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Concordia University–Portland

College of Education

Doctorate of Education Program

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Leadership Influence in the Adoption of Innovation by Critical Care Nurses

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Concordia University–Portland

College of Education

Dissertation submitted to the Faculty of the College of Education

in partial fulfillment of the requirements for the degree of

Doctor of Education in

Transformational Leadership

Yvette Ghormley, Ph.D., Faculty Chair Dissertation Committee

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Concordia University–Portland

2019

Abstract

Innovation is critical to the survival and continued success of hospitals. Public and political criticism coalesces around costs, quality, and access. This qualitative research study was conducted to discover strategies that may be useful to nurse managers in supporting innovation adoption. The research design of this case study is useful in understanding how managers and nurses experience innovation in critical care settings. Data collection was carried out on the campus of a university-affiliated research hospital located in the southeastern U.S. A semistructured, protocol-driven, interview process, was used to collect data from 12 participants including nurse leaders and staff nurses. Emphasis was placed on culture, emotional intelligence, transformational leadership, education, and competency. Data were triangulated using interview transcripts and the 2016 Community Health Needs Assessment of the site organization. Thematic analysis and the Diffusion of Innovations framework (Rogers, 2003) was used to identify five themes. Findings included information useful in developing strategies that nurse leaders may use to influence the adoption of innovation. Future researchers may seek answers to questions such as reducing barriers to innovation, effective approaches to protected time for creativity and innovation, and effective methods of teaching innovation skills.

Keywords: nurse manager, leadership, culture, healthcare education, innovation, diffusion, adoption, buy-in, skills, competencies, emotional intelligence, leadership, collaboration

Dedication

First and foremost, I dedicate this dissertation to my Lord and Savior Jesus Christ. To my parents, William F. McEachern Jr. and Betty J. McEachern, whose love and support taught me to seek life-long learning. I wish you were here to celebrate this accomplishment with me. With all my heart and soul, I want to thank my wife and master encourager, Linda, without her love and support this effort would never have come to completion. My daughters: Britney, Laura, and Kenzie, whose love, caring souls and never-ending support of the Daddy is infinite. To my grandchildren Brodie, Letty, and Kane for whom I hope to play a small part in transforming the world in which you live. I want to thank Gus, my faithful Golden Retriever, ever by my side during life and the writing of this Dissertation. Unfortunately, life did not allow you to be here for the celebration; I miss you dearly. Thank you all, I love you with all my heart.

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Chapter 1: Introduction

Introduction to the Problem

The amount of healthcare spending in the U.S. reached \$3.5 trillion in 2017 (Kamal & Cox, 2017). Access may be hindered for many by the high costs associated with healthcare (Kamal & Cox, 2017). Industrialized countries struggle with the balance between this need for healthcare and the cost to support a quality accessible system. Availability of a healthy and abundant workforce may depend on the overall health of a population. Providing the healthcare to maintain a healthy and available workforce might be costly, especially in cases of critical care and chronic health issues. An aging population which experiences a higher level of chronic diseases is creating rapid increases in the cost of healthcare delivery (Fox, Gardner, & Osborne, 2018). Health care expenditures in the U.S. increased by 144% between 2000 and 2016, with spending reaching a high of \$1968.12 billion (Kamal & Cox, 2017). The rate and pace of rising healthcare costs could endanger the overall health status and financial well-being of the U.S.

The U.S. health care system is a complex network of hospitals, providers, and clinics operating in a rapidly changing environment. Healthcare leadership is challenged by poor quality and access which currently exists in the overall healthcare system (Arroliga, Huber, Myers, Dieckert, & Wesson, 2014). The healthcare industry and government pursuit of substantial improvements in cost, quality, and access has given only incremental progress. Quality and access measures for the U.S. health system fall in the lower measurements of all developed countries (Arroliga et al., 2014). The inadequate results in quality are contradictory to the large amounts spent on health care (Arroliga et al., 2014). Hospitals accounted for 32% of the total national health expenditures in 2016 (Kamal & Cox, 2017). Rising expenditures and

inadequate quality results place hospital systems under intense pressure to attain significant levels of improvement in cost, quality, and improved access.

