policy creation and distribution processes have progressed (Navex, 2017).

In general, there are likely three methods of distributing policies: paper copies of documents in binders, documents available on a shared drive, or an intranet (Blankenship et al., 2013), and specialized policy distribution software. The mechanics of each of the first three methods may have common elements, but the actual distribution method sets the three methods apart. Organizations that have few policies may not see a need to invest in electronic policy management methods (Penman & Stephens, 2017). The decision is likely an economic one, although, with increasing regulatory and accreditation oversight

in many industries, electronic policy management may have increased importance (Penman & Stephens, 2017).

A common element in the creation and distribution of policy documents is the use of word processing software (Campbell, 2007). Word processing software allows the creation, editing, and storage of a document on a computer. The relative ease of managing policy document creation using word processing software made policies much easier to create and distribute. Electronic versions of documents can be printed, emailed, or stored on a shared storage media. Policy documents can be printed for distribution to staff. The printed versions of policy documents may be organized in binders to facilitate ease of reading and to facilitate the replacement of a document when a new version is available (Campbell, 2007). This method can provide challenges to managing and controlling the documents. Locating and replacing obsolete copies of policy documents, policy documents becoming misplaced, and vandalism are all examples of challenges with printed copies of policy documents (Barlow, 2015; Campbell, 2007).

Electronic distribution of policy documents might help to alleviate some of the logistical challenges associated with managing printed policy documents. However, this method is not without issues as well. Electronic versions of policy documents can be emailed, placed on a shared drive, or on a cloud type drive with worldwide access (Rasmussen, 2011; Squires et al., 2012). Some platforms such as Microsoft SharePoint can be used to distribute policy documents (Carr, 2001). These types of platforms do not provide tracking, reporting, or any automated features (Rasmussen, 2011). Documents saved in the word processing program’s native format are subject to alteration resulting in

questions regarding authenticity (International Organization for Standardization, 2015). Alternatively, documents can be saved in a non-editable format such as Adobe's pdf. Pdf documents can be easily created and distributed, have a smaller file size, and cannot be edited without specialized software (Deuchler, 2017).

Integration of word processing software with other types of programs has resulted in more sophisticated programs with advanced capabilities. These capabilities include distribution, tracking, and reporting features (Rasmussen, 2011). Policy distribution software can be configured in many different ways. Storing and distributing many different types of documents, tracking employee access and attestation, allowing access from only inside a company network, or through the Internet or accessing from one area such as a nurse's station or at a patient's bedside (Penman & Stephens, 2017). This study used the PCI (Canary et al., 2013) to determine how hospitals focus communication of policy information.

Pitfalls of policy delivery methods. As was discussed earlier, policy delivery methods have common elements of form and function. Documents are created and stored electronically. The document distribution can be via paper documents printed and handed to staff or placed in binders for organization and ease of access (Navex, 2017). Documents can be stored electronically, placed on a single computer, a shared network drive, an intranet service such as Microsoft SharePoint, or via policy distribution software. Each of these methods has advantages and disadvantages that can influence their selection or rejection as a method of policy document distribution (Penman & Stephens, 2017).

Paper policy documents are likely the simplest form of distribution. Paper policy documents, if stored and cared for, can last for a long time (Campbell, 2007). However, they are subject to environmental damage such as water or insect damage. They are subject to human damage as well; they can be unintentionally or intentionally removed or damaged. Control of different versions of a document is also a challenge. When a policy changes, it is important to replace all obsolete copies of the document with the new version (Navex, 2017). Employees might make copies of paper policy documents as a reference to make notes on or if access to the source document is not convenient. Some organizations choose to control original versions of paper policy documents physically, making controlled copies of documents available for staff use. When a change is made to the original document, all of the controlled copies are collected, inventoried, and destroyed to avoid having staff access an obsolete version (Navex, 2007). This process can be resource intensive if there are frequent changes to large numbers of documents. Often there is record keeping showing adherence to the process. With the advent of electronic methods for document control, this type of system is being replaced (Dols et al., 2017).

Some organizations have replaced paper distribution of policy and procedure documents with electronic distribution methods. There is little data on the selection of a method for distribution (i.e., paper versus electronic) (Penman & Stephens, 2017). Electronic policy and procedure management requires additional skills and knowledge to set-up and manage the platform used. As mentioned earlier, Microsoft SharePoint is a file management platform that is end-user configurable but requires specialized training or a

design professional to build a system of the type described (Carr, 2011). A policy and procedure distribution system constructed using Microsoft SharePoint is not amenable to tracking individual user access to documents. While Microsoft SharePoint functions well for the distribution of policies and procedures, documents must be created, edited, and archived independently of the distribution platform (Rasmussen, 2011). Often quality management systems, such as ISO 9001:2008, or an accreditation agency (e.g., DNV-GL) require retention of previous versions of a document for a specified period, often for years (DNV-GL Healthcare, 2018). Archived documents can be stored electronically in a system such as Microsoft SharePoint or policy distribution software. Bedside nurses would not commonly use this type of document storage; more often, it is utilized for regulatory and legal proceedings.

Policy distribution software, in general, is user configurable, and depending on the features acquired, have built-in document editing capabilities, tracking of document access and document events, protected storage, and archiving of previous versions (Navex, 2017). In most policy distribution software programs, there are two general categories of users, administrative users who upload, configure, approve, and assign documents and there are end users who access the software to read and attest to reading documents assigned (Navex, 2011). Depending on the complexity of the software and the user's skill level, the user might require additional training to deploy the software effectively.

Variables Used in the Study

As was discussed earlier, a policy or procedure consists of more than just a written document but is an interconnected communication process involving communication and the written document (Canary et al., 2013). The variables selected aided in evaluating different aspects of this communication process.

Independent variables. The independent variables in this study consist of policy communication practices as measured using the subscales of the PCI (Canary et al., 2013) and demographic variables (age, nursing education level, and years in nursing practice). The PCI consists of five subscales: Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions (Canary et al., 2013). The PCI subscales each address a different facet of the communication process that results in the formation of the concept of a policy. The Supervisor/Coworker Written Instruction is the primary subscale variable of interest as this focuses on the role of written policy documents in the policy knowledge communication process (Canary et al., 2013).

Infinedo (2016) discussed the use of the demographic factors of education level and age as variables in his study on the moderating effects of demographic characteristics on nurses' acceptance of information systems. I discussed these two variables in the Literature Review with several references each to support their use. The education level question in my study focused on nursing education level specifically as nursing is educationally stratified (Hicks & Patterson, 2017). Age of the nurse is included as there may be some generational differences in learning styles. However, according to some

studies, age has been reported as not influencing learning (Rodriguez Ooms, Montanez, 2008; Hallin, 2014). These studies, conducted in academic settings, while my study was conducted in a clinical setting where there are different motivations for learning and different subjects (policies, guidelines). Time in nursing practice was included due to the anticipated retirement of older, experienced nurses resulting in an experience gap (Bishop, 2013). Infinedo (2016) also discussed the exclusion of gender as a demographic variable in his nursing study due to the predominance of females in the nursing profession. Therefore, gender was not examined as a separate variable in my study.

Dependent variables. In my study, two dependent variables were used. The first was a measure of policy knowledge that is a separate set of questions in the PCI survey tool (Canary et al., 2013). Eight questions related to the nurse's knowledge of the reference policy (*Pressure Injury Prevention*) formed the PKM (Canary et al., 2013). The second dependent variable was the frequency of accessing the reference policy using the policy distribution software by nurses who practice at the bedside. The number of times a nurse accessed the reference policy using the policy delivery software was measured.

Relationship to Research Questions

The review of the literature has shown that a policy is more than just the document whether a paper or electronic version. Rather, a policy is a concept, derived collectively within an organization; that is based on or represented by a document or policy (Canary et al., 2013). The policy document is the basis for the concept of the policy, but the communication processes that occur between employees, employees and organizational members such as supervisors or human resources personnel, and other

influences result in the organization's concept of the policy. Canary et al. (2013) have devised the PCI to measure the influence each of the five subscales has in the formation of a policy within an organization. This study used the PCI and other data to examine how nurses acquire policy knowledge. This information might be used later to formulate best practices for the allocation of resources by hospital nursing leadership. The first research question looked at the relationship between the PCI and the nurse's knowledge of the reference policy as measured by the PKM (Canary et al., 2013). The second research question looked at the policy knowledge communication process to determine which PCI sub-factor was most influential in the process (Canary et al., 2013). The third research question looked at the relationship between the demographic factors of the age of the nurse, nursing education level, and time in nursing practice and the nurse's knowledge of the reference policy as measured by the PKM (Canary et al., 2013). The fourth research question looked at the relationship between the PCI (Canary et al., 2013) and the frequency of policy document access. The fifth and final research question looked at the relationship between the demographic factors of the age of the nurse, nursing education level, and time in nursing practice, and the frequency of policy document access.

Research Question 1. The first research question examined whether there is a correlation between policy communication processes, as measured by the PCI (Canary et al., 2013), and the nurse's knowledge of the reference policy as measured by the PKM (Canary et al., 2013). The five subscales of the PCI, Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written

Instructions, and Personal Expressions (Canary et al., 2013), each represent a form of communication. Communication channels are one of the five main elements of Rogers's (2003) diffusion of innovation theory. Communication is the process by which innovations spread from one person to the next. It is important to understand that the policy knowledge process is the innovation being studied. Pressure injury prevention, which could be an innovation for some nurses performing bedside nursing, is not the innovation in question. The learning of pressure injury prevention by the bedside nurse is outside the scope of this study.

The focus of my study was to examine the policy communication process among nurses who practice bedside nursing in a hospital. The Canary et al. (2013) study used the Family and Medical Leave Act policy as the reference policy for the study. The reference policy Canary et al. selected had been implemented in the organization with collective policy knowledge as a result. This policy was selected because it would be widely known by bedside nurses. This commonality of knowledge of one policy was necessary to determine which communications practices influence the organization's collective concept of the reference policy in Canary et al.'s (2013) study. My study used a different policy, *Pressure Injury Prevention,* to examine the same process of policy knowledge formation. Canary et al. discussed how the social structure of an organization influences the process of policy formation. The results of the PCI conducted in a hospital setting might be different due to the different social and authoritative structures in the hospital setting. A difference in the structure of the original organization in the study and the organizational structure of a hospital could result in differences in how policy knowledge

is communicated (Canary et al., 2013). The goal of my study is to determine how nurses obtain policy knowledge. The results of the PCI show how each subscale influences the way an organization builds policy knowledge. This information can contribute to decisions regarding the integration of technology in nursing.

Meeting Discussions (Canary et al., 2013) is the first PCI subscale and examines the role that discussions of policies at staff meetings have on the formation of policy knowledge. During meeting discussions, explanations and clarification occur; employees can have their lack of knowledge addressed at meetings as well (Canary et al., 2013). Supervisors also provide input in staff meetings lending an element of authority to the discussion. Canary et al. (2013) indicated that Meeting Discussions received a low score in their study which they interpreted as there was little discussion regarding the policy occurring in the meeting. I wanted to determine how nurses report on Meeting Discussions as a forum for receiving information regarding a new policy. The low value for Meeting Discussions in influencing policy knowledge construction appears to be counter to several nursing researcher's reports that meetings were a forum for introducing new policies to staff (Blankenship et al., 2013; Friesen et al., 2018).

Some authors describe the use of the meeting discussion format; however, they are unclear in their descriptions of what actually transpired in the meetings. (Blankenship et al., 2013). A meeting discussion, as described by Canary et al. where "meetings as a context for discussing details, background, and explanations of the policy" (2013, p. 482) was not identified in the literature reviewed. Canary et al. (2013) also state that meeting discussions help to legitimize the policy knowledge in a setting authorized by the

organization. Some studies did not address the distribution of policies and procedures (Corey et al., 2018; Squires et al., 2012). Nursing policy and procedure related studies do not articulate the use of the meeting discussion format as a method for policy communication. It is also not clear if authors did not consider the influence of the meeting discussion format in policy communication or if they did not feel it contributed to policy communication and therefore did not address it. In some studies (Becker et al., 2012; Blankenship et al., 2013; Squires, Sullivan, Eccles, Worswick, & Grimshaw, 2014), the descriptions of meeting discussions are vague. It is unclear if a policy discussion occurred and to what extent there was a discussion of the policy. Becker et al. (2012) describe using staff meetings as a way to present a policy document and follow-up with an online test of comprehension. Cullen, Wagner, Matthews, and Farrington (2017) also describe a formalized process of using a unit-based practice council to disseminate information. The description does not detail specific strategies such as distributing copies of a policy document. They do describe strategies to determine comprehension and collect feedback on the document. Friesen et al. (2017) discuss the staffing meeting as a way to disseminate policy information but do not describe the actual steps used in a meeting.

Canary et al. (2013) found that Human Resource Communications, the second of the PCI subscales, had a mean that was higher than the mid-point of all scores and the stated that this represented the greatest influence on policy knowledge acquisition. They went on to explain this was likely the result of two aspects, the authoritarian nature of a Human Resources department and training on the policy. The authors imply information

provided by human resources representatives legitimizes the policy knowledge by their position in the organizational hierarchy. Training might produce a similar authoritarian effect through the trainer providing information as an organizationally sanctioned expert. Information regarding a nursing policy would likely have different sources, as the human resources department is not versed in nursing related processes or nursing information. Canary et al. (2013) in their study did not discuss whether the selection of a human resources related policy (Family and Medical Leave Act) influenced the score for the Human Resources Communication subscale. Nursing, having a different authoritarian hierarchy, might result in a different score for this subscale. The questions regarding Human Resource Communications state HR/Trainer do not differentiate the source of the information as coming from HR personnel or a trainer. Nurses should only be trained by other nurses (Harper & Maloney, 2016) however; this difference in the trainer (human resources trainer versus nursing trainer) might not be reflected in the subscale score.

The third PCI subscale, Coworker Interactions, examines the influence informal conversations that occur outside of meetings and training sessions (Canary et al., 2013) have on policy knowledge formation. Coworkers engage in conversations with one another discussing differences in opinions, experiences, or providing explanations (Canary et al., 2013). Coworker interactions have been mentioned as an important source of information in the evidence-based practice process as well (Dols et al., 2017). In contrast to the evidence-based practice strategy of finding research data, appraising the data, applying the new information and evaluating the outcome; nurses have reported obtaining most of their on the job information through informal conversations with

coworkers (Stokke et al., 2014) although there are also other factors influencing the adoption of evidence-based practices. This would appear to be similar to the finding by Canary et al. (2013) that coworker interactions are an important part of policy knowledge development

The fourth subscale, Supervisor/Coworker Written Instructions (Canary et al., 2013), is reflective of how supervisors and coworkers use written instructions in the construction of policy knowledge. The subscale category includes coworkers to ensure all types of written communication are included (Canary et al., 2013). Supervisor/Coworker Written Instructions are considered a mediating resource, which also includes communication technology and other written documents. This measure is appropriate because the purpose of this study is to advance the knowledge of how nurses obtain policy knowledge. This information can help guide nursing leaders in making informed choices regarding the incorporation of technology into nursing practice. Policy documents have been described as an important method to implement evidence-based practices easily and efficiently (Dols et al., 2017). This measure should reflect the importance nurses place on the written policy document in the formation of policy knowledge.

The fifth and last subscale, Personal Expressions (Canary et al., 2013) is a measure of how knowledge, experience, and values interact in the formation of policy knowledge. It is reflective of the communication of experiences and values in the policy knowledge process (Canary et al., 2013). As described later, experience as a nurse is an important determiner of competency in nursing (Numminen, Meretoja, Isoaho & Leino-

Kilpi, 2013) which leads to better patient outcomes. This measure should reflect the influence of experience and other personal traits of the nurse on policy knowledge formation.

Each of the five PCI subscales (Meeting Discussions, Human Resources Communication, Coworker Interaction, Supervisor/Coworker Written Instruction, and Personal Expression) plays a unique role in the formation of policy knowledge (Canary et al., 2013). The relationship of these subscales with the PKM, the dependent variable in this question, should lead to a better understanding of how nurses acquire policy knowledge. This should, in turn, lead to understanding better ways to communicate policy information to staff to improve patient care.