Rapid change in healthcare and continued pressure on cost and quality requires new leadership approaches and strategies. Collaboration among providers is crucial in efforts to make change successful and transform the healthcare delivery system (Clausen, Lavoie-Tremblay, Purden, Lamothe, Ezer, & McVey, 2017). Collaboration between disciplines may be difficult. Bender, Connelly, and Brown (2015) concluded that healthcare organizations are challenged in the development of collaborative care. Clausen, Cummings, and Dionne (2017) emphasized that providers of healthcare will work in systems of care which extend beyond the boundaries of a setting and past current organizational boundaries. The multiple pressures and rapid change in healthcare may require new experiences, understandings, and competencies in innovation for individuals and organization to keep pace.

Background, Context, History, and Conceptual Framework for the Problem

Healthcare costs continue to rise at a steadily rapid rate as access to healthcare and reimbursements continue to decrease similarly and quality issues persist. The efforts of organized programs to reduce costs, increase access, and improve quality have plateaued (Avakame, Balgley, Bartolozzi, & Mitchell, 2017). New ideas and methods in hospital leadership are necessary. Hospital leaders must learn to innovate quickly and successfully for the organizations which they lead to survive. Well-prepared healthcare leaders with skills in innovation are critical to achieving improvement in cost, quality, and access. Demand for well-prepared leaders in hospitals is increasing as the supply of these leaders trails the demand (Keys, 2014). Keys (2014) reported the supply of capable nurse leaders fell short of the outlook for future demand.

While some leaders receive training in innovation, most nurse leaders (middle managers) may not; these managers might also lack formal business training. Mackoff, Meadows, and Nash (2017) noted improved education efforts in leadership is essential to succession planning. Universities must develop nurses with competencies in business and innovation leadership so nurses will be prepared for leadership roles. Once nurses are educated, ongoing training and development programs could include material to enhance innovation and emotional intelligence. Change is a team endeavor which must be understood and championed at all levels of the organization. Nurse leaders must be able to recognize and manage the emotions of others in an environment which can be emotionally charged. White, Pillay, and Huang (2016) found nurse leaders to be lacking in 18 of 19 innovation competencies in their study of nurse leaders and innovation. The key competencies identified in the White et al. (2016) study included several elements directly related to emotional intelligence (EI).

Pillay and Morris (2016) identified 19 competencies using a multi-round Delphi methodology. Samples for the study were collected from three distinct populations: health entrepreneurs, entrepreneurship and innovation educators, and senior representatives from government. Seven of the innovation competencies identified by Pillay and Morris (2016) were associated with EI. These competencies are an ability to maintain focus and adapt, resilience, interdisciplinary teamwork and collaboration, confidence, tenacity and perseverance, and guerilla skills (unconventional tactics), and an understanding which drives decision making based on economics (Pillay & Morris, 2016). Further, the authors identified the creativity and innovation skills as key competencies. The final round of the Delphi technique indicated consensus among participants regarding the 19 identified innovation competencies.

White et al. (2016) found the five most important competencies for innovation to be an ability to convey a compelling vision, resilience, the ability to recognize an opportunity, tenacity and perseverance, and interdisciplinary teamwork. Of the top five competencies identified, resilience, interdisciplinary teamwork, and tenacity/perseverance were related to EI (Thomas, Seifert, & Joyner, 2017; Tyczkowski et al., 2015). Vitello-Cicciu, Weatherford, Gemme, Glass, and Seymour-Route (2014) indicated self-awareness as critical to EI and a teachable skill which had lasting effects. Tyczkowski et al. (2015) noted resilience as an EI skill essential to transformational leadership (TL) and the process of influencing the adoption of innovation. Nurse leaders need these skills to effectively address innovation aimed at high costs, insufficient quality, and increased access (Herzlinger, Ramaswamy, & Schulman, 2014; White et al., 2016).

A study conducted in 2000 concluded medical errors to be the cause of approximately 44,000 to 100,000 American deaths each year (Kohn, 2000). The high number of medical errors revealed in the study indicates a need for innovation through the development of new care protocols that relate to patient safety. Nurse leaders (including middle managers) require the 19 competencies related to innovation to effectively lead transformative efforts which might address these errors (Waxman, Roussel, Herrin-Griffith, & D'Alfonso, 2017).

Uniquely situated within the hospital hierarchy, nurse leaders may lack the skills to support, guide, and promote the engagement of employees in innovation efforts. Whaley and Gillis (2018) described the poor selection process of middle managers in hospitals as a contributor to the placement of ill-prepared nursing leaders. New nurse managers (NM) might have demonstrated excellent skills in their roles as a staff nurse. Excellent performance in patient care may not correlate to a successful transition into a management role. Research indicates that nursing leaders might not have the education and skills to support their efforts as

an effective leader (Pillay & Morris, 2016; Whaley & Gillis, 2018). A lack of skills could create a problem for the success of a NM, and, by extension, a failure point for innovation. NMs may be uniquely situated in the general acute care hospital to exert broad influence over innovation; a lack of skills and training might hamper recognition of opportunities for innovation efforts.

This study explores the necessary competencies for the role of NM so that readers might better understand the strategies NMs identify as needed to influence the adoption of innovation among staff nurses. The findings of this study may assist readers in the development of ongoing effective training and development programs. White et al. (2016) observed a lack of collaboration between academia and practitioner. This study is timely for two significant reasons. First, the Congress of the U.S. has not effectively addressed the issues of cost, access, and quality in healthcare. Congressional legislative efforts have had little positive effect on value or the expansion of access to healthcare.

Second, an increase in turnover among experienced nurse leaders, associated with the aging population of NMs, creates an immediate need for nurses with academic and experiential preparation in leadership and innovation. Keys (2014) discussed a gap in the rate of the retirement of experienced nurse leaders and those qualified and willing to fill vacated positions. Given the rigors of the job, qualified candidates have shown a decreased interest in pursuing the nurse leader role (Keys, 2014). A lack of interest in leading can negatively affect a hospital's ability to innovate. To bring attention to the competency gap of nurse leaders, this study included a thorough literature review and status of studies in the field. The literature review will explore the presence and depth of four attributes: emotional intelligence, innovation, influence, and culture.

Statement of The Problem

The significant increase in population and longevity of people over 65 years of age are the largest contributors to the national debt followed by the annual expenditures on healthcare (Peter G Peterson Foundation, 2019). Kamal and Cox (2017) reported the sizeable portion of this debt to be associated with hospitals. Arroliga, Huber, Myers, Dieckert, and Wesson (2013) emphasized that despite such a substantial investment in healthcare, the U.S. continues to rank lower in access and quality than other developed and industrialized nations. Efforts to change this ranking continue to have had little effect on improving cost, quality, and access to care.

Hospitals operate in environments of increasingly rapid change and require leaders that are prepared to drive and sustain change (Al-Hussami, Hamad, Darawad, & Maharmeh, 2017). Aslani, Zolfagharzadeh, and Naaranoja (2015) identified innovation as a competency which is necessary to address the areas of cost, quality, and access to healthcare. Further, the authors emphasized the need for organizational climates which are encouraging toward creativity and the development of new methods. Hospitals may have significant effect on the areas of cost, quality, and access if leaders are adequately prepared to take advantage of environments which support innovation. Nurse leaders occupy a centric position within a hospital's leadership hierarchy and could be positioned to have significant influence over innovation (White, Pillay, & Huang, 2016).

Hospital leaders need clarity around the NMs' ability and readiness to influence the process of innovation. Pillay and Morris (2016) identified 19 competencies which healthcare leaders need to be effective in leading the innovation process. White et al. (2016) concluded that nurses occupy a position of influence regarding innovation and then identified a significant gap in the understanding which nurses have of these competencies. Hospitals may benefit from

identifying strategies which nurse leaders need to influence innovation until such time as these skills adequately become a standard curriculum in academic programs. There is insufficient information available in the literature about strategies that NMs need to influence the process of innovation adoption.

Purpose of the Study

The purpose of this study was to determine the strategies nurse leaders need to direct a hospital's innovative process. The NM who is competent in the areas of emotional intelligence, innovation, and organizational culture may be better able to influence the innovative process in the complex cultures associated with general acute care hospitals. Edmondson et al. (2017) suggested NMs require a strong and vibrant peer community in which to share experiences. A deeper understanding of how nurses train and develop skills for their leadership role may guide academia, senior healthcare leaders, and human resource professionals in the education, development, and support of active NMs.

Research Question

I focused on perceptions of nurse leaders and staff nurses regarding the adoption of innovation in critical care. I sought to address the question: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses?