Research Question 2. The second research question examined the relationship each of the five subscales in the PCI (Canary et al., 2013) has on the PKM to predict which score or scores have a significant impact on nurses' policy knowledge process. The intent of this research question was to see which of the five subscales might have the greatest impact on the way nurses acquire policy knowledge. Canary et al., (2013) found that the Human Resources Communication subscale appear to have the greatest impact on participants acquiring knowledge about their reference policy. The authors acknowledged the use of the Family and Medical Leave Act policy as a limitation in their study. Only certain individuals might use the policy (Canary et al., 2013). They suggested conducting additional studies using a policy that was more widely used in organizational practice as a way to further assess the scale's validity (Canary et el., 2013). The Human Resources Communication factor includes teaching about the policy by human resources personnel,

which Canary et al. stated included the organization's educational staff (2013). As was mentioned earlier in this chapter, nursing professional standards mandate that nursing knowledge come from other nurses (American Nurses Association, 2010). Nurse educators may not be considered human resources staff in a hospital making the data from this question challenging to interpret.. This question helped to determine if the Human Resources Communication factor (Canary et al., 2013) has a similar impact on nurses acquiring policy knowledge as it did in the original study or if a different subscale or subscales have a significant impact.

Research Question 3. The third research question examines the relationship between the selected demographic factors of age, nursing education level, time in nursing practice and the nurse's knowledge of the reference policy. The intent of this research question is to see if a relationship between the demographic factors help to determine if the understanding of the reference policy varies by a demographic factor.

Age of the nurse may reflect generational differences in learning styles or the understanding of the policy document. Head, Van Hoeck, and Garson (2015) have described a need for additional research on the relationship between age and learning. However, a study of nursing students by Hallin (2014) reported no difference in learning styles of the nursing students by age group. Hallin's study (2014) addressed learning in a university setting where the focus is on learning about nursing. Nurses in an inpatient setting likely have a different focus in their learning than nursing students in a university setting. Nursing competency is an important factor in the provision of good patient care and good outcomes (Numminen et al., 2013). However, age does not correlate positively

with competency; experience is a much more important factor in establishing competency (Meretoja, Numminen, Isoaho & Leino-Kilpi, 2015). Schulz & Roßnagel (2010) reported on informal workplace learning and the relationship to the age of the learner. In their study they describe informal learning as where the learner sets their own goals, monitoring their own learning progress, and choosing the time and place of learning (Schulz, & Roßnagel 2010). They also stated that older workers did take longer to learn new material, but that older workers could make adjustments by pacing their learning and that their experience could help them adjust their learning efforts.

Nursing is educationally stratified in that nurses may practice at the bedside with any level of nursing education from Associate degree level up to the doctoral level (Gorski, Gerardi, Giddens, Meyer, & Peters-Lewis, 2015; Hicks & Patterson, 2017). This factor helped to determine if there is a difference in understanding of the policy information based on the nurses' educational level.

The last factor, time in nursing practice, would show if experience as a practicing nurse influences the communication of policy knowledge. The role of experience in nursing practice has been studied extensively. Studies have shown that experience is a much more important factor in the determination of competency than age (Meretoja, et al., 2015). Benner's (1984) theoretical framework on the role of experience in nursing, From Novice to Expert, discusses the role of experience in the development of nursing competency. The theory is somewhat controversial in nursing; however, the theory is widely used in describing competency (O'Leary, 2012). Given that experience has been

shown to be a more significant determinate of competency than age, it is included as one of the independent variables.

Research Question 4. The fourth research question was intended to examine the nature of the relationship between the policy communication processes, as measured by the PCI (Canary et al., 2013), and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access of the reference policy. While the policy communication process was discussed earlier in this chapter in the section regarding Research Question 1, this question is examining the relationship between policy communication practices and the frequency of accessing the reference policy using policy distribution software. The frequency of accessing the document would imply the use of the document as a source of information (Canary et al., 2013) versus alternate sources of information. The PCI subscales with higher scores are to be used to help interpret the frequency of access and what role the reference policy has in the formation of policy knowledge.

Research Question 5. The fifth and final research question examined whether there is a correlation between the demographic factors discussed earlier (age, nursing education level, time in nursing practice) and the frequency of accessing the reference policy using policy distribution software. This question may help to provide insight into a relationship between the age of the nurse and differences in learning styles. Although there is evidence that indicates there is little correlation between age and learning styles (Hallin, 2014) the study examined nursing students and not practicing nurses. No studies were found which examined age and policy knowledge acquisition. Nursing education

level and time in nursing, both examined earlier in this chapter, along with age of the nurses are likely to be significant with the impending retirement of experienced nurses. The shortage of experienced nurses might result in more reliance on other sources of information, such as policy documents (Uthaman, Choa, & Ang, 2016) in the acquisition of policy knowledge.

Summary and Conclusions

Evidence-based practice has been shown to positively affect patient outcomes in health care (Davidson & Brown, 2014; Grinspun et al., 2015; Kahn et al., 2014; Melnyk & Overholt, 2015). Although there are several ways to implement evidence-based practices; policies and procedures have been shown to be a rapid and efficient way to bring evidence-based practices to nurses practicing at the bedside. As described in the literature review in Chapter 2, the mechanism by which nurses obtain policy knowledge is not well described. My study examined how nurses acquire and incorporate policy knowledge into their practice. This information may be used in the future to make decisions regarding the incorporation of technology in the policy distribution process.

The diffusion of innovation was selected as the theoretical framework for this study (Rogers, 2003). Rogers (2003) asserts that communication channels play a role in the diffusion of an innovation. The PCI (Canary et al., 2013) was used to evaluate the communication channels used by nurses in the process of acquiring policy knowledge. The diffusion of innovation process (Rogers, 2003) would also influence the adoption of policy distribution software, although this is outside of the scope of this study. The

communication of policy knowledge, in my study, is somewhat dependent on the adoption of the software.

The other of Rogers's (2003) variables in the diffusion of an innovation are the five perceived attributes of innovation (relative advantage, compatibility, complexity, trialability, and observability). The written policy document is the basis for one of the PCI subscales, Supervisor/Coworker Written Instructions (Canary et al., 2013). The reference policy used in the PCI study was distributed via policy distribution software. The adoption of the policy distribution software would likely influence the availability of the written policy document. This influence of the adoption of the software and the availability of the reference policy was taken into consideration in the interpretation of the findings of this study, but overall is outside the scope of my study

The focus of this study is the generation of policy knowledge among nurses. Policies and procedures are one method for the implementation of evidence-based practices (Dols et al., 2017). The four constructs of May's Theory of Implementation (May, 2013), capability, capacity, potential, and contribution describe the forces which influence the incorporation of evidence-based practices into nursing practice. These same forces likely play a role in the formation of policy knowledge as well.

The key concepts examined are evidence-based practice, policies and procedures, policy knowledge construction, and policy delivery. The role of evidence-based practice in the provision of health care cannot be stressed more (Davidson & Brown, 2014; Grinspun et al., 2015; Kahn et al., 2014; Melnyk & Overholt, 2015). Evidence-based practices have been demonstrated to improve patient outcomes, increase efficiencies, and

reduce health care costs (Kahn et al., 2014; Melnyk et al., 2016; Titler et al., 2009). Evidence-based practices have proven challenging to implement due to factors such as lack of leadership support, lack of motivation to change, need for additional education in evidence-based practice, and a lack of resources to implement evidence-based practices effectively (Melnyk et al., 2016). Policies are a set of guidelines that nurses use to help determine the care, patient and family education, and evaluation of care (Long et al., 2009). Polices help to ensure the care provided to all patients is consistent with potentially measurable outcomes (Cullen, 2018; Long et al., 2009,). Some authors have advocated the adoption of evidence-based practices through policies and procedures (Melnyk et al., 2016; Squires et al., 2012).

Policies can be described as collective knowledge as it is situated within an organization (Becker et al., 2012) and have the crucial element of communication as part of the process of constructing knowledge within an organization (Canary et al., 2013). Rogers (2003) has stated that communication channels are an important element of the diffusion of innovation. Canary et al. (2013) have described five characteristics of policy knowledge construction that are different aspects of the policy communication process. These characteristics are measured using five subscales of the PCI consisting of Meeting Discussions, Human Resources Communication, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions (Canary et al., 2013). While Human Resources Communication was stated has having the most influence in the construction of policy knowledge in the original study (Canary et al.,

2013), this may not hold true with nursing policy knowledge. My study examined the policy knowledge construction process among nurses using the PCI.

The methods of ensuring that policies and procedures are available to staff are dependent on the technology used within an organization. Distribution of policies and procedures may use any of several different methods including paper copies, common access through a network drive, a shared intranet platform such as Microsoft SharePoint, or specialized policy distribution software (Rasmussen, 2011; Squires et al., 2012). In health care, with the widespread advent of electronic medical record systems, computers are readily available to nurses (Alexander et al., 2014) to access documents, such as policies and procedures, electronically. An essential aspect of distributing policies and procedures is ensuring the correct version of a document is the one available for use. Regulatory and accreditation agencies emphasize the importance of document control in health care (Penman & Stephens, 2017). The use of electronic systems to distribute policy and procedure documents can help alleviate some of these issues. However, these systems can require significant resources for effective implementation. Evidence that these systems might contribute to more effective patient care and better outcomes could help inform hospital leadership in their decisions on the allocation of resources.

The advantages of implementing evidence-based practices in nursing have been well described in the literature (Davidson & Brown, 2014; Grinspun et al., 2015; Kahn et al., 2014; Melnyk & Overholt, 2015). The use of policies and procedures as a vehicle to implement evidence-based practices has been described as one method of effective implementation (Corey et al., 2018; Squires et al., 2012; Titler et al., 2013). While the

literature describes ways in which staff is informed of new or revised policies and procedures (Squires et al., 2012), it is unclear how nurses acquire and use the policy information. A better understanding of how nurses acquire and use policy knowledge can lead to methods that are more effective to implement evidence-based practices. Two independent variables were selected, policy communication practices are one, demographics (age of the nurse, the educational level, and the length of time as a nurse) is the other independent variable. Two dependent variables were selected, the PKM (Canary et al., 2013) and the frequency of accessing the reference policy. Conducting a study using the PCI (Canary et al., 2013) can provide information to understand better how nurses acquire policy knowledge. The findings from this study can also help nursing leaders in hospitals make informed decisions regarding the policy communication process and the incorporation of technology to facilitate the distribution of policy documents.

In Chapter 2, I presented an overview of the strategies used to obtain research-based articles for my study. I presented information regarding the selection of Rogers's (2003) diffusion of innovation theory as the theoretical framework for my study. The social change implications of evidence-based practices and their impact on health care were addressed. I then presented an in-depth review of available literature on evidence-based practice, policies and procedures, policy knowledge construction, and policy delivery.

Chapter 3 describes the research methodology. Chapter 4 is a quantitative analysis of the data collected. Chapter 5 presents the results of the data analysis and recommendations according to literature findings, study results, and analysis.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to examine how nurses obtain policy knowledge by looking at the association between policy communication processes (independent variable) as well as demographic variables (age of the nurse, the educational level, and the length of time as a nurse) and two dependent variables—policy knowledge and the frequency of accessing a reference policy via policy distribution software. Policies and procedures are one method of implementing evidence-based practices (Dols et al., 2017; Squires et al., 2012). The expanding information infrastructure in health care has afforded the opportunity to expand the use of this technology in other ways such as policy distribution software (Alexander et al., 2014). A deeper understanding of the process of policy knowledge communication can help nursing leadership determine the best ways to incorporate technology into the policy knowledge acquisition process. Chapter 3 presents a detailed discussion of the methods I used to gather evidence for analysis in the formulation of a set of recommendations for the incorporation of technology into the policy knowledge acquisition process.

Research Design and Approach

I used a quantitative, correlational approach to examine the correlations between policy communication practices and demographic factors and the PKM and the frequency of accessing a reference policy (Canary et al., 2013). Data collection was accomplished through self-reported survey questionnaires completed by nurses practicing at the bedside in a single acute care hospital. The research design was chosen to test the relationship

between the independent variables of policy communication practices and demographic factors and the dependent variables of knowledge of an evidence-based nursing policy (reference policy) and frequency of accessing the policy via policy distribution software. The policy communication practices were measured using subscales from the PCI (Canary et al., 2013). The demographic factors included the age of the nurse, education level of the nurse and years of experience as a nurse. Knowledge of the reference policy was measured using an additional subscale from the PCI, PKM (Canary et al., 2013). The frequency of accessing the reference policy was obtained from the policy distribution software used in the target hospital.

The first research question was designed to examine the relationship between policy communication processes as measured by the subscales of the PCI (Meeting Discussions, Human Resources Communication, Coworker Interaction, Supervisor/Coworker Written Instruction, and Personal Expression) and the PKM (Canary et al., 2013). The PCI is intended to examine the communication processes that are part of the construction of policy knowledge for a reference policy (Canary et al., 2013). This first research question aided in gaining a better understanding of the communication processes that are a part of constructing nurses' policy knowledge.

The second research question was designed to examine the subscales of the PCI to determine if a factor or factors are predictive of the PKM (Canary et al., 2013). The intent of this question was to determine which of the five factors might have the greatest impact on the policy knowledge acquisition process. This question also aided in gaining a better

understanding of the extent to which different factors in the communication processes appear to be more predictive of the extent of nurses' policy knowledge.

The third research question was designed to examine the relationships between the demographic factors of the age of the nurse, educational level of the nurse, and years of experience as a nurse and the PKM (Canary et al., 2013). This research question helped to gain a better understanding of the relationships between these demographic factors and the nurses' knowledge of the reference policy.

The fourth research question was designed to examine the relationships between policy communication processes as measured by the subscales of the PCI and the frequency of accessing the reference policy. This question helped to gain a better understanding of the relationship between policy communication processes and the use of policy distribution software by nurses.

The fifth and final research question was designed to examine the relationship between the demographic factors of the age of the nurse, educational level of the nurse, and years of experience as a nurse and the frequency of accessing the reference policy. This question helped to gain a better understanding of the relationship between these demographic factors and the use of the policy distribution software by nurses.

Based on the literature review, although there has been research regarding policy communication practices within organizations (Canary et al., 2013), little research has been conducted regarding policy communication in nursing. Much of the published research regarding policy implementation in nursing addresses the construction of policies (Corey et al., 2018; Blankenship, et al., 2013) or the incorporation of research-

based practices into practice through policies and procedures (Dols et al., 2017). This study helped to address this gap in the research, providing nursing leaders in hospitals information regarding policy communication processes and in making decisions regarding the use of technology to facilitate the distribution of policy documents.

I used a correlational approach to examine the policy communication process in nursing, which is a new approach to examining this process. The PCI was applied in a general organizational context and the reference policy used was a policy that applied to all employees in the organization. The application of the PCI in a nursing context is new, as Canary et al. (2013) have recommended the application of the tool in other policy settings to broaden the knowledge of policy communication practices.

Methodology

This section describes the steps in conducting the study. Description of the population, sampling methodology, recruitment procedures, and data collection procedures are addressed.

Population

The population for this study consisted of registered nurses who practice nursing at the bedside in an acute care hospital. According to the Bureau of Labor Statistics (2015), nurses comprise almost 29% of the U.S. health care workforce, the largest single group of health care workers. This population was chosen because there is an increasing need to implement evidence-based practices among nurses in order to improve patient outcomes (Melnyk et al., 2016). Although all nurses would benefit from increased

knowledge and access to evidence-based practice techniques and knowledge, nurses in an inpatient hospital setting, practicing at the bedside, were chosen as a convenience sample.

Nurses who do not practice at the bedside in a hospital could include nurse managers, nurse directors, nurse abstractors, case managers, utilization review nurses, or nurse educators. Although nurses in these types of positions may need to know and understand evidence-based practice policies and procedures, the focus of my study was on nurses who would most likely be impacted by the results of my study. The number of nurses meeting these criteria is estimated at 250 at the study hospital. These nurses were the target population for the study.

Sampling and Sampling Procedures

Sampling strategy. To examine the relationships between policy communication practices and demographic variables (age of the nurse, educational level, and length of time as a nurse) and the PKM and frequency of accessing the reference policy, a census sample was used (Etikan, Musa, & Alkassim, 2016). The sampling strategy was not intended to target a group of nurses within the population of all bedside nurses; all bedside nurses were invited to participate. The sample was intended to be any nurse who practices in any hospital nursing setting (e.g., intensive care, medical-surgical, pediatrics, emergency department; Etikan et al., 2016). Other reasons for selecting census sampling include limited funding for recruitment, difficulty in accessing the target population promptly, and limitations on traveling to the hospital selected for the study.