Rationale, Relevance, and Significance of the Study

The relevance of this study is based on the intense and increasing public discourse regarding the shortfalls of the health care system in the U.S. The political, business, and academic sectors have not reached conclusive, concrete, or collaborative solutions to the significant issues confronting the health system as a whole or in part. As reported by Kamal and Cox (2017), the hospital sector accounts for 32% of total annual health care expenditures in the

U.S. Nurses and nurse leaders comprise a significant part of the human resource assets of a hospital. If these groups are not prepared well, they may be ineffective in leading innovation efforts.

Ill-equipped nurse leaders may be unable to deal with innovation. Academia does not have a proper and sufficient curriculum to prepare nurse leaders in the area of innovation (Pillay & Morris, 2016). Academicians might take some time to determine the most effective epistemic approaches in the area of innovation. The situation is further exacerbated by the lack of qualified nurse academicians and administrators (Branden & Sharts-Hopko, 2017). The findings of my study could provide a better understanding of the strategies NMs may use to influence innovation, long before the academic and epistemic issues are resolved. An understanding of these strategies may help in the areas of epistemic theory and the preparation of leaders as relates to the proliferation of innovation in hospitals.

The disruption of current and longstanding practices by innovation in general acute care hospitals may support prolific improvements in cost, access, and quality. The findings of this study might help prepare nurse leaders in their abilities to influence this innovation. Academia has neglected the preparation of leaders in innovation (White et al., 2016). In a study using semistructured interviews, Whaley and Gillis (2018) concluded that leadership development programs in healthcare organizations designed to address the abilities of middle managers focused only on business skills. Innovation skills were not addressed in the programs studied. Whaley and Gillis (2018) identified the importance of leadership development programs that were specific in nature, collaborative, and structured to include tangential development of employees.

Leadership roles in nursing are changing rapidly: skills and experiences essential to past practices have changed. Leaders now require an understanding of explicit skills to deal with innovation which disrupts the current paradigms of leading (Crawford, Omery, & Spicer, 2017). A lack of recognition regarding the skill changes required is evident in the literature. Thune and Mina (2016) commented on the lack of appreciation for the contribution which hospitals are capable of providing when the organization's role in medical innovation is considered. The preparation of leaders to influence disruptive innovation is critical to addressing cost, access, and quality in a prompt and effective manner (Pillay & Morris, 2016).

Definition of Terms

The following terms will appear throughout this study. They are defined here to provide clarity, context, and consistency for use in the research.

Acute care hospital: An acute care hospital is a healthcare facility which provides services including emergency medicine, trauma care, pre-hospital emergency care, acute care surgery, critical care to patients with serious medical conditions (Hirshon et al., 2013).

Adoption of innovation: A point at which an individual decides to embrace an innovation and use it absolutely (Rogers, 2003).

Community needs health assessment: An assessment of the health needs of a community served by a hospital classified as a 501(c)(3) organization. The Internal Revenue Service requires a 501(c)(3) organization to assess community health needs assessment every three years. The organization must implement a strategy to meet the identified needs (Internal Revenue Service, n.d.).

Critical care unit: A critical care unit is any area of a hospital where patients with life-threatening conditions receive care. Nurses and physicians typically treat patients experiencing complications (MedlinePlus, 2015).

Culture: A complex concept that reflects the learned and shared values and beliefs, of an organization. Culture encompasses assumptions, beliefs, knowledge, norms, and values, as well as attitudes, behavior, dress, and language (businessdictionary.com).

Diffusion of innovations (DOI): A theory developed by Rogers (2003) in 1962 is one of the oldest theories associated with social science. The diffusion of innovations theory began in communication to explain how, over time, an idea or product gains momentum and spreads through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product (LaMorte, 2018).

Emotional intelligence: The subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions (Salovey & Meyer, 1990).

Influencing strategy: A method or plan developed and used to bring about a desired future: achievement of a goal or desired solution to a problem (businessdictionary.com).

Innovation: Ideas, material things, and methods which are perceived as new or create new uses (Lavoie-Tremblay et al., 2017; Rogers, 2003). For the purposes of this study innovation may include new software, information technology, patient care equipment, and care procedures. In critical care, innovations might relate to new medication and care protocols or practice alerts with care guidelines (Bourgault et al., 2014).

Magnet status: A designation awarded by the American Nurses Credentialing Center to hospitals which meet specific standards regarding, work environment, innovations in nursing

practice, nursing excellence, and quality patient outcomes. The credential is the highest awarded for nursing practice available worldwide (<https://www.nursingworld.org/ancc>).