In this census sample, where all bedside nurses were invited to participate, the target sample was selected from all registered nurses at the target hospital listed as

working in specific hospital units that practice bedside nursing (Choi & Boyle, 2014). The sampling frame was a list of nurses including name, unit, job title, employee identification number, and employer-provided email address. Hospital nursing leadership provided the list. Nurses excluded from the study are those in administrative or leadership roles or nurses who do not provide direct patient care (e.g., case management, stroke coordinator, and others). The nurses voluntarily participated in the study.

Power analysis. A power analysis was conducted to minimize the chances of a type II error. With a type II error, the null hypothesis is not rejected although it is false or fails to find significance when it exists (Barlett, Kotrlik, & Higgins, 2001, Schneider, 2015). Some authors have argued that statistical significance is more important and that that statistical significance should be lowered to $p < 0.005$ as opposed to the generally accepted threshold of $p < 0.05$ (Benjamin et al., 2018). I used the standard statistical significance value because a change would be outside of the scope of this study.

Sometimes there are population or sample size restrictions imposed by no fault of the researcher (Barlett et al., 2001). These restrictions may include inadequate sample sizes, length of time to collect data from an acceptable sample size, or the sample size overwhelms the available resources to handle the amount of data. It is important to state if the sample size is out of bounds as this may affect the interpretation of the data (Yan, Robert, & Li, 2017).

In this study, I used G*Power Version 3.1.9.2 as a method to establish a suitable sample size for my study. G*Power 3.1.9.2 is a free program that can be used to calculate sample size for many different types of statistical tests (Faul, Erdfelder, Buchner, &

Lang, 2009). Effect size, alpha, and statistical power are entered into the software to determine the sample size. The effect size is gaining increasing attention in the generalization of findings, though this is sometimes controversial (Bosco et al., 2015).

Although there is a gap in the research regarding policy knowledge acquisition by nurses, another nursing study provided support for my G*Power settings. To determine G*Power settings for my study, I located a study regarding nurses' perceptions that used Likert style questions. The parameters for my study are similar to those used by Regan, Laschinger, and Wong (2015). Using the means: difference from constant model, a statistical power of 80% with an alpha level of 0.05, and an effect size of 0.3 (small effect size) was used to arrive at a total sample size of 102.

Table 1

T-Test Means: Difference from Constant (One Sample Case)

Input	Output
Tails = two Effect size d = .3 α err prob = .05 Power (1-β err prob) = .85	Noncentrality parameter δ = 3.0298515 Critical t = 1.9837310 Df = 101
Total sample size	102
Actual power	0.8510524

Note. A priori: Compute required sample size

Procedures for Recruitment, Participation, and Data Collection

This study involved studying policy communication processes among nurses who practice nursing in a hospital setting at the bedside. Several factors were considered in determining this group for inclusion in my study. Nursing is a diverse field with nurses practicing in many different settings such as hospitals, clinics, home health settings, academic settings, and other settings (Health Resources and Services Administration,

2010). Given that nursing is a large, diverse population, I selected a narrow focus for my study for practical reasons, and I determined that hospital nursing has a more immediate need to understand the process of acquiring policy knowledge. Hospitals are under pressure to implement evidence-based practices to improve patient outcomes and control costs (Hanrahan et al., 2015; Melnyk et al., 2016). Addressing the heterogeneity to ensure the sample represents a broad spectrum of hospital nurses was difficult with a convenience sample. Several demographic factors were solicited as part of the data collection.

Securing a suitable location for my study involved dialogue with nursing leaders at several hospitals, focusing on one hospital in the central United States. Earlier in the planning of my study, I determined that conducting the study at the hospital where I am employed could introduce some bias in the study. I was able to locate a hospital in my division of my company at which to conduct the study. I was able to establish a relationship with key nursing leaders, which was important in assessing the ability to collect data and address any concerns about validity or ethics. Nursing leadership was supportive of research into the dynamics of policy knowledge acquisition. A discussion of informed consent procedures and data collection plans follows.

Informed consent. Before collection of data or discussion of the study with any prospective participants, I obtained Institutional Review Board (IRB) approval from Walden University. During this review, I assessed any potential risks that could impact the participants in the study. In advance of conducting this study, I completed the

National Institute of Health Certificate Training for Protection of Human Subjects in Research. The certificate was submitted with my application for IRB approval.

Once approval by the IRB was confirmed (approval no. 11-26-18-0043094), a recruitment e-mail was sent to the prospective nurses. Included in the e-mail was a link to the consent form and instructions on how to proceed with the study if the participant desired. A link to a pdf version of the consent form, which the participant could download or print, was available to each participant. Instead of collecting a signed form because this was an anonymous survey, the participants confirmed their consent in the electronic survey tool. The consent form informed the participant of the purpose of the study, the right to withdraw, procedures in the study, their rights to ask questions, obtain results, confidentiality, and the risks and benefits of participation. Participants were asked to provide their employee identification number that enabled me to link the participant's survey data with the software report from the policy distribution software containing frequency of accessing the reference policy. No other identifying information was requested or collected. I provided the participants with my contact information in case questions or concerns arise throughout the study period.

Participants had the opportunity to participate in the study in a manner that was convenient regarding time and place for completing the questionnaire. Collection of information should not have interfered with the participant's daily routine or responsibilities. The confidentiality of the participants, the hospital, and the management company were protected throughout the study and afterward.

Data collection. A link to the consent form and to the questionnaire, hosted on SurveyMonkey, was included in the e-mail to the nurses. The link was active for approximately 90 days, longer than originally planned to secure additional participants. Reminders were to be sent periodically (approximately every 2 weeks) to all participants reminding them of the potential benefits to the nursing profession of completing the survey. Other methods of promoting the survey such as weekly hospital newsletters or hospital-approved flyers were used as well. Once the required number of completed surveys was received, the survey was closed. A final e-mail was sent stating the survey has ended, thanking nursing leaders for their participation. The survey tool was used to collect demographic information, information about participant's policy knowledge, and the PCI questionnaire answers. No incentives were offered to survey participants. All research study materials, storage devices with information and other documents will be securely stored under lock and key for 5 years and then destroyed.

Follow-up procedures. The survey tool required a short amount of time to complete without any follow up. The participants could complete the survey in a setting of their choosing. There were no additional requirements beyond completing the survey questionnaire and providing demographic information. The confidentiality of the participants was maintained with no further discussion of the study or the participant's activities within the study.

Instrumentation and Operationalization of Constructs

The construction of a research study is a complex process requiring careful consideration of setting, participants, and meticulous preparation. In designing the plan

for conducting this study, several factors were considered. These included reliability and validity of the quantitative tool, the study location, privacy, and confidentiality of the participant's and data analysis strategies.

Instrumentation

The quantitative tool selected aligned directly with the research questions and provided an accurate assessment of the process being studied. The PCI (Canary et al., 2013) has been applied utilizing a two-stage process to ensure validity and reliability of the instrument and index. Permission was obtained from the primary author of the PCI study (Canary et al., 2013) with an email located in Appendix A. The PCI consists of five subscales, Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions (Canary et al., 2013). The authors created variables for each of the factors by computing the mean of the scores for each subscale. The actual PCI is a composite score computed from the mean of the five subscales. The reliability of the composite score is high with α =.91 (Canary et al., 2013). With the PCI (Canary et al., 2013) Likert scale questions are used to answer questions regarding participant's perceptions of the policy knowledge acquisition process in their organization. Participants also answered questions through the PKM regarding their knowledge of the reference policy regarding the Family Medical Leave Act (Canary et al., 2013).

The PCI is a 21-item scale used to assess the role communication plays in the development of policy knowledge within an organization (Canary et al., 2013). To score the items on the scales, each has five choices, ranging from *Strongly Disagree*, scored as

a 1, to *Strongly Agree*, scored as a 5 (Canary et al., 2013). The PKM consists of eight questions, each with five choices, ranging from *Strongly Disagree*, scored as a 1, to *Strongly Agree*, scored as a 5 (Canary et al., 2013). The demographic questions asked the participant for information regarding their age, nursing education level, and time in nursing practice.

Validity and reliability of the survey instrument are vital to ensuring the data collected are useable and are an accurate reflection of the participant's answers. Canary et al. (2013) utilized several statistical methods to ensure validity and reliability of their instrument. First, their initial list of items was based on previous qualitative research findings and from the author's own experiences (Canary et al., 2013). Next, in a modified Delphi technique, the list was sent to a small group of individuals selected by the authors who they considered experts in policy communication. This combination of expert review and use of qualitative study results helped to establish content validity.

Two studies were conducted to validate the PCI (Canary et al., 2013). In both studies, university students who worked in companies with more than 50 employees recruited the participants. In the first study, 54 items were presented for evaluation (N = 197). The principal component analysis was performed using Varimax, which yielded fifteen items. Further analysis using Kaiser-Meyer-Olkin test for sampling adequacy and Bartlett's test for sphericity resulted in a Kaiser-Meyer-Olkin value of .83 and a χ^2 = 7492.72 (2016), $p < .001$. The Kaiser-Meyer-Olkin value is well above the cutoff of .50 (Field, 2013) and Bartlett's test is acceptable with the value of < .001. The factors were narrowed down to 5 that explained a majority of the variance (Canary et al., 2013)

In the second part of their study, Canary et al. (2013) 21 items were presented in an online survey (*N* = 245). Data were analyzed using confirmatory factor analysis. Initial screening indicated the several variables were positively skewed which was corrected using logarithms of the skewed variables (Canary et al., 2013). One variable, "I use my personal values to interpret FMLA" was eliminated due to low-reliability (Canary et al., 2013). A five-factor model was constructed, which included the 20 items. The authors used several measures to test for fit ($\chi 2$ (165) = 473, $p < .001$, CFI = .88, NFI = .83, RMSEA = .09) and were felt to be acceptable. Correlational analysis was used for further analysis of the data concluding that the five factors represented unique aspects of the policy communication process (Canary et al., 2013).

Operationalization

The independent variables in this study were the policy communication processes as measured by the PCI (Canary et al., 2013) and demographic factors (age of participant, nursing education level, and time in nursing practice). The dependent variables were the PKM (Canary et al., 2013) and the frequency of accessing the reference policy accessed via the study hospital's policy distribution software. Participants were sent a link to SurveyMonkey where they completed a survey tool for each variable except the frequency of access. The frequency of access data was obtained from the hospital's policy distribution software reporting feature.

The PCI tool consists of 21 Likert-type questions with a five-point scale. A score of 1 represents "Strongly disagree" and a score of 5 represents "Strongly agree" (Canary et al., 2013). The PCI measures 5 factors or subscales, Meeting Discussions, Human

Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions (Canary et al., 2013). Each subscale has between 3 and 5 questions which are used to rate the factor. For example, “In meetings, people talk about the background of the Pressure Injury Prevention policy” is a question for the Meetings Discussion subscale (Canary et al., 2013). For each of the subscales, summated scores for each subscale are calculated. The details of the PCI calculations are discussed later in the section Data Analysis Plan.

The demographic variables (age of the nurse, educational level, and length of time as a nurse) were measured using a variety of question types. The participants entered their age as a whole number (e.g., 42 years). The educational level of the nurse was measured by the participant selecting the highest nursing educational level completed from a list. This is a categorical variable, which was treated differently than the other variables in the study. The length of time is entered as a whole number representing the number of years in practice as a bedside nurse.

The two dependent variables, PKM, and frequency of accessing the reference policy were measured as follows. The PKM consists of eight Likert-type questions with a five-point scale (Canary et al., 2013) regarding the reference *policy Pressure Injury Prevention* Policy. A score of 1 represents “Strongly disagree” and a score of 5 represents “Strongly agree” (Canary et al., 2013). An example question is “I know how to find information I need about Pressure Injury Prevention”. The summated scores from the Policy Knowledge questions are used to determine the PKM. The second dependent variable is the frequency of accessing the reference policy (*Pressure Injury Prevention*

Policy), via the hospital's policy distribution software. The software, Policy Tech, has a reporting feature that can report the number of times a policy has been accessed within a user-defined timeframe. The timeframe of user access of the reference policy was from the date of publication of the document in the software to the last day of the survey. Employees cannot access the document prior to the publication date. Although Canary et al., (2013) did not specify a timeframe for having accessed the Family and Medical Leave Act document in their study; the reporting feature of the policy distribution software requires a timeframe for generating the report. This was addressed during the data evaluation. A copy of the survey tool is located in Appendix B.

Data Analysis Plan

The data analysis plan was determined by the research questions to be answered in the study and by the overall quantitative research design used to construct the study. The data was collected using SurveyMonkey, a well-known online platform used to distribute a wide range of studies from informal questionnaires to complex formal research study questionnaires (Burkhead, 2018). Data analysis was performed using IBM SPSS Statistics, Version 25 software.

Before data analysis, the survey responses were reviewed for data cleaning including completeness and missing responses. The Likert type items from the PCI survey (Canary et al., 2013) which are missing responses can affect the power of the analysis and the accuracy (Downey, & King, 1998; Musil, Warner, Yobas, & Jones, 2002). The number of missing items determines how missing items are handled and whether there are patterns in the missing data, the latter of which are more important.

One study suggested that 5% to 10% percent missing data was considered small while 40% missing data were considered high (Musil et al., 2002). If small numbers of missing data are encountered, list-wise deletion would be used to remove that respondent's responses. While this reduces the sample size, it is likely the easiest method. If larger numbers of responses are missing or if a pattern is observed, a technique such as simple regression imputation (Musil et al., 2002) would be used. The effect on the correlation analyses will be carefully considered during the data analysis.

The age of the participant and years of experience in nursing practice data was examined for out of range values (e.g., under 18 years of age, over 85 years of age). Out of range values will be further scrutinized to determine if the responses should be included in further data analyses or otherwise dealt with. A descriptive statistical analysis using a Shapiro-Wilk test will be performed to look for normal distribution of responses (Laerd Statistics, 2017a). If encountered, non-normally distributed answers will be handled as appropriate. When using Pearson's Correlation, it is important that there be a linear relationship between the variables. A scatter plot will be used to visually inspect the data for linearity with data transformation as needed. Spearman's Correlation will be used for statistical analysis of the categorical data for the nursing educational level. Spearman's Correlation also requires a normal distribution of answers. A scatter plot is used to verify linearity of data for a Spearman Correlation. Non-monotonic data would require transformation in order to use Spearman's Correlation (Laerd Statistics, 2017d).

Research Questions

Research Question 1: What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index, and the Policy Knowledge Measure score (Canary et al., 2013)?

$H_0$1: There is no relationship between the Policy Communication Index and the Policy Knowledge Measure score

H_a1: There is a relationship between the Policy Communication Index and the Policy Knowledge Measure score

Research Question 2: How many Policy Communication Index factors indicate a predictive value on the Policy Communication Index score (Canary et al., 2013)?

$H_0$2: There are no predictive factors among the Policy Communication Index subscales

H_a2: There are one or more predictive factors among the Policy Communication Index subscales

Research Question 3: What is the nature of the relationship between demographic factors (age, nursing education level, and years of experience in nursing practice) and the Policy Knowledge Measure subscale score (Canary et al., 2013)?

$H_0$3: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the Policy Knowledge Measure subscale score

H_a3: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the Policy Knowledge Measure subscale score

Research Question 4: What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index (Canary et al., 2013), and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$4: There is no relationship between the Policy Communication Index and the frequency of policy access through policy distribution software

H_a4: There is a relationship between the Policy Communication Index and the frequency of policy access through policy distribution software

Research Question 5: What is the nature of the relationship between demographic factors (age, nursing education level, years of experience in nursing practice) and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$5: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

H_a5: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

Research Question 1 was answered as follows. First, I calculated the summated scores (Warmbrod, 2014) of the responses to the items corresponding to each of the five subscales to create indexes for each of the factors. The summated score of the PKM (Canary et al., 2013) was also calculated and used to create an index for this factor. The

means for the subscales and the PKM was not calculated. Then Pearson's correlation was conducted with each of the PCI subscale summation scores and the summation scores of the PKM. Pearson's Correlation, a measure of strength and direction of the correlation, is an appropriate measure to determine if a relationship exists between two factors (Laerd Statistics, 2017a). The correlation coefficient has a value from +1 to -1 where a positive value denotes a positive correlation and a negative value denotes a negative correlation (Laerd Statistics, 2017a). The decision to reject or not reject the null hypothesis was based, in part, on the significance and strength of the correlation between the PCI subscales and the PKM.