Nurse manager (NM): A registered nurse (RN) who fills a management or leadership role in a patient care area. This term includes titles such as Nursing Director, Unit Manager, Director of Nursing, and Chief Nursing Officer (Nurse.com OnCourse Learning, 2017).

Process improvement: A methodical, step-by-step approach to improving a process or system by identification of performance gaps and closing these gaps to improve quality, decrease variation, and increase efficiency (businessdictionary.com).

Staff nurse: A staff nurse is an RN who provides direct patient care in a critical care setting of an acute care hospital.

Assumptions, Delimitations, and Limitations

I assumed leaders and their subordinates will respond in-depth and honestly. Healthcare is troubled by an inability to decrease costs, improve quality, and enhance access (Chaimongkonrojna & Steane, 2015; Kamal & Cox, 2017). Innovation may be necessary to create significant momentum for the change necessary to improve in the areas of cost, quality, access. Pillay and Morris (2016) emphasized that healthcare leaders do not have the requisite skills to promote innovation and academic programs do not teach these skills (Pillay & Morris; White et al., 2016). I imagine that the findings of my study might be interesting to those nurse managers and leaders who are tasked with creating improvement in difficult circumstances.

Innovation may be considered an art as opposed to a process. In the absence of industry standards or prescriptive pathways to innovation available to hospital leaders some examples of innovation efforts might be useful. Well-known examples of innovative organizations could influence study participants. Woordiul Spine Hospital (South Korea), Leeds Cancer Centre

(West Yorkshire England), and Johns Hopkins Hospital (Baltimore, Maryland, USA) are internationally recognized as innovative organizations (Oza, 2015). Some hospital organizations have created internal entities for the sole purpose of formalizing innovation efforts (“25 Innovation Centers,” 2015). These organizations might not provide models in which participants associated with a smaller, regional organization can relate. Attempts at contextual comparisons could alter a participant’s responses.

A delimitation of this study arises from my decision to limit the research to the single phenomenon of innovation. Findings from my study may not be generalizable beyond the immediate study population. My decision to limit participants to nurse leader and staff nurse participants might make it easier for end-users to transfer the findings to a similar setting.

A limitation may occur if study participants believe that information shared within a personal interview might not remain confidential. If a participant feels their answers will be judged unfavorably by the interviewer, the participant may be less cooperative. Hospitals are organizations that hold confidentiality in high regard and import. This researcher understands a level of trust must be present at all times during the interview and research process which creates a comfortable and trustworthy environment for the participant. Participants may confuse innovation with process improvement efforts. I recognize innovation and process improvement are not mutually exclusive and will prepare questions to elicit information associated with innovation as opposed to process improvement.

Participants may be reluctant to share anything which the participant might deem to be critical of their organization, leaders, or coworkers. Further, coworkers could withhold information they feel make them look inadequate or unskilled at their job. Organizational and team norms could differ from one work unit to another and from leader to leader. I understand

that my experience as a hospital chief executive and operating officer, when known to participants, may color their responses. Participants may attempt to impress the interviewer with the knowledge or be unwilling to share information when they are aware of his background. Smith (2018) explained that qualitative research may be generalized when the reader of the study is a part of the decision to generalize a study's findings.

Chapter 1 Summary

The U.S. health care industry accounts for a substantial portion of the gross national product. The health of a population is vital to a well-functioning society; efforts to understand and improve the delivery system are of significant consequence to researchers, academicians, healthcare practitioners, and patients alike. In the following chapters, I will provide context through a conceptual framework which binds the study based on the common issues of cost, access, and quality faced by hospitals and hospital leaders. A review of the extant literature will allow discovery of areas related to leadership preparation, culture, the ability to influence, and competencies required for healthcare leaders. The competencies of nurse leaders in general acute care hospitals are of specific interest.

The conceptual framework will inform the study design. A thorough review of the literature will assist in the design of the research question and the identification of gaps which require additional inquiry to produce a more in-depth understanding. The following chapters will explain the need for deeper knowledge in the area of critical care. The literature directed me in the determination of a study population through the identification of studies which characterize populations and provide context for the method of sample selection. The sampling method drove the choice of instrumentation and data analysis methods. Although case study design may create bias in the study, I will inform the reader of steps taken in the study designed

to recognize and avoid bias in each phase of the research. The efforts summarized in this chapter provide the foundation for a free and unbiased review of the literature.