Research Question 2 was evaluated by performing multiple regression using the indexes for the PCI subscales and the Policy Knowledge measure previously created for Research Question 1. Stepwise multiple regression was used to determine if the independent variables produce a statistically significant variance in the dependent variable (Kim, 2016). Stepwise multiple regression has been used in studies similar in structure (Hunsaker, Chen, Maughan, & Heaston, 2015) and is suitable for use in the analysis of the data for Research Question 2.

Research Question 3 was evaluated in a similar fashion using Pearson's Correlation for the mean of the age of the nurse, the mean of the years of experience as a nurse and the mean of the PKM. To reject or not reject the null hypothesis was also based on the significance and strength of the relationship between the mean of the age of the nurse, the mean of the years of experience as a nurse and the mean of the PKM.

The education level of the nurse, a categorical variable, was evaluated using a different statistical test, Spearman's correlation. Different assumptions were made to conduct Spearman's correlation. A scatter plot was used to look for linearity. The data must be monotonic for Spearman's Correlation (Laerd Statistics, 2017d). Monotonic refers to the distribution of the data. As the values of one variable increase the values of the other variable increase or as the values of one variable increase, the values of the other variable decrease (Laerd Statistics, 2017d). The test was performed using a scatterplot and visually inspecting the data points. When the data points are roughly distributed in a linear fashion, they are said to be monotonic. If the data do not appear to be monotonic in the scatterplot, the data may be transformed. The type of transformation depends on the appearance of the data. For example, if the data was moderately, positively skewed a square root transformation could be applied to the data (Laerd, 2017d). To reject or not reject the null hypothesis was based on the significance and strength of the relationship between the nursing educational level and the mean of the PKM.

Research Question 4 was evaluated using Pearson's Correlation to evaluate the mean of each of the PCI subscales (Canary et al., 2013) and the frequency of accessing the reference policy as measured by the policy distribution software. To reject or not reject the null hypothesis was based, in part, on the significance and strength of the correlation between the means of the PCI subscales and the frequency of accessing the reference policy as measured by the policy distribution software.

Research Question 5 was evaluated using Pearson's Correlation for the mean of the age of the nurse, the mean of the years of experience as a nurse and the frequency of accessing the reference policy as measured by the policy distribution software. To reject or not reject the null hypothesis was based on the significance and strength of the relationship between the mean of the age of the nurse, the mean of the years of experience as a nurse and the frequency of accessing the reference policy as measured by the policy distribution software.

The education level of the nurse, a categorical variable, was evaluated using a different statistical test, Spearman's correlation. Again, the data must be monotonic for Spearman's Correlation (Laerd Statistics, 2017d). A scatterplot was used to visually inspect the data. The decision to reject or not reject the null hypothesis was based on the significance and strength of the relationship between the nursing educational level and the frequency of accessing the reference policy as measured by the policy distribution software.

Threats to Validity

Threats to validity can call into question the ability of a researcher to conclude that the intervention did result in the expected outcomes and not a different factor (Creswell, 2009). Threats to validity can be internal threats, external threats; or threats to construct validity each was examined below. These were important factors to consider in the design and conduct of this study.

External Validity

Threats to external validity refer to the generalizability of the results or the representativeness of the results, how well the results represent the general population (Tuckman & Harper, 2012). Creswell (2009) states that external validity threats come about when the research draws incorrect conclusions from the data to other persons or settings; he also describes three types of threats. One is the interaction of the participant and the treatment (Creswell, 2009). A scenario where a narrow group of participants with specific characteristics was selected cannot be generalized to people who do not have the same characteristics. Another threat is the interaction between setting and treatment. In this scenario, unique characteristics of one setting may make it difficult to generalize reliably to other settings (Creswell, 2009). Tucker and Harper (2012) have two other different characteristics reactive effects of testing and multiple-treatment interference.

There are two of the above-described threats, which might apply to this study. The first is the interaction of the treatment and the participants (Creswell, 2009). In my study, I selected a relatively narrow cross-section of the nursing population, nurses who practice bedside nursing on inpatients at an acute care hospital. Generalizing the findings of this study would be difficult as there are numerous different types of nurses and areas of nursing practice (hospital areas such as the quality department, clinic settings, home health nursing) where some policy knowledge transfer characteristics may be different, and my study findings would not apply. A strategy to handle this occurrence might be a disclaimer statement within the consent form that discusses the impact of data from a participant who did not meet the study criteria. In Chapter 5, the discussion on

generalizability includes a discussion of the possibility of an external threat to validity due to the narrow focus of the target population. It is important to ensure transferability to allow others to conduct the study in their settings. External validity was accomplished by carefully describing the steps in the study, participant selection, and methodology.

Internal Validity

Threats to internal validity come about from issues related to treatments or experiences of the participant which impinge on the researcher's ability to make correct inferences about the data (Creswell, 2009). The researcher may not be able to determine if the experimental treatment or some other uncontrolled factor produced differences in the groups (Tuckman & Harper, 2012). Some examples include maturation, selection, mortality, or diffusion of treatment (Creswell, 2009). In maturation, participants continue to grow and learn. This newfound information may influence the participant's answers beyond the experimental treatment. Mortality results when participants drop out of the study and their additional data is lost (Creswell, 2009).

In this study, the most likely threat to internal validity is diffusion of treatment (Creswell, 2009). In diffusion of treatment, participants communicate with each other and influence the scores. This was controlled through careful instructions to the participants not to disclose the survey questions or answers they gave for the survey to other participants.

Construct Validity

In this study, threats to statistical or construct validity may occur if inferences about the test scores cannot be drawn about the concept being studied (Heale &

Twycross., 2015). For example, the intent of the PCI is to obtain information regarding policy knowledge communication. If the tool only obtained information about the reference policy (*Pressure Injury Prevention Policy*), it would not be valid. Heale and Twycross (2015) discuss three types of evidence that can be used to determine if a survey instrument has construct validity. The instrument should have homogeneity, convergence, and theory evidence. Homogeneity means that the survey instrument addresses one subject. Convergence means the instrument concepts are similar to that of other survey instruments. Theory evidence refers to the participants demonstrating behaviors similar to the ideas outlined in the theoretical basis of the study. The example used by Heale and Twycross (2015) described a tool which measures anxiety. A participant who scores high on anxiety should demonstrate symptoms of high anxiety.

Construct validity for this study meets some of Heale and Twycross' (2015) criteria. The PCI Survey tool (Canary et al., 2013) demonstrates homogeneity as it addresses one topic, policy knowledge communication. Convergence is more difficult to assess, as there are almost no other instruments that measure this phenomenon. There is only the original study (Canary et al., 2013) against which to compare the tool. Since it is almost a duplicate of the original study, the comparison is not effective. Other aspects of the study support the last item, theory evidence. The PCI instrument (Canary et al., 2013) was designed to measure policy communication; some aspects of which are intangible and can only be measured by responses on the PCI instrument. Other data to support theory evidence is the frequency of accessing the reference policy via the policy

distribution software. This is evidence that a behavior supports the policy communication theory under study.

The manner in which threats to validity either external, internal, or construct (Heale & Twycross, 2015) are addressed will help readers to determine if the conclusions generated as a result of this study are applicable in their own practice. The threats to validity in this study are minimal and should not interfere with later interpretation.

Ethical Procedures

When conducting a research study, it is important to ensure subjects are treated fairly, with dignity and respect. It is important to maintain the privacy of subjects no matter the subject of the study. This study was conducted according to Federal regulations and Walden University requirements to uphold the highest ethical principles, protection of the subjects, and integrity of the study.

IRB Approval

Approval from the Walden University IRB was granted following formal approval of this study proposal. A letter of cooperation with cooperating hospital was signed following formal approval of this study proposal (Appendix D) and data use agreement. The assistant chief nursing officer of the cooperating hospital agreed to allow the study to be conducted at the hospital; this was to ensure compliance with university policies and regulations as well as the cooperating policies and regulations. I have completed the National Institutes of Health training regarding Protecting Human Research Participants. A copy of the National Institutes of Health certificate is attached to the IRB Application as well as available in Appendix C.

Recruitment

Nurses at the facility where I was previously a nursing leader did not participate in the study to minimize any conflict of interest. My study was conducted at another nearby hospital. There appear to be no additional or special restrictions regarding the conduction of educational research in this state. Potential subjects were not contacted until final approval was received from the Walden University IRB. Initially, participants were contacted via their hospital email address. The email included a copy of the informed consent document and instructions with a hyperlink to the survey if they wish to participate.

The recruitment email addressed concerns about anonymity, privacy, and use of the data obtained. The recruitment email did not contain any language that might be considered coercive or that would otherwise give the participants the impression that their livelihood would be in jeopardy as the result of participating or not participating in this study. The participants were informed their participation is voluntary and they can drop out of the study at any time without penalty. There will be no follow-up to participants who withdraw from the survey. Contact information for the hospital representative and my contact information was included so potential participants could have questions or concerns addressed. The hospital contact was asked to sign a confidentiality agreement to protect participant's privacy.

Data Collection

Data collection was accomplished through an anonymous link to the survey tool on the SurveyMonkey website. The survey tool settings were configured for anonymous

responses to ensure that no respondent information was collected other than the participant's employee identification number. Participant confidentiality was addressed in the informed consent document available to each participant.

Data Protection and Security

Data is protected and secured using several methods. The data was collected via a survey tool on the SurveyMonkey website. The SurveyMonkey account is password protected with a password known only to the researcher. Data collection concluded when the required number of participants completed the survey. The data was then downloaded and stored in two secure locations. A copy of the data file is stored in a secure online storage site, and a working copy was stored on the researcher's personal computer for analysis. No physical data was collected for this study. The data was transferred to an encrypted USB Flash drive at the conclusion of the analysis and will be stored in the researcher's bank safety deposit box. After five years, the data will be destroyed.

Summary

In Chapter 3, I have discussed data collection strategy for this quantitative study to learn more about how nurses obtain policy knowledge. Included in this chapter was a description of the sample population, how the population is to be selected, and parameters for inclusion or exclusion from the study. Included are the steps used to determine the appropriate sample size for the study. The steps taken for recruitment including ensuring informed consent of participants. Additionally, provision for the protection of participant's privacy and other ethical concerns were described. A discussion of the survey instrument including the statistical tests to be used for analysis

followed. Concerns regarding threats to external and internal validity were addressed. Finally, ethical concerns including steps to obtain IRB approval, protection of participant's rights and security of data collected for this study were addressed.

Chapter 4 was a quantitative analysis of the data collected. In Chapter 5, I presented the results of the data analysis and make recommendations according to literature findings, study results, and analysis.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the association between policy communication processes (independent variable) as well as demographic variables (age of the nurse, the educational level, and the length of time as a nurse) and two dependent variables—policy knowledge, and the frequency of accessing a reference policy via policy distribution software. A deeper understanding of the process of policy knowledge communication can help nursing leadership determine the best ways to incorporate technology into the policy knowledge acquisition process.

There are five research questions addressed in this study. The first question helped examine the nature of the relationship between two measures of the policy communication process, the PCI and the PKM (Canary et al., 2013). The second question helped examine whether any PCI factors are predictive of the PCI score (Canary et al., 2013). The third question helped examine the relationship between three demographic factors (age, nursing education level, and years of experience in nursing practice) and the PKM score (Canary et al., 2013). The fourth question helped examine the relationship between the PCI subscores and the frequency of accessing the reference policy using the hospital's policy management software (Canary et al., 2013). The fifth question helped examine the nature of the relationship between the demographic factors (age, nursing education level, years of experience in nursing practice) and the frequency of accessing the reference policy using the hospital's policy management software (Canary et al., 2013).

Chapter 4 includes a description of the data collection process, the time frame for data collection, and response rates. Discrepancies in the data collection plan implementation are discussed. Baseline descriptive statistics are reviewed as well as a discussion of how representative the sample is of the population. Next is an analysis of the survey results, including descriptive statistics and specific statistical analysis findings for each research question. Post-hoc analysis results are included as well.

Data Collection

As outlined in Chapter 3, data collection was conducted at a small hospital in a medium-sized city in the Southwest. The population included registered nurses who practice bedside nursing, as they were more likely to have read the target policy regarding prevention of skin-related pressure injury. Participants were briefed on the intent of the study and given a brief overview of the process, which included reading a consent form. The participants were then asked to answer 30 questions regarding policy knowledge acquisition and to answer three demographic questions. The participants were also asked to provide their hospital employee identification number to help me match participants' answers to the survey questions with their frequency of accessing the reference policy using the hospital's policy distribution software. A report was run by hospital administrative staff using the hospital's policy distribution software to determine the frequency of accessing the reference policy by each participant. The report results were used in answering two of the research questions.

A total of 28 responses were received in approximately three months of actively collecting responses. Attempts to collect additional responses were time consuming and

resulted in few completed surveys. I informed the hospital nursing leader contact that I was ending data collection and thanked her for the opportunity to interact with her staff and for their contribution to my study.

Data Collected

The data used for this study included survey results collected from 28 nurses employed at the participating facility from December 2018 to March of 2019. The survey consisted of 30 Likert-type questions that emulated the questions from the PCI (Canary et al., 2013). Three demographic questions were included regarding the age of the nurse, nursing education level, and length of time as a nurse. Data were handled according to the data analysis plan. After removing cases that were missing values (Musil et al., 2002) or that were outliers, high leveraging, or highly influential, 21 cases were used in the regressions for Research Questions 1, 2, and 3. A subset of the surveys collected, which included an employee identification number, were used to answer Research Questions 4 and 5.

Data Discrepancies

A few discrepancies were identified in the data collected. In two cases, many of the 30 questions were not answered, so these cases were excluded from the analyses (Musil et al., 2002). In 13 of the cases, the employee identification number entered appeared to be incorrect (e.g., 123456 or 000000). The settings for this question on the Survey Monkey website required an entry for this question to move forward in the survey. Participants answering this question without entering their actual employee identification number may have had concerns about privacy or potential repercussions

from their employer and therefore did not enter their actual employee identification number. Because these cases could not be compared with the data showing the number of times the employee accessed the reference policy, they were excluded from the analyses used to answer Research Questions 4 and 5.

Descriptive Analysis

The first step in the analysis of the data was to calculate total scores for each of the variables used in the analysis. The dependent variables are the PKM and the frequency of accessing the reference reference policy. The independent variable, PCI, is an aggregate of the subscores of Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions. Next, the data were divided into two separate data files, one containing all cases (N = 24) and another data file containing cases with a valid employee identification number (VID Case File) (N = 13). The data were tested for normality of distribution using the Shapiro-Wilks Test and skewness and kurtosis (Laerd Statistics, 2018e). In the data set containing all cases (N = 24), the Shapiro-Wilks test revealed normality of distribution for all means tested ($p > 0.05$). PKM mean (N = 24) scores were normally distributed with a skewness of -1.088 (SE = 0.472); however, the kurtosis was 2.519 (SE = 0.918). Two cases were excluded from the data set to compensate for the kurtosis. The Shapiro-Wilks test results continued to show normal distribution ($p > 0.05$). One additional case was identified as highly influential and removed. With the exclusion of this case, the Shapiro-Wilkes continued to show normal distribution. The PKM mean (N = 21) scores were normally distributed with a skewness of -0.017 (SE = 0.501), and

the kurtosis was -0.499 (*SE* = 0.972). This data set named ”21 Case File” was used to answer Research Questions 1, 2, and 3.

The data file VID Case File (*N* = 13) was also tested for normality. The PKM mean scores were not normally distributed, as assessed by the Shapiro-Wilks test ($p > 0.05$). PKM mean scores were negatively skewed -2.011 (*SE* = 0.616), and the results indicated positive kurtosis as well 4.664 (*SE* = 1.919). The analyses were changed to Spearman’s Correlation as this test is not affected by issues with normality of distribution (Laerd Statistics, 2018d).

The data file containing the frequency of accessing the reference policy initially contained listings for 31 employees with 41 user access encounters. Of the 31 employees, 25 were registered nurses, 18 met the study criteria of practicing at the bedside. Of the 18 registered nurses who met criteria, five were included on the report as having accessed the reference policy.

Results

Three types of statistical tests were run to answer the five research questions: Pearson’s Correlation, Spearman’s Correlation, and stepwise multiple regression. To answer the research questions using this data, several assumptions were required to be met for each type of test in order to perform the various analyses (Laerd Statistics, 2018b). Explanations of each assumption and the procedures used to check them are described in the following paragraphs.

There are two assumptions that were required to be met for all three tests to ensure the data could be analyzed using the test. First, there must be at least two

continuous variables (Laerd Statistics, 2018c). The PKM and the five PCI subscores (Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions) in both the 21 Case File and the VID Case File met this criterion. The age and years of experience as a nurse are continuous variables as well.

Assumption 2. The continuous variables should be paired (Laerd Statistics, 2018c), which the PKM and the five PCI subscores in both the 21 Case File and the VID Case File also met.

The next section describes the remaining assumptions for each statistical test, Pearson's Correlation, Spearman's Correlation, and stepwise multiple regression, and the results for the two data sets, 21 Case File and VID Case File, used in my study.

Pearson's Correlation

This section includes the remaining assumptions for the Pearson's Correlations.

Assumption 3. There needs to be a linear relationship between the two variables being tested (Laerd Statistics, 2018c). This was tested through a scatter plot of the variables and visually inspecting it for evidence of a linear relationship. The 21 Case File showed a linear relationship between the PKM and the means of the individual subscore means (see Figures 1-5). The VID Case File showed a linear relationship between the PKM and the means of the individual subscore means (see Figures 6-10).

Assumption 4. There should be no significant outliers in the data to be tested (Aguinis, Gottfredson, & Joo, 2013; Laerd Statistics, 2018c). This was tested through a scatter plot of the variables and visually inspecting it for outliers. No outliers were

observed in the scatter plots for the 21 Case File (see Figures 1-5). No outliers were observed in the scatter plots for the VID Case File (see Figures 6-10).

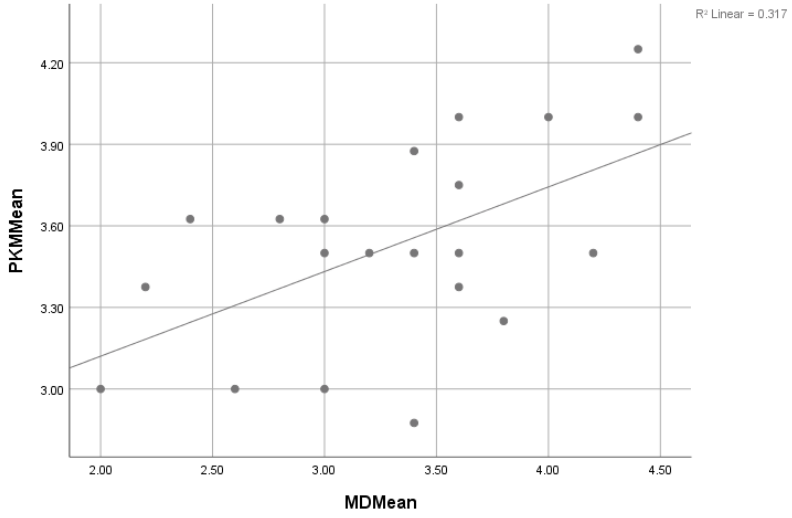

Figure 1. Scatter plot 21 case file (PKM mean and meeting discussions mean)

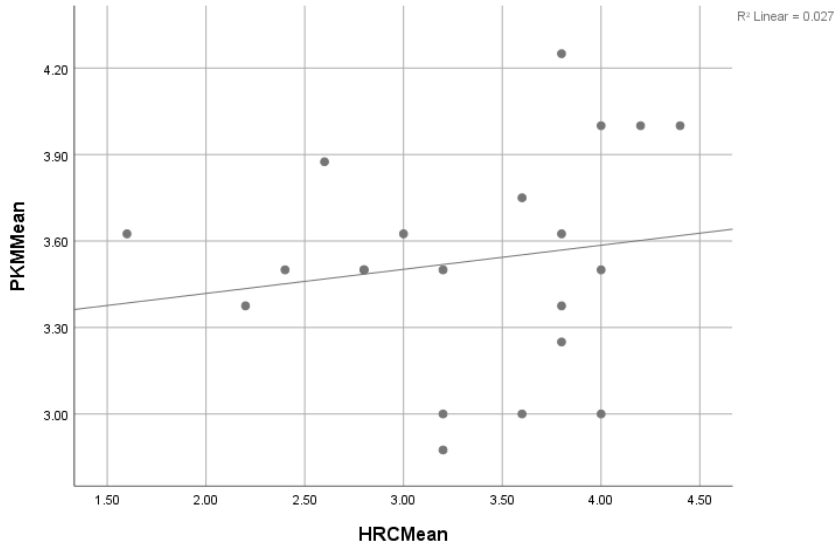

Figure 2. Scatter plot 21 case file (PKM mean and human resources communications mean)

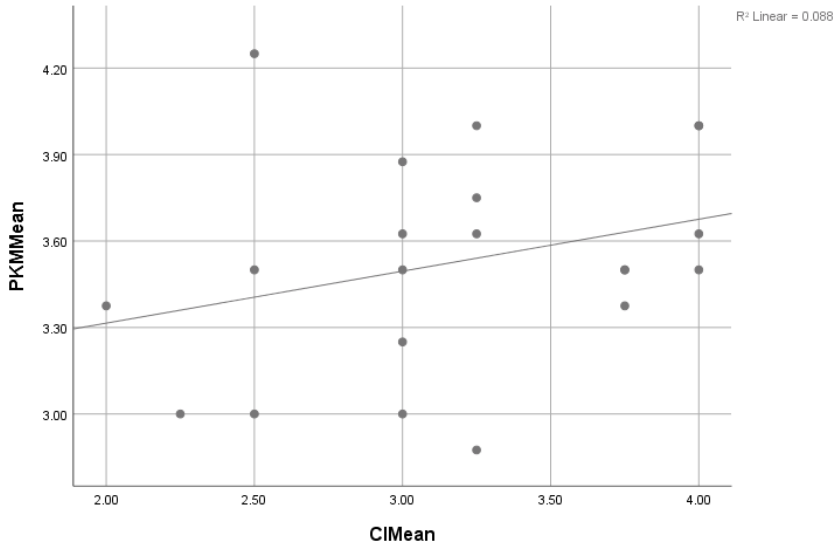

Figure 3. Scatter plot 21 case file (PKM mean and coworker interactions mean)

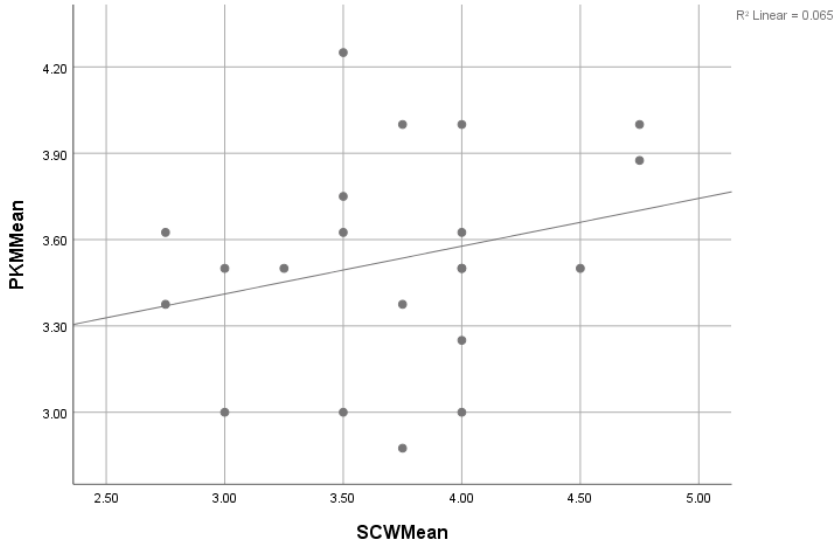

Figure 4. Scatter plot 21 case file (PKM mean and supervisor/coworker written instructions mean)

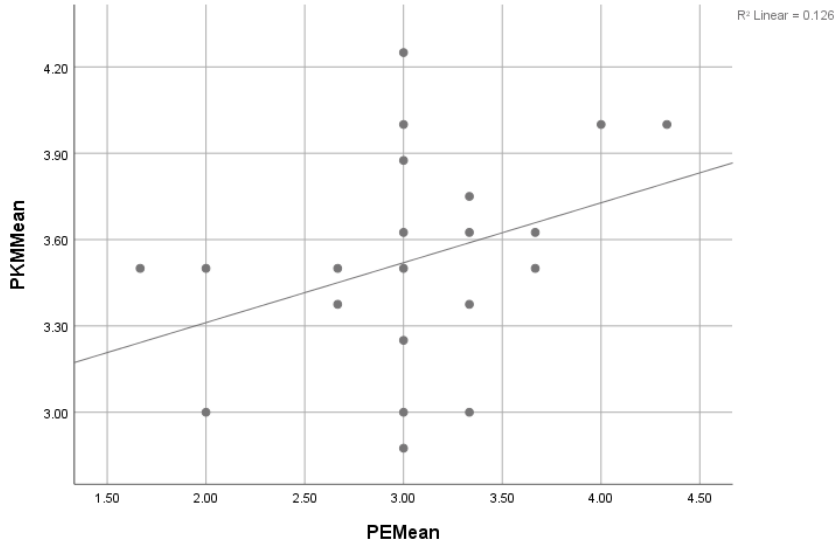

Figure 5. Scatter plot 21 case file (PKM mean and personal expressions mean)

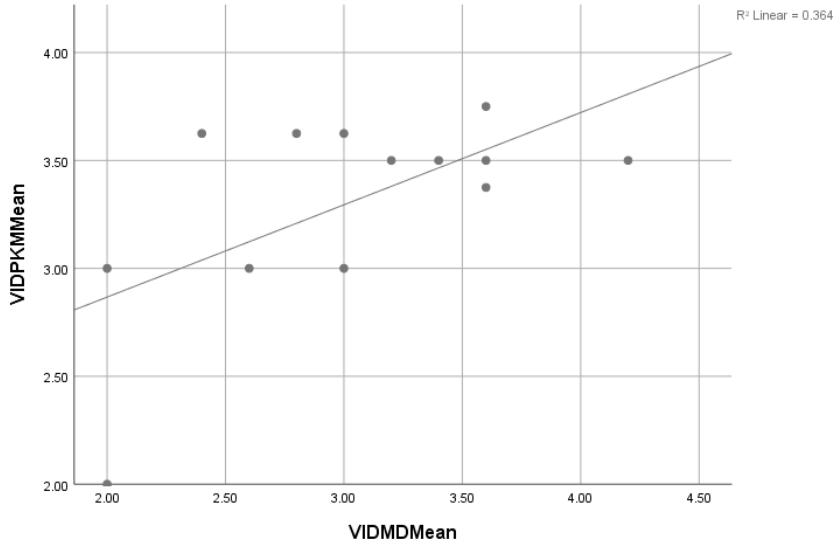

Figure 6. Scatter plot VID case file (VID PKM mean and VID meeting discussions mean).

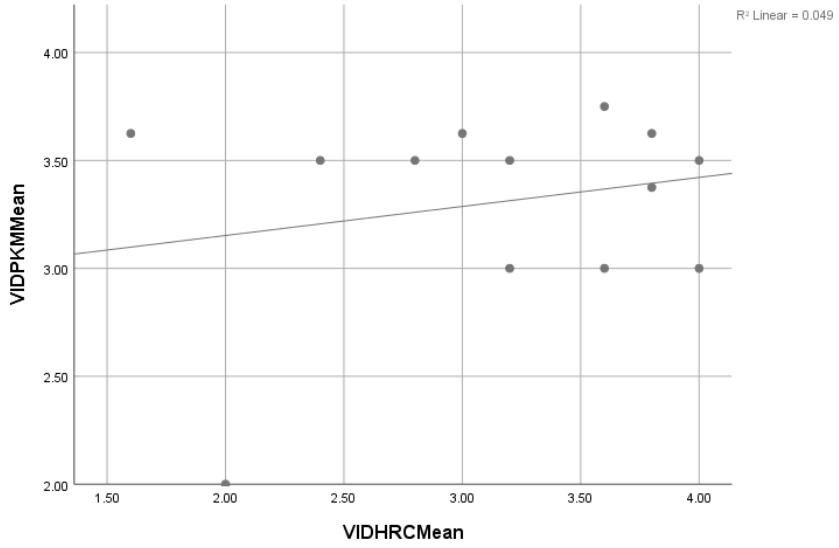

Figure 7. Scatter plot VID case file (VID PKM mean and VID human resources communications mean)

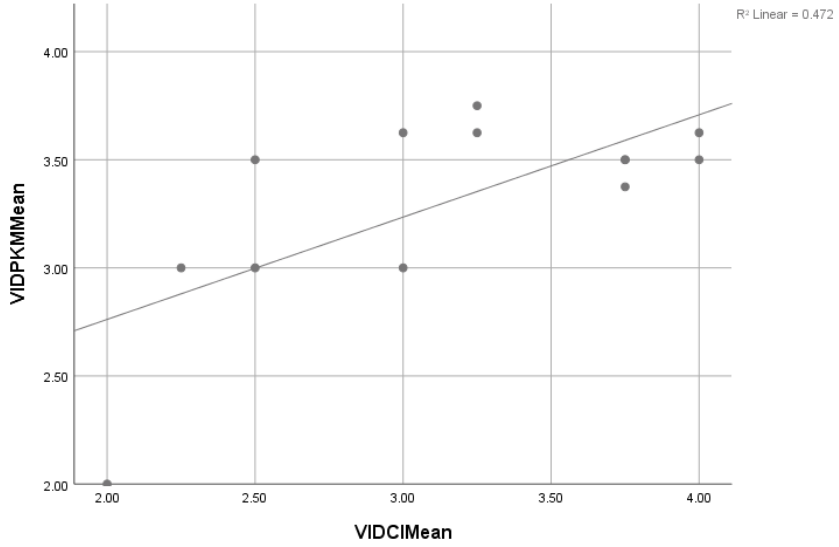

Figure 8. Scatter plot VID case file (VID PKM mean and VID coworker interactions mean)

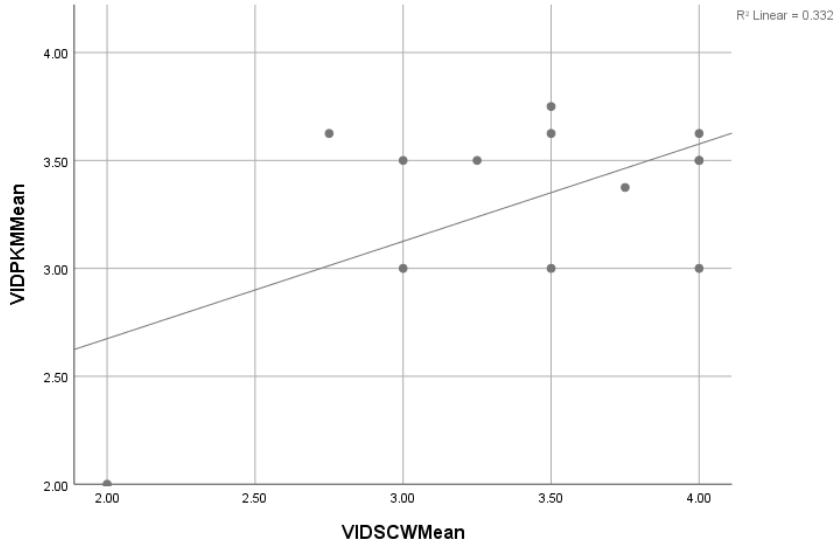

Figure 9. Scatter plot VID case file (VID PKM mean and VID supervisor/coworker written instructions mean)

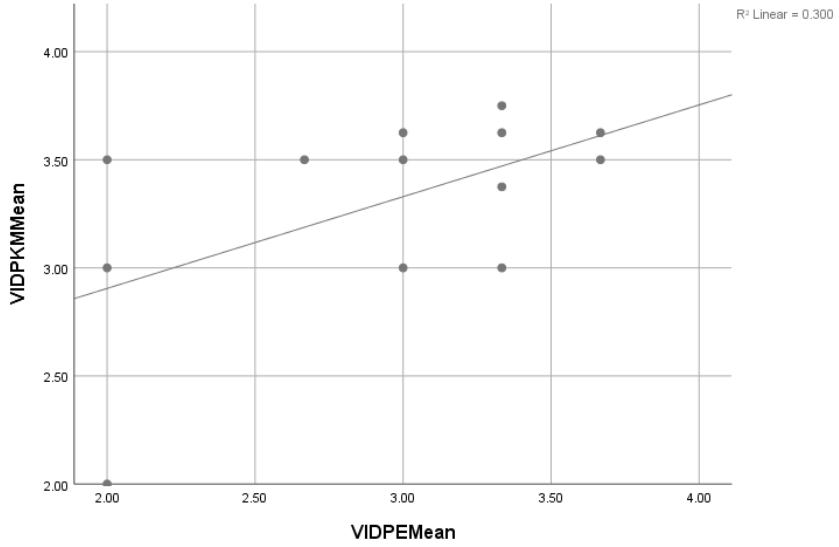

Figure 10. Scatter plot VID case file (VID PKM mean and VID personal expressions mean)

Assumption 5. There needs to be bivariate normality is assessed by testing the skew and kurtosis and through the Shapiro-Wilk test (Laerd Statistics, 2018c). The 21 Case File Shapiro-Wilks test results showed normal distribution ($p > 0.05$). The PKM mean scores were normally distributed with a skewness of -0.017 (SE = 0.501), and the kurtosis was -0.499 (SE = 0.972). Skewness and kurtosis are assessed by calculating the *z* score using the skewness or kurtosis value and the significance value (Laerd Statistics, 2018e). The higher (or lower) the skewness *z* value, the more skewed the values are, in that direction, from normal distribution. The higher (or lower) the kurtosis *z* value, the higher the number of scores that are located in the tails, relative to a normal distribution (Filliben, 2013).