Chapter 2: Literature Review

Introduction to the Literature Review

I explored the literature to determine what knowledge existed regarding the research question. I used the Concordia University library resources, as well as Google Scholar to locate literature from the CINHALL, ProQuest, EBSCOhost, and Wiley databases. Retrievals include books, and peer-reviewed and non-peer-reviewed literature in the areas of innovation, NMs, influence, culture, collaboration, EI, and TL.

I performed a general exploration using various sources to discover literature related to the research problem. This search was continual throughout the research process and included literature related to NMs, innovation, methodology, and case design. All literature searches were performed through the online Concordia University library search function and Google Scholar to locate peer-reviewed and non-peer-reviewed literature. The following data bases were accessed during the search: ProQuest Central, ProQuest ERIC, ProQuest Health Management, ProQuest Education, CINAHL, Wiley and Sons, Google Scholar, JSTOR, PubMed, Gale, Ovid Journals, Emerald Insight, Wolters Kluwer Health, and ScienceDirect.

In this study I used peer and non-peer-reviewed articles, seminal works, textbooks and books related to the adoption of innovation. The following key words were used during the searches: emotional intelligence, competencies, NM, development, change, and TL. This literature review serves to position this study in the body of literature which addresses nurse leader influence in innovation and identifies gaps in the literature. I examined 144 sources during the literature review, of which 130 (90%) were peer-reviewed, and 135 (94 %) were published between 2013 and 2019.

I used keywords in the search to locate pertinent information included in articles, seminal works, and journals. These keywords and key phrases included: NMs, emotional intelligence, innovation, NM and physician collaboration, leadership competencies, leadership skills, leadership styles, NM influence, educational preparation, leadership development, and decision-making, and nurse leaders.

A desire to develop a better understanding of the strategies NMs use to lead and influence the adaptation of innovation in large urban hospitals drives this case study. An exploration of the competencies required for transformation, particularly the acceptance of innovations, may help practitioners and academics in developing training and development programs which teach skills necessary for long-term NMs' success. Nurse leaders hold unique positions from which they influence change and quality (O'Luanaigh & Hughes, 2016).

Hospitals globally remain under intense pressure to reduce the cost of health care and increase the quality of care and patient outcomes. Hospitals are complex organizations and require effective methods to increase innovation and the acceptance of innovation. Academic approaches and curricula do not provide NMs opportunities to learn the necessary competencies for health innovation programs (Pillay & Morris, 2016). Further, White et al. (2016) concluded the gap in innovation competencies is compelling. In the absence of training in innovation competencies, NMs cannot lead with practical strategies for adoption. These competencies are not included in any level of academia nor do many professional organizations provide ongoing development opportunities.

NMs are notably situated in the middle of the hospital hierarchy and are an integral part of innovation (Thune & Mina, 2016). NMs interact with patients, caregivers, and physicians on a regular basis. The Thune and Mina (2016) study showed the importance of a patient's role in

innovation. Further, Thune and Mina expressed the patient's part is almost never studied. The importance of innovation to the NM and hospital being critical indicates the need for a cadre of business skills for NMs. Nurse leaders were found to be in a position of influence regarding change and the quality of care delivered (O'Luanaigh & Hughes, 2016). O'Luanaigh and Hughes noted the NM is the leader who provides the directive and creates a framework to support innovation.

The development of technology has lowered and continued to diminish barriers to innovation (Shapiro, 2016). As this trend continues, NMs need additional and continuous growth in business skills (Waxman et al., 2017). Tyczkowski et al. (2015) discovered the statistically strong relationship among emotional intelligence, leadership outcomes, and TL. Miners, Côté, and Lievens (2017) found that emotional intelligent behavior was instinctive.

Nurses often move from staff to managerial roles as NMs with little consideration given to their administrative abilities. Emotional Intelligence can be developed as shown in a study of nurses who participated in a 12-month leadership development program (Crowne et al., 2017). Crowne et al. (2017) conducted a study focusing on nurses in nursing home facilities and emphasized the study may provide implications for the development of emotional intelligence and leadership among NMs in acute care hospitals.