Table 2

21 Case File Shapiro-Wilk's Test Results

	Shapiro-Wilk		
	Statistic	df	Sig.
PKMMean	0.957	21	0.458
MDMean	0.969	21	0.713
HRCMean	0.943	21	0.250
CIMean	0.925	21	0.110
SCWMean	0.945	21	0.274
PEMean	0.934	21	0.162

Table 3

21 Case File Skewness and Kurtosis Results

		Statistic	Std. Error
PKMMean	Skewness	-0.017	0.501
	Kurtosis	-0.499	0.972
MDMean	Skewness	-0.221	0.501
	Kurtosis	-0.471	0.972

HRCMean	Skewness	-0.712	0.501
	Kurtosis	-0.054	0.972
CIMean	Skewness	-0.215	0.501
	Kurtosis	-0.863	0.972
SCWMean	Skewness	0.055	0.501
	Kurtosis	-0.329	0.972
PEMean	Skewness	-0.321	0.501
	Kurtosis	0.631	0.972

In the VID Case File, the PKM mean scores were not normally distributed, as assessed by the Shapiro-Wilks test ($p > 0.05$). PKM mean ($N = 13$) scores were negatively skewed -2.011 ($SE = 0.616$), the results were positively kurtosed as well 4.664 ($SE = 1.919$). The scores for the Personal Expressions mean also were not normally distributed as assessed by the Shapiro-Wilks test ($p > 0.05$). Due to the violation of the normality assumption that was required to conduct the Pearson Correlation (Laerd Statistics, 2018c), Spearman's Correlation was conducted instead. Spearman's Correlation does not require data to be normally distributed (Laerd Statistics, 2018d).

Table 4

VID Case File Shapiro-Wilk's Test Results

	Shapiro-Wilk		
	Statistic	df	Sig.
VIDPKMMean	0.759	13	0.002
VIDMDMean	0.959	13	0.741
VIDHRCMean	0.910	13	0.181
VIDCIMean	0.921	13	0.260
VIDSCWMean	0.885	13	0.082
VIDPEMean	0.851	13	0.029

Table 5

VID Case File Skewness and Kurtosis Results

		Statistic	Significance
VIDPKMMean	Skewness	-2.011	0.616
	Kurtosis	4.664	1.191
VIDMDMean	Skewness	-0.111	0.616
	Kurtosis	-0.595	1.191
VIDHRCMean	Skewness	-0.824	0.616
	Kurtosis	-0.261	1.191
VIDCIMean	Skewness	-0.309	0.616
	Kurtosis	-1.230	1.191
VIDSCWMean	Skewness	-1.045	0.616
	Kurtosis	1.016	1.191
VIDPEMean	Skewness	-0.714	0.616
	Kurtosis	-0.808	1.191

Spearman's Correlation

This section discusses the two remaining assumptions for the Spearman's Correlations.

Assumption 1. The variables must be continuous or ordinal to run a Spearman's Correlation (Laerd Statistics, 2018d). The 21 Case File Education Level variable and the VID Case File Educational Level variable are both ordinal variables, and therefore, the assumption was met. The VID Case File PKM mean is a continuous variable and therefore meets this assumption.

Assumption 3. There must be a monotonic relationship between the variables (Laerd Statistics, 2018d). The Spearman's Correlation was used to determine the nature of the relationship between the participant's Nursing Education Level (e.g., Diploma, ADN, BSN, MSN, DNP) and the PKM in both the 21 Case File and the VID Case File.

The 21 Case File and the VID Case File both appeared to have monotonic distribution of variables.

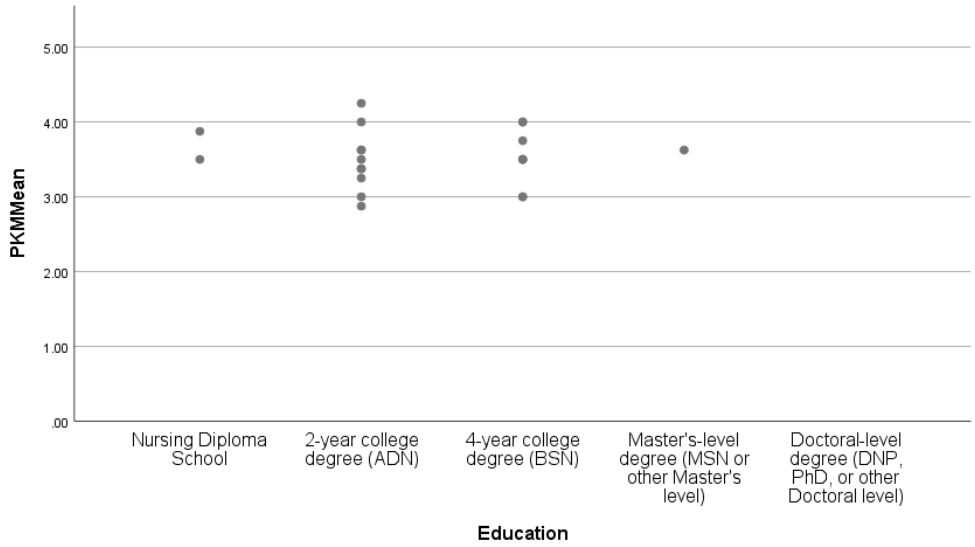

Figure 11. Scatter plot 21 case file (PKM mean and education)

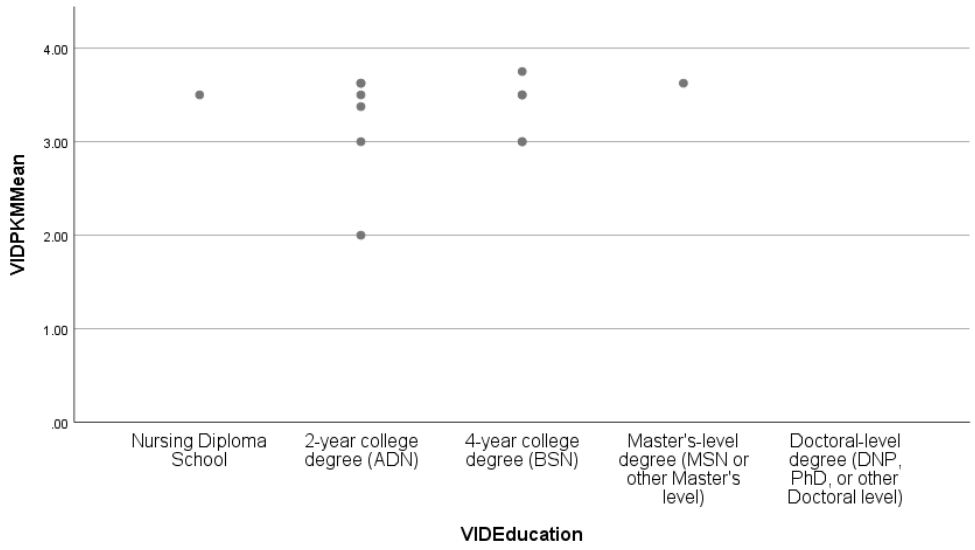

Figure 12. Scatter plot VID case file (VID PKM mean and VID education)

Stepwise Multiple Regression

This section addresses the assumptions met for the stepwise multiple regressions.

Assumption 3. The independence of observations is required (Laerd Statistics, 2018a). This assumption was checked using the Durbin-Watson statistic. The Durbin-Watson statistic was 1.437 which is close to 2, therefore there is an independence of means (Field, 2013). Thus, the assumption was met.

Table 6

Multiple Regression Model Summary (21 Case File)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.631[a]	0.398	0.197	0.33389	1.437

a. Predictors: (Constant), PEMean, SCWMean, CIMean, HRCMean, MDMean

Assumption 4. The independent variables must be linearly related to the dependent variable, both individually and collectively (Laerd Statistics, 2018b). To determine if the dependent variable was linearly related to the independent variables collectively, a multiple regression test was run using the 21 Case File. Several variables were created, including studentized residuals and unstandardized predicted values (Laerd Statistics, 2018b). A scatter plot was generated using the studentized residuals and unstandardized predicted values. There was no apparent non-linear pattern, the PKM mean (dependent variable) and the independent variables likely had a linear relationship.

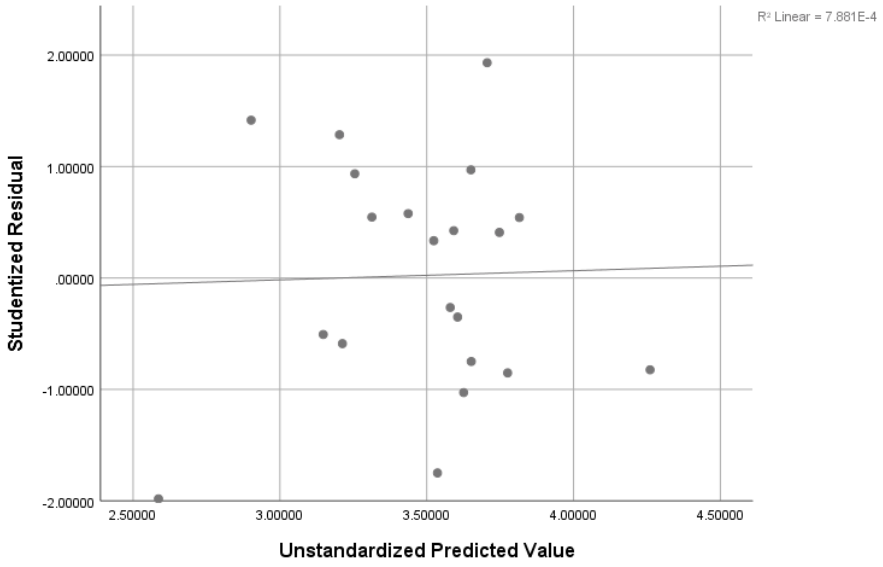

Figure 13. Scatter plot 21 case file (studentized residuals and unstandardized predicted values).

Partial regression plots were created to determine if the dependent variable was linearly related to each independent variable (Laerd Statistics, 2018b). The stepwise regression only tested the continuous variables of the PCI (Canary et al., 2013) and was not applied to the demographic variables, one of which, education level is a nominal variable. As this is a stepwise regression with only the Meeting Discussions mean being included in the model, the partial regression plots were only created for the PKM mean and the Meeting Discussions mean. There was no apparent non-linear pattern, the PKM mean (dependent variable), and the Meeting Discussions mean likely had a linear relationship.

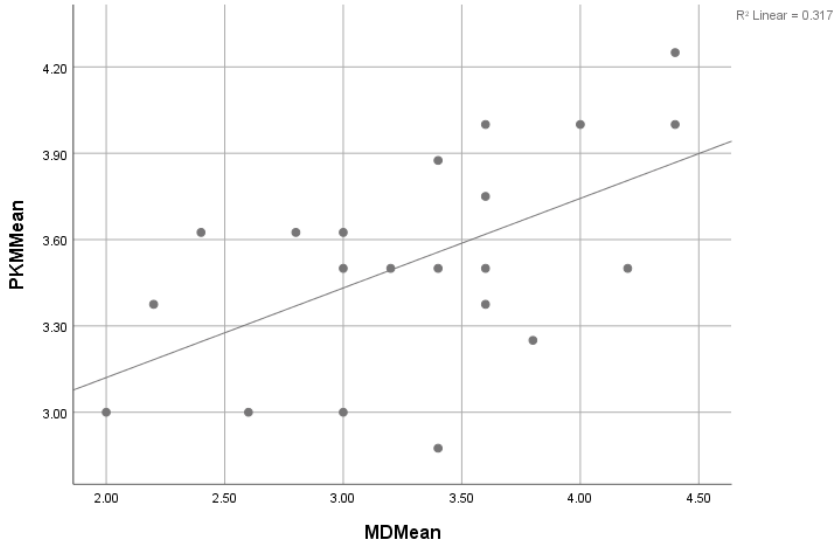

Figure 14. Partial regression plot 21 case file (PKM mean and meeting discussions mean).

Assumption 5. There must be homoscedasticity of residuals (Laerd Statistics, 2018b). As is apparent in Figure 13, the dispersion of the residuals seemed to be random, which indicates that this assumption was met.

Assumption 6. There must be no multicollinearity in the data. To test this assumption in SPSS, an inspection of correlation coefficients and variance inflation factor values were examined. The correlation coefficients for the independent variables should be higher than 0.1. Variance inflation factor values greater than 10 indicate a multicollinearity problem (Laerd Statistics, 2018b). An inspection of the correlations from the multiple regression test run using the 21 Case File reveals that there were no correlations with a value lower than 0.558. Additionally, there were no variance inflation factor values greater than 1.791. Thus, this assumption was also met.

Table 7

21 Case File Collinearity Statistics

	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
MDMean	0.558	1.791
HRCMean	0.692	1.445
CIMean	0.748	1.336
SCWMean	0.796	1.257
PEMean	0.865	1.157

Assumption 7. The data should not include any significant outliers, high leverage points, or highly influential points (Laerd Statistics, 2018b). Cases where the standardized residual is greater than ±3 standard deviations can represent outliers. Studentized deleted residuals that are greater than ±3 standard deviations can also represent outliers. In the 21 Case File, no cases where the standardized residual was greater than ±3 the standard deviation were identified. Again, in the 21 Case File, none of the studentized deleted residuals are greater than ±3 the standard deviation. During the multiple regression procedure, leverage values were generated.

In some cases, a value can exert greater influence than the remaining cases. The leverage values of <0.2 are considered safe with little untoward influence. Leverage values >0.2 but less than <0.5 are considered risky. Leverage values >0.5 are considered dangerous (Laerd Statistics, 2018b). In the 21 Case File, there are 7 leverage values <0.2, 16 values were in the range 0.2 to 0.5, and no cases the value was greater than 0.5. Next, the Cook's Distance, a measure of influence, is examined to determine influence. Values greater than 1 are considered to be very influential (Laerd Statistics, 2018b). In the 21

Case File, none of the Cook's Distance values are greater than 1. Thus, with the absence of outliers, no high leverage points, and no highly influential points, this assumption was met.

Assumption 8. Residuals must be approximately normally distributed (Laerd Statistics, 2018b). This assumption was tested by visual inspection of a histogram and P-P plot of standardized residuals. Based on the histogram in Figure 15 and the P-P plot in Figure 16, the standardized residuals appear to be approximately normally distributed. Thus, this assumption was met.