In 2005, the American Organization of Nurse Executives (AONE) developed a set of skills considered of importance to nursing leaders, hospitals, and academic institutions (Waxman et al., 2017). The AONE list of competencies is used globally and includes influencing behaviors, change management, thinking skills, labor relations, emotional intelligence and more (Waxman et al., 2017). Leadership, knowledge of healthcare, relationship building, professional development, and business skills were found to be professional development topics in a study

which concluded a regimen of assessment and development are essential to modern healthcare organizations (Leach & McFarland, 2014). Further, findings from the survey identified eight core competencies related to high performance included: stewardship, interpersonal effectiveness, systems thinking, technical skills, creative thinking, adaptability, customer service, and personal mastery. The competencies largely mirror those identified by the AONE and used in the Veterans Health Administration (VHA; Leach & McFarland, 2014).

Other literature indicated competencies such as creativity, innovation, and business thinking are vital competencies which are learnable outside the academic setting through exercises which provide new experiences and observational opportunities to the student (Pillay & Morris, 2016). Thune and Mina (2016) performed their study of hospitals and innovation with interest in innovative environments in universities, research hospitals, and academic medical centers. Key to their findings is the idea that tasks carried out by one team member must follow a contribution of another team member.

More specific to innovation in the delivery of healthcare, one study found deficiencies in 18 of 19 competencies which researchers consider to be essential to the success of innovation implementation and maintenance (White et al., 2016). These gaps were found to exist among nurse leaders and academic leaders. As healthcare continues to change rapidly, effective leadership from NMs may have a substantial on an organization's ability to innovate (Al-Hussami et al., 2017). One style of leadership linked closely to emotional intelligence and change is TL. A phenomenological study of emergency services systems leaders in Canada (using the Wu-Shi-Ren (WSR)-Li paradigm) identified leadership challenges and 12 key competencies. Those competencies included relationships, diffusion of knowledge, collaboration, change management, and skills for transformational leaders (Caro, 2016).

Tyczkowski et al. (2015) found that EI and TL were positively related to leadership outcomes. Some variables of EI have been shown to be a predictor of TL as rated by a leader's followers (Foster & Roche, 2014). An ability to recognize the emotions of oneself and others in the workplace is key to the relationships required for TL to be effective (Herpetz, Schutz, & Nezlek, 2016). Goleman (1995) found self-awareness, self-regulation, self-motivation, social awareness, and social skills to be elemental variables of EI.

Innovation may be actively encouraged as a path to improve outcomes. Weng, Huang, Chen, and Chang (2015) noted that organizational climate was affected by the use of TL and innovation. Al-Hussami et al. (2017) emphasized findings which showed that leaders using TL were able to overcome the pace of change and the complex nature of a healthcare entity. Ross et al. (2014) described TL as a social influence with wide applicability in nursing. There might be an applicability of TL, as it relates to innovation, in addressing cost, quality, and access to healthcare.

The healthcare system in the U.S. is one of the most expensive in the world. The Center for Disease Control (CDC) reported total 2015 annual expenditures for health care in the U.S. at \$3.2 Trillion or 17.8% of the Gross Domestic Product (GDP; Center for Disease Control and Prevention Website, 2016). Studies have shown the U.S. healthcare system does not produce outcomes that are superior in quality to health systems in other countries (Avakame et al., 2017). According to Arroliga et al. (2014), the U.S. health care system had less access and poorer quality than other developed countries. Cost reduction efforts and process improvements have slowed even as the pressure for change in access, cost reduction, and quality of care continue to increase (White et al., 2016).

Exploration and the identification of new methods to address cost, access, and quality are crucial if the U.S. health care system is to survive. Health care providers struggle to create new effective programs, processes and practices. New ideas may be difficult to share if a culture does not support communication. Avakame et al. (2017) noted the importance of communication across the continuum of the health system. The dissemination of new products and technology has been successfully carried out through physicians, pharmaceutical and technology companies (Blume, 2013; Thune & Mina, 2016). On whole, the system is fragmented in ways which do not encourage widespread sharing of new knowledge except in the area of technological innovation. Thune and Mina (2016) described a significant gap in the role which hospitals play in innovation. The study identified a significant lack of attention to a hospital's capacity to innovate in the area of medicine (Thune & Mina, 2016). Rogers (2003) described the importance of interaction among peers as it related to the adoption of innovations and identified the processes of peer interaction and networking as communication practices suited to knowledge sharing in organizations.