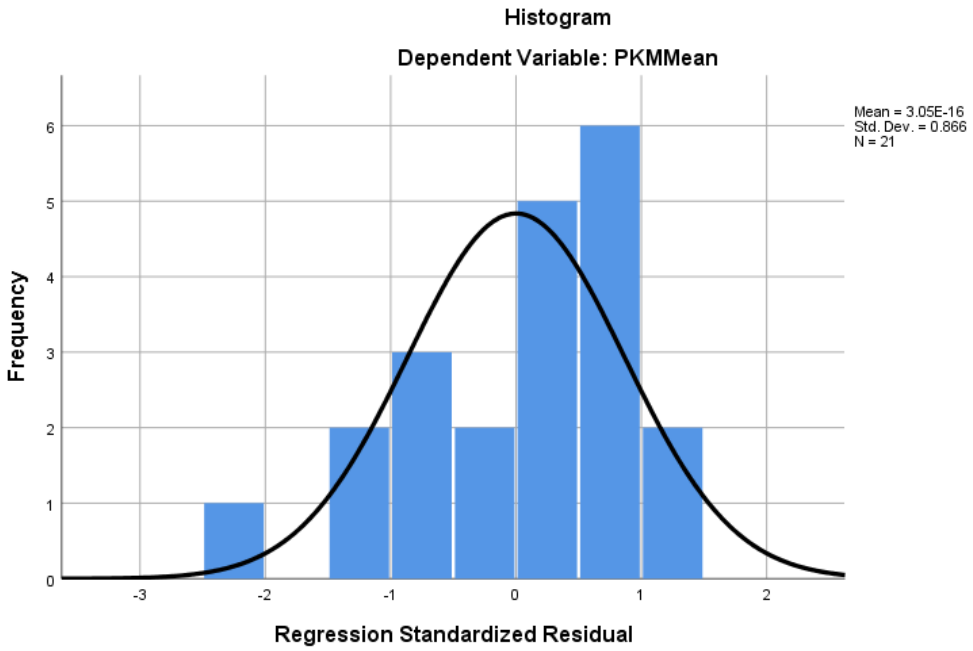

Figure 15. Histogram of standardized residuals (21 case file).

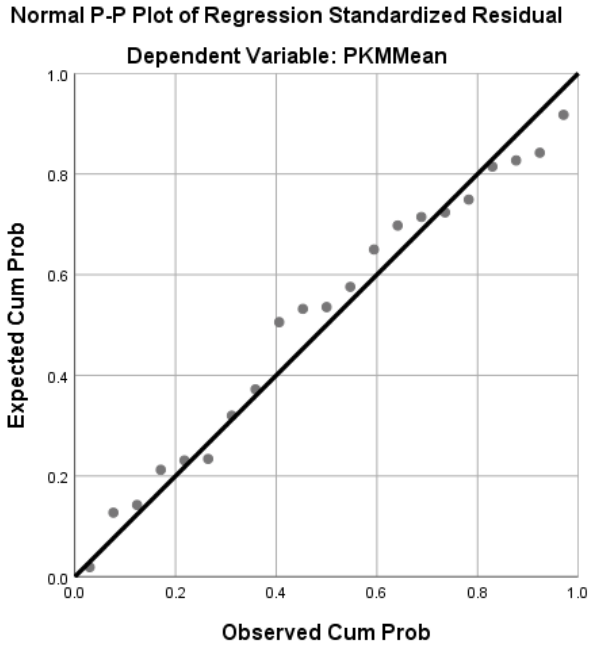

Figure 16. Normal p-p plot of standardized residuals (21 case file).

All assumptions for Pearson's Correlation, Spearman's Correlation, and Stepwise Multiple Regression have been met; the next section discusses the statistical analysis of the data from the two data sets, 21 Case File and VID Case File.

Analysis of Results

This section addresses the analysis of results as they pertain to each Research Question. Evaluation of individual hypotheses are included.

Research Questions

In the following section is a discussion of the statistical results for each research question. There are five research questions addressed in this section.

Research Question 1. What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index, and the Policy Knowledge Measure score (Canary et al., 2013)?

$H_0$1: There is no relationship between the Policy Communication Index and the Policy Knowledge Measure score.

H_a1: There is a relationship between the Policy Communication Index and the Policy Knowledge Measure score.

A Pearson's Correlation was conducted using the 21 Case File to assess the relationship between the Policy Knowledge Measure (PKM) and the subscores of the Policy Communication Index of Meeting Discussions, Human Resources Communications, Coworker Interactions, Supervisor/Coworker Written Instructions, and Personal Expressions. Preliminary analysis showed the relationship to be linear with all variables normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there were no outliers. There was a strong positive correlation between the PKM mean and the MDMean, r (20) = .50, p = .017. The correlations between the PKM mean and remaining subscores were not statistically significant. Therefore, the null hypothesis is rejected.

Table 8

Pearson correlations for main study variables

		MDMean	HRCMean	CIMean	SCWMean	PEMean
PKMMean	Pearson Correlation	.563**	0.164	0.296	0.255	0.355
	Sig. (2-tailed)	0.008	0.478	0.193	0.265	0.115

PKM = Policy Knowledge Measure, MD = Meeting Discussion, HRC = Human Resources Communication, CI = Coworker Interactions, SCW = Supervisor/Coworker Interactions, PE = Personal Expressions,

*. Correlation is significant at the 0.05 level (2-tailed).

Research Question 2. How many Policy Communication Index factors indicate a predictive value on the Policy Communication Index score (Canary et al., 2013)?

$H_0$2: There are no predictive factors among the Policy Communication Index subscales.

H_a2: There are one or more predictive factors among the Policy Communication Index subscales.

A stepwise, backward regression was conducted using the 21 Case File to predict PKM score from the PCI subscores (MDMean, HCRMean, CIMean, SCWMean, PEMean). The stepwise regression Model 5 (Table 9) statistically significantly predicted PKMMean $F(1, 20) = 6.764$, $p = .017$. Only Model 5 from the stepwise regression (Table 10), containing the MDMean variable added statistically significantly to the prediction, $p < .05$. R2 for Model 5 was 31.7% with an adjusted R2 of 28.1% (Table 10), a small size effect according to Cohen, West, and Aiken (2014). The Meeting Discussions mean accounts for only 28.1% of the variance of the PKF mean and 71.9% of the variance is unaccounted by the measures chosen in this study, they come from other sources or variables. Therefore, the null hypothesis is rejected.

Table 9

ANOVA Table for 21 Case File Stepwise Multiple Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.106	5	0.221	1.984	.140[b]
	Residual	1.672	15	0.111		
	Total	2.778	20			
2	Regression	1.103	4	0.276	2.634	.073[c]

	Residual	1.675	16	0.105		
	Total	2.778	20			
3	Regression	1.093	3	0.364	3.673	.033[d]
	Residual	1.686	17	0.099		
	Total	2.778	20			
4	Regression	1.001	2	0.500	5.067	.018[e]
	Residual	1.778	18	0.099		
	Total	2.778	20			
5	Regression	0.881	1	0.881	8.817	.008[f]
	Residual	1.898	19	0.100		
	Total	2.778	20			

a. Dependent Variable: PKMMean
b. Predictors: (Constant), PEMean, SCWMean, CIMean, HRCMean, MDMean
c. Predictors: (Constant), PEMean, SCWMean, HRCMean, MDMean
d. Predictors: (Constant), PEMean, HRCMean, MDMean
e. Predictors: (Constant), PEMean, MDMean
f. Predictors: (Constant), MDMean

Table 10

Model Summary Table for 21 Case File Stepwise Multiple Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.631[a]	0.398	0.197	0.33389	
2	.630[b]	0.397	0.246	0.32357	
3	.627[c]	0.393	0.286	0.31489	
4	.600[d]	0.360	0.289	0.31425	
5	.563[e]	0.317	0.281	0.31603	1.620

a. Predictors: (Constant), PEMean, SCWMean, CIMean, HRCMean, MDMean
b. Predictors: (Constant), PEMean, SCWMean, HRCMean, MDMean
c. Predictors: (Constant), PEMean, HRCMean, MDMean
d. Predictors: (Constant), PEMean, MDMean
e. Predictors: (Constant), MDMean
f. Dependent Variable: PKMMean

Research Question 3. What is the nature of the relationship between demographic factors (age, nursing education level, and years of experience in nursing practice) and the PKMure subscale score (Canary et al., 2013)?

$H_0$3: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the Policy Knowledge Measure subscale score.

H_a3: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the PKM subscale score.

A Pearson Correlation was run using the 21 Case File to assess the relationship between the PKM and two of the demographic factors of the participants, age of participant, and the years in practice as a nurse. Preliminary analysis showed the relationship to be linear with all variables normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there were no outliers. There was no statistically significant correlation between the PKM mean and the age of the participant, r (21) = .148. There was also no statistically significant correlation between the PKM and the Years in Practice as a nurse, r (21) = 0.012 (Table 11). Therefore, the null hypothesis is not rejected.

Table 11

Pearson Correlation 21 Case File, Age of Participant and Years as a Nurse

		Age	Years of Nursing
PKMMean	Pearson Correlation	0.148	0.012
	Sig. (2-tailed)	0.521	0.960

A Spearman Correlation was run using the 21 Case File to assess the relationship between the PKM and the education level of the nurses. The educational level data is ordinal data; therefore, the Spearman Correlation was used (Laerd Statistics, 2018d). Preliminary analysis showed the relationship to be linear with all variables normally

distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there were no outliers. There was no statistically significant correlation between the PKM and the education level of the nurses, rs(21) = .041, $p = .860$. Therefore, the null hypothesis is not rejected.

Research Question 4. What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index (Canary et al., 2013), and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$4: There is no relationship between the Policy Communication Index and the frequency of policy access through policy distribution software.

H_a4: There is a relationship between the Policy Communication Index and the frequency of policy access through policy distribution software.

A Spearman Correlation was run using the VID Case File to assess the relationship between the PCI mean and the frequency of accessing the reference policy, *Pressure Injury Prevention Policy*, through the hospital's electronic policy distribution software. Preliminary analysis showed the relationship to be non-linear with all variables not normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there were no outliers. There was no statistically significant correlation between the PCI mean and the frequency of access of the reference policy (FreqAccess), $r_s(12) = -0.067$, $p = .828$. Therefore, the null hypothesis is not rejected.

Research Question 5. What is the nature of the relationship between demographic factors (age, nursing education level, years of experience in nursing

practice) and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

$H_0$5: There is no relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

H_a5: There is a relationship between demographic factors (age, nursing education level, time in nursing practice) and the frequency of policy access through policy distribution software.

Spearman Correlations were run using the VID Case File to assess the relationship between age of participant and the years as a nurse, educational level and the frequency of accessing the reference policy (FreqAccess), *Pressure Injury Prevention Policy*, through the hospital's electronic policy distribution software. Preliminary analysis showed the relationship to be non-linear with all variables not normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there were no outliers. There was a strong correlation between the frequency of accessing the reference policy and the education level of the nurse, r (13) = .571, p = .041. There was no correlation between the frequency of accessing the reference policy and the age, r (13) = -0.432, p = .141. There also was no correlation between the frequency of accessing the reference policy and the years of nursing, r (13) = -0.085, p = .782. Therefore, the null hypothesis is rejected.

Additional analysis run was on the VID Case File to see if the result would be similar to the stepwise, backward regression results of the 21 Case File. The VID Case file represents a subset of the entire group of participants who submitted a VID. The

question was these participants' answers differed from the entire group's answers. A stepwise, backward regression was conducted using the VID Case File to predict PKM score from the PCI subscores (MDMean, HCRMean, CIMean, SCWMean, PEMean). The multiple regression Model 3 statistically significantly predicted PKM mean $F(3, 9) = 12.165$, $p = .002$. Regression coefficients and standard errors can be found in Table 12. The results of the VID Case File Stepwise multiple regression do differ from the 21 Case File stepwise regression. In the 21 Case File, the Meeting Discussions mean was found to be the only statistically significant variable to have correlation with the PKM mean. In the VID Case File, three different variables were found to have a correlation with the PKM mean: the Coworker Interactions mean, Supervisor/Coworker Written Instructions mean, and Personal Expressions mean (Table 13).

Table 12

ANOVA Table for 13 Case File Stepwise Backwards Multiple Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	2.121	3	0.707	12.165	.002[d]
	Residual	0.523	9	0.058		
	Total	2.644	12			

d. Predictors: (Constant), VIDPEMean, VIDCIMean, VIDSCWMean

Table 13

Coefficients from Stepwise Backwards Multiple Regression, VID Case File

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	0.305	0.578		0.527	0.614	-1.062	1.672
	VIDMDMean	0.016	0.165	0.022	0.095	0.927	-0.374	0.406
	VIDHRCMean	-0.101	0.113	-0.165	-0.891	0.402	-0.368	0.166

	VIDCIMean	0.369	0.146	0.535	2.533	0.039	0.025	0.713
	VIDSCWMean	0.352	0.153	0.450	2.299	0.055	-0.010	0.714
	VIDPEMean	0.309	0.127	0.399	2.439	0.045	0.009	0.609
2	(Constant)	0.302	0.540		0.559	0.592	-0.944	1.548
	VIDHRCMean	-0.100	0.105	-0.164	-0.947	0.372	-0.342	0.143
	VIDCIMean	0.377	0.111	0.547	3.395	0.009	0.121	0.633
	VIDSCWMean	0.357	0.133	0.457	2.677	0.028	0.050	0.665
	VIDPEMean	0.310	0.118	0.401	2.629	0.030	0.038	0.583
3	(Constant)	0.214	0.529		0.405	0.695	-0.983	1.412
	VIDCIMean	0.352	0.107	0.511	3.282	0.009	0.109	0.595
	VIDSCWMean	0.305	0.121	0.390	2.525	0.032	0.032	0.578
	VIDPEMean	0.320	0.117	0.414	2.742	0.023	0.056	0.585

a. Dependent Variable: VIDPKMMean

Summary

Chapter 4 addressed the data collection for my quantitative study to learn more about how nurses obtain policy knowledge. While the response was less than expected, data was collected from 28 participants. Included in this chapter was a detailed description of the actual data collection strategies. Each participant indicated on their survey that they acknowledged the informed consent that was given to them as part of the recruitment process. All aspects of the participant's privacy were addressed with no apparent breeches of privacy or ethical concerns reported. Next, the statistical tests, Pearson's Correlation, Spearmen's Correlation, and stepwise backward multiple regression, used in the analysis of the data were described along with a description of the assumptions that needed to be met in order to correctly run the tests.

A detailed analysis of data associated with each of the five research questions was presented. Each research question was addressed along with the conclusions reached, based on the findings of the statistical test for each question.

With Research Question 1, there was a strong positive correlation between the PKM and the Meeting Discussions mean, r (20) = .50, p = .017. The remaining correlations between the PKM mean and remaining subscores were not statistically significant. Therefore, the null hypothesis was rejected.

With Research Question 2, the stepwise, backwards regression Model 5 statistically significantly predicted PKMMean F(1, 20) = 6.764, p = .017. Only Model 5 from the stepwise regression (Table 10), containing the MDMean with an Adjusted R^2 of 0.281 explained 28.1% of the variation. Regression coefficients and standard errors can be found in Table 10. Therefore, the null hypothesis was rejected.

For Research Question 3, there was no statistically significant correlation between the PKM mean and the age of the participant, r (20) = .148. There was also no statistically significant correlation between the PKM mean and the years in practice as a nurse, r (20) = 0.012 (Table 11). There was also no statistically significant correlation between the PKM mean and the nursing education level, $r_s(19) = .041$, $p = .860$. Therefore, the null hypothesis was rejected.

With Research Question 4, there was no statistically significant correlation between the PCI mean and the frequency of access of the reference policy (FreqAccess), r_s (12) = .067, p = .828. Therefore, the null hypothesis was rejected.

In Research Question 5, there was a strong correlation between the Frequency of Accessing the reference policy and the education level of the nurse, r (12) = .571, p = .041. There was no correlation between the frequency of accessing the reference policy and the age of the nurse, r (12) = -0.432, p = .141. There was also no statistically

significant correlation between the frequency of accessing the reference policy and the years as a nurse, $r_s(12) = -0.085$, $p = .782$. With one significant statistical test, education level of the nurse, the null hypothesis is rejected.

In Chapter 5, presents the results of the data analysis. The interpretation of findings is presented against Rogers's (2003) diffusion of innovation and recommendations made according to literature findings, study results, and analysis. There is also a discussion of the implications on positive social change. Limitations of the study are addressed along with recommendations for future work around this topic.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to learn more about how nurses obtain policy knowledge. I examined the association between policy communication processes (independent variable) and two dependent variables—policy knowledge and the frequency of accessing a reference policy via policy distribution software. I also examined the association between demographic variables (age of the nurse, the educational level, and the length of time as a nurse) and the same two dependent variables. The results indicated that policy knowledge was more closely related to meeting discussions than other sources of knowledge that were examined. There was no correlation between the demographic factors of age, years in practice as a nurse, or the nursing educational level.

In the subset of participants who provided a valid employee identification number, the results were different. There was no correlation between the PCI and the frequency of accessing the reference policy through the hospital's policy distribution software. There was a strong correlation between the demographic factor of nursing education level and the frequency of accessing the reference policy. There was no correlation between the age of the participant and the years in practice as a nurse and the frequency of accessing the reference policy. Additional analysis using the subset data set showed that policy knowledge was more closely related to coworker interactions, supervisor/coworker written instructions, and personal expression, which was different than the results of the other data set. This chapter provides a more in-depth interpretation

of the findings from the study. Details of the limitations of the study and suggestions for future research are presented as well. The implications for positive social change are also included.

Interpretation of Findings

This section includes interpretations of the findings associated with each research question. Explanations of how these findings can contribute to nursing are included as well.

Research Question 1

What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index, and the Policy Knowledge Measure score (Canary et al., 2013)?

The results showed that there is a correlation between the Meetings Discussion mean and the PKM. This is different than the finding in Canary et al.'s (2013) original study that showed a strong correlation between the PKM and Human Resources Communication. Canary et al. speculated that this could be due to the acculturation of the participants expecting policy knowledge to come from human resources communication. In the context of my study, these results can be supported in part by Rogers's diffusion of innovation theory, which discusses the function of communication channels in the diffusion of information (Rogers, 2003). Meeting discussions are one social venue where this communication can occur. These results in my study could be interpreted as nurses not expecting information about a nursing policy to come from human resources but expecting the information to come from their supervisor or another nurse in the form of a

meeting discussion. This might be related to the meeting format relating a sense of authority or legitimacy from nursing administration to the discussion of the policy (Canary et al., 2013). Further research is needed to address these implications.

Research Question 2

How many Policy Communication Index factors indicate a predictive value on the Policy Communication Index score (Canary et al., 2013)?

The results again showed a higher correlation between Meeting Discussions and the PKM than the other subscore means. This is also different than Canary et al.'s (2013) results indicating Human Resources Communication had the highest correlation. In addition to the acculturation of participants into expecting policy communication to come from human resources, Canary et al. included education in the category of Human Resources Communication. However, the hospital where my study was conducted does not consider education to be a human resources function. Although education is not mentioned in the survey questions, this cannot be ruled out as influencing this question. Rogers's (2003) use of communication channels for the diffusion of information would apply to this question as well. Within the 21 Case File data, no other factors appeared as highly correlated as Meeting Discussions. Again, further research is needed in this area.

Research Question 3

What is the nature of the relationship between demographic factors (age, nursing education level, years of experience in nursing practice) and the PKM subscale score (Canary et al., 2013)?

The study results showed no relationship between the PKM and the three demographic measures of age, nursing educational level, and years of experience in nursing practice. There are several different views on the influence of age in learning in nursing. For example, Head et al. (2015) stated that there needs to be more research into the relationship between age and learning. However, Hallin (2014) stated that there is no relationship between age and learning based on a survey in a nursing school setting. Nursing competency is an important factor in the provision of good patient care and good outcomes (Numminen et al., 2013), but age does not correlate positively with competency. Experience is a much more important factor in establishing competency and is more closely related to learning than age (Meretoja et al., 2015).

The educational level of the nurse is widely seen as an important factor in the provision of nursing care (Gorski et al., 2017). Despite there being a range of nursing education levels reported in the survey, there was no relationship observed between the nursing educational level and the PKM within the 21 Case File. The years of experience reported by the nurses also did not demonstrate a relationship with the PKM, though research has indicated the importance of experience (Meretoja et al., 2015). Because nursing has a range of specialties, career paths, and work settings, it might have been better to ask about years of experience in a current position rather than overall years of experience. Thus, the results for this question show that additional research into the role each of these demographic factors plays in the policy knowledge acquisition process is needed.

Research Question 4

What is the nature of the relationship between the policy communication processes, as measured by the Policy Communication Index (Canary et al., 2013), and the frequency of accessing the reference policy through the hospital's policy distribution software?

The results showed that there was no significant correlation between the policy communication processes, as measured by the PCI, and the frequency of accessing the reference policy using the hospital's policy distribution software. The first factor that might be limiting the results of this question is the limited number of responses available for analysis. Only 59% of the original responses were available to use in the data analysis for this question. Eleven responses did not have a correct employee identification number in the results. The reasons behind the incorrect employee identification number such as fear of reprisal by the employer or privacy concerns are beyond the scope of this study. A modified study design or a better explanation of the use of the employee identification number in the study process might produce an increased number of useful responses. Further research on this aspect of the study is needed.

Research Question 5

What is the nature of the relationship between demographic factors (age, nursing education level, years of experience in nursing practice) and the use of policy distribution software to access policies and procedures by nurses as measured by the frequency of access?

This question is similar to Research Question 3 but had a subset of the data file in which participants provided a VID number. The results for this question varied from the results in Research Question 3, which had a larger data set, 21 Case File. Level of nursing education did show a relationship with the frequency of accessing the reference policy, but the age of the nurse and years of nursing experience did not show any correlation with the frequency of accessing the reference policy.

Despite there being a strong correlation between education level of the nurse and the frequency of accessing the reference policy, it is difficult to draw any conclusions at this point. Gorski et al. (2017) argued that the education level of the nurse is an important aspect of the care they provide. It could be that the more experienced nurses access the actual policy to understand the information contained in the document. Although years of experience as a nurse is more likely to be related to learning (Meretoja et al., 2015), this and age of the nurse were not indicated as playing a role in acquiring policy knowledge. Age is not commonly found to be related to learning in nursing (Head et al., 2015), which explains part of the results, but further research is needed in this area.

Limitations of the Study

In Chapter 1, I described several limitations to this study. The first was the selection of the study type. Due to limitations of time, funding, and access, I was unable to use a controlled experimental design. Another limitation was the selection of a single policy as the reference policy. The choice of *Pressure Injury Prevention Policy* as the reference policy may have influenced the results of the survey in that some nurses may not have read the policy or accessed it as often as a policy such as *Patient Care: Use of*

Restraints. Another limitation of the study was the setting of health care in which the policy was implemented. The motivations which underly the implementation of a policy could influence the generalizability of the results in a different setting, especially outside of health care.

The decision to not conduct the study at my hospital was another limitation. Concerns about bias due to my role in writing and deploying policies at my facility resulted in a different hospital being selected. The selection of a different hospital, other than my own, resulted in a much small population to survey. This was a significant limitation. Additional details about these limitations can be found in Chapter 1.

The selection and approval of a site was problematic, as well. The original site selected ultimately did not grant me permission to conduct my study at their facility. The site I was able to use was much smaller, that probably contributed to the low response rate (N=28). The low response rate and the need to remove several responses due to various factors resulted in a very low number of cases for analyses. This makes generalizing the results problematic.

The use of the employee identification number as a way to correlate the survey results with the actual frequency of accessing the reference policy in the hospital's policy distribution software was a significant limitation in the study. Participants who did not provide their actual employee identification number may have had concerns about privacy or retaliation by nursing administration at the hospital. Without addressing this directly with the individual participants, there is no way to determine what their concerns were.

One last limitation was the actual administration of the survey by hospital personnel. The original plan for the survey called for a hospital contact to email two separate requests for participation to nurses meeting the survey criteria at the hospital. There were some changes in mid-level leadership during this time and the email requests were not sent out as intended. Another aspect of the plan was to attend meetings when staff gathered (staff meetings, shift huddles) to discuss participation in the survey. My attendance at these meetings appeared to have aided in the recruitment of participants. The meetings that I attended appeared to be where the majority of participants were recruited. Future research should be considered using a much larger study site or sites, a different reference policy, and closer interaction with hospital nursing leadership in the recruitment process.

Recommendations

There are several recommendations that would make this study more effective and useful to nursing leaders. The recommendation likely to have the most impact would be to repeat the study with a larger number of participants. The survey response rate was very low (28/250=11.2%). This may be due, in part, to some logistical issues at the beginning of the survey window in getting information about the survey to the potential participants. While survey responses within organizations have been declining, a higher rate was expected as the average according to one source is 34% (Fulton, 2018). A better-organized rollout with additional on-site time for personal interaction with participants may contribute to a better response rate. Another study discussed the use of incentives to increase response rates (Robb et al., 2017), but this was not considered for this study due

to the cost and logistics behind distributing the incentive. Repeating the survey with the inclusion of an incentive has the potential to increase the number of participants. Robb et al. (2017), used a mail-in survey in their study, but an increase in the number of participants might still be achieved by offering a small incentive such as providing a ticket that could be redeemed for a beverage or snack at the hospital.

The single hospital was conveniently selected for this survey based on willingness to participate. In the future, this could be mitigated by choosing different sized hospitals across a wider geographic area. Originally the selection of a single site was intended to aid in the identification of the locus of policy communication and correlate this with other factors to determine how likely nurses would utilize the software as intended. The low number of responses limited the ability to identify additional factors important in the use of the software. There are some advantages to using multiple hospitals within a hospital system approach. Increasing the number of responses is one advantage. Using multiple sites can increase the generalizability of the results. Hospitals have different cultures and different types of nursing care units. The results may be different for different hospitals or between units and may depend on a leader's management style or application of techniques to increase knowledge of evidence-based practices.

The selection of a different reference policy may also help to increase the response rate. Anecdotal comments from the staff at the hospital where I conducted my study indicated some confusion over the selection of the policy. Staff seemed to think it was an odd selection. The evidence-based policy *Pressure Injury Prevention* was selected because the pressure injuries are an issue at many hospitals (Bauer et al., 2016). Another

evidence-based policy could be selected to serve as the reference policy that would be recognized by participants and perhaps related to by staff more readily.

Another recommendation is the use of a better method of correlating the data from the survey to usage data. Asking the nurses to enter their Employee ID number into a survey may have been perceived as risky or invasive by at least half of the participants in my survey. In reflecting on the composition of the usage report, a smaller percentage of the nursing staff had accessed the policy via the policy distribution software than had responded to the survey. A better strategy might also be to explore the barriers to accessing the document through the policy distribution software. A mixed methods approach combining qualitative data regarding nurses' perceptions of the policy knowledge acquisition processes and additional qualitative data might provide better information that can help to improve attitudes about policies, increase policy knowledge and improve communication about policies in hospitals (Canary, Hansen, Rinehart, May, & Barlow, 2015). The nurses might report the information regarding the policy was more likely obtained through meeting discussions because they perceived a barrier precluded them obtaining the information directly from the document.

Implications for Social Change

The social change that can result from the findings of this study is the timely dissemination of evidence-based practices in hospitals. Evidence-based practice has long been touted as having a positive impact on the provision of safe and effective health care (Institute of Medicine, 2011). With the ever-increasing costs of health care in the U.S., evidence-based practices can have a significant impact both on reducing costs and

improving patient outcomes and overall health and wellbeing (Warren et al., 2016). Meeting Discussions were reported as being an important source of policy knowledge by nurses in this study. Meetings are an important source of interaction and communication in the workplace. Some studies have shown that effective communication plays a vital role in safe patient care and job satisfaction (Seamons, & Canary, 2017; Vermeir et al., 2017; Wagner, Bezuidenhout, & Roos, 2015). Safe patient care is a goal of evidence-based practices. Increased job satisfaction lowers job turnover, increases productivity, and reduces staff burnout (Dotson, Dave, Cazier, & Spaulding, 2014; Vermeir et al., 2017) Conducting this study is one step towards a better understanding of ways to more effectively implement evidence-based practices in hospitals.

Conclusion

The results of this quantitative study indicate meeting discussions are an important source of policy knowledge. The low response rate, however indicates that additional research is needed to reinforce this finding. The results of this first look at policy knowledge acquisition by nurses are equivocal but act as a stepping stone on which to build additional studies. Considerable amounts of work are needed to meet the Institute of Medicine (2011) goal of 90% evidence-based decisions in health care by 2020 (Breckenridge-Sproat et al., 2015). Often overlooked, the implementation of evidence-based policies can be an effective means of incorporating research evidence into practice, generating new avenues for future research, and improving implementation efforts and patient outcomes. My study showed that discussions regarding policies at meetings was an important source of policy knowledge. This should not preclude continued study of the

use of technology in the implementation of evidence-based practices. Nursing leaders can use the results from this study to assess their own policy knowledge processes and implement process improvements in their hospitals (Canary et al., 2015). Guided by Rogers's diffusion of innovation (2003) principles, the use of policy distribution software might be more effectively leveraged as an additional avenue of policy knowledge transference. Nursing leaders can use the information from my study now to improve nursing communication while continuing to explore the use of technology in the implementation of evidence-based practices. Evidence-based practices are becoming increasingly important in health care (Melnyk et al., 2016) and are a critical factor in the reduction of health care costs (Warren et al., 2016). Any research that can aid in the implementation of evidence-based practices will help to improve health care for everyone.

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Appendix A: Permission to Use Communication Index Survey Tool

Heather Canary [redacted]
To: [redacted]
Apr 14, 2015 at 7:13 AM

Hello Curtiss,

Thank you for contacting me. I am glad to know that the PCI instrument my colleagues and I developed might be of use to your research. The items are published in the MCQ article in Table 1. The only item that we did not retain, based on results from Study 2, is the Personal Expressions item "I use my personal values to interpret FMLA." We purposefully worded items so any policy name/acronym can be substituted where we used "FMLA." You do not need a printed copy of the instrument from me because the items are published, with the copyright stated, in the MCQ article. You simply need to cite the original publication information when you describe the items in your dissertation and in any subsequent publications. I imagine you will incorporate the items into a survey that includes demographic information and perhaps other measures so it does not make sense to include the copyright information about my measure on the actual survey you distribute to your research participants.

If you would like the items we developed to measure policy knowledge and policy attitudes, I am happy to share those items with you. They are not part of the PCI but I use them, as have others, to look at correlations between different types of policy communication and self-reported levels of knowledge and self-reported attitudes (favorable-less favorable) toward the focal policy of a particular study.

Let me know if those are the items you would like.

Good luck in your study! I look forward to hearing from you in the near future about your findings.

All the best,

Heather Canary, PhD
Associate Professor
Department of Communication
Consortium for Families and Health Research
Utah Center for Excellence in Ethical, Legal, and Social Implications Research
University of Utah

Appendix B: Survey Tool Questions

Question	Subscale
In meetings, people talk about the background of the Pressure Injury Prevention policy	MD
In meetings, people compare the Pressure Injury Prevention policy to other work issues.	MD
In meetings, people ask for details about the Pressure Injury Prevention policy	MD
My supervisor explains the Pressure Injury Prevention policy in meetings.	MD
My supervisor tells me why the Pressure Injury Prevention policy exists.	MD
I learn about the Pressure Injury Prevention policy by learning about consequences of noncompliance.	HRC
I get written instructions on the job from HR/trainers.	HRC
People in HR/trainers tell me why the Pressure Injury Prevention policy exists.	HRC
I get verbal instructions on the job from HR/trainers	HRC
Handouts/fliers are in language I understand.	HRC
Coworkers and I talk about what is right and wrong about the Pressure Injury Prevention policy.	CI
This policy has come up in conversations with coworkers.	CI
I learn about the Pressure Injury Prevention policy by getting detailed explanations from coworkers.	CI
I learn about the Pressure Injury Prevention policy from things that happen at work.	CI
Written instructions from my supervisor are given through memos.	SCW
Written instructions from coworkers are given through email.	SCW
Written instructions from my supervisor are given through email.	SCW
I get written instructions on the job from my supervisor.	SCW
I use my personal values to interpret the Pressure Injury Prevention policy.	PE
I express my opinion to others about the Pressure Injury Prevention policy.	PE
I offer suggestions about the Pressure Injury Prevention policy.	PE

Note. MD = Meeting Discussion, HRC = Human Resources Communication, CI = Coworker Interactions, SCW = Supervisor/Coworker Interactions, PE = Personal Expressions.

PCI Subscales:

Meeting Discussions	MD
Human Resources Communications	HRC
Coworker Interactions	CI
Supervisor Coworker Written Instructions	SCW
Personal Expressions	PE

Policy Knowledge Measure Score Questions

I know as much as I need to know about Pressure Injury Prevention policy.
I received enough training about Pressure Injury Prevention policy.
I know how Pressure Injury Prevention policy is used.
I know how to find information I need about Pressure Injury Prevention policy
I know who to talk to in order to use Pressure Injury Prevention policy.
I am confused about how to use Pressure Injury Prevention policy.
I understand what Pressure Injury Prevention policy is about.
I need more formal training about Pressure Injury Prevention policy.

Appendix C: Protecting Human Research Participants Certificate

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Curtiss Vavra** successfully completed the NIH Web-based training course "Protecting Human Research Participants."

Date of Completion: 04/14/2018

Certification Number: 2796346

NIH National Institutes of Health
Office of Extramural Research