NMs provide a crucial link in the creation and diffusion of innovation within a healthcare system (Thune & Mina, 2016). The centric position occupied by the NM allows daily and frequent contact with all care providers, primarily physicians. Several studies found innovation efforts necessary to control costs and improve quality as cost cutting, and process improvement programs were not adequate (Al-Hussmani, Hamad, Darawad, & Mahaemeh, 2017; Fischer, 2016). A significant gap exists in the competencies (see Appendix G) related to business and innovation skills among practicing NMs and academic nurses (Mackoff et al., 2017; White et al., 2016). The NM's ability to influence the adoption of innovation is essential to a hospital's ability to significantly affect cost, quality, and access.

Effective leadership is crucial to success in nursing. NMs are critical leaders and active participants in the identification of improvements and innovations designed to improve quality, access, and cost of delivery (Al-Hussmani et al., 2017). Academic and developmental programs lack curriculum regarding the preparedness of nurses in leadership competencies and a high level of readiness to address change in healthcare organizations (Al-Hussmani et al., 2017; Mackoff et al., 2017; White et al., 2016). In the absence of business and emotional intelligence skills, innovations may be less likely to be diffused throughout an organization and will disappear or become ineffective over time.

Compagni, Mele, and Ravasi (2015) found that innovation in robotics surgery was driven in part by an openness to innovate and an emotional response (excitement) on the part of surgeons and managers alike. Nurse leaders with competencies in innovation may influence providers to accept an innovation early into their routine. Findings from the study by Pillay and Morris (2016) noted significant gaps in 18 of 19 competencies (see Appendix G). These gaps were identified nationally through a sample ($n = 357$) taken from practicing leaders in nursing and academia. Delmatoff and Lazarus (2014) commented that a health care system experiencing precipitous change required managers with a high level of self-awareness: to understand the needs of the people which they lead. The Association of Nurse Executives (AONE) researched and created a map for the development of nurse executives in five areas: communication and relationship building, organizational alignment and culture, leadership, professional practice environment, business skills, and relationship with self (Waxman et al., 2017). Aspects of this program mirror those competencies described in studies conducted by Pillay and Morris (2016) and White et al. (2016). According to Waxman et al. (2017) the AONE program is recognized worldwide as the competency standard for nursing leadership.

Conceptual Framework

An understanding of the characteristics which may influence the adoption of innovation is essential to develop a deeper understanding of how NMs might influence adoption in critical care. The diffusion of innovations (DOI) theory (Rogers, 2003) is one of the original theories used in the social sciences (LaMorte, 2018). Rogers (2003) developed DOI in 1962 emphasizing that the adoption of an innovation could be quick or may take years. The author acknowledged that some innovations have a rapid rate of adoption; others take years to reach full adoption and are never to be fully adopted. New ideas with observable advantages could be difficult to get adopted (Rogers, 2003).

Rogers (1976) explained that research on the diffusion of innovation was rooted in two schools of anthropology. The author described the concept that most innovation came to one society from another. Rogers (1976) described the classic model as the importance of communication which took place within a social system. The author later described a diffusion model which was built on five attributes.

The attributes associated with adoption of an innovation included the pace of adoption, perception that an innovation is better than what is replaced, consistency with current values, needs, and experiences, compatibility with culture and current practices, meeting needs, clarity or understandability of an innovation, the extent to which an innovation can be tried before it is adopted, and the visibility of the results of adoption (Rogers, 2003). Rogers (2003) emphasized the effects of individual or social system perceptions on an innovation regarding the decision taken (individual or organizational), the communication channels and norms within a social system, and the promotion of adoption as presented by an influencer (e.g., an early adopter). Rogers (2003) concluded that the combination and interaction of these variables determined a

high percentage of the rate of adoption. Universal terms were developed to describe the attributes that affect the rate of adoption of an innovation (Rogers, 2003).

There are other aspects of innovations which may affect the rapidity of diffusion (Rogers, 2003). The author noted that a rapid drop in the price point of an innovation may increase the rate at which the innovation is adopted. Secondly, the author suggested that the rate of adoption can be associated with various units of analysis: individuals, organizations, communities, or some other interconnected group that shares similarities. Rogers (2003) noted that other attributes may be taken into consideration which may have importance in a specific context for a unique set of individuals. To understand the rate of adoption of an innovation, the perceptions of those who might adopt the innovation must be taken into consideration (Rogers, 2003).

The DOI theory provides the conceptual framework for this study. In 1962 Rogers introduced DOI as a model that emphasizes diffusion as a social process involving interpersonal communications (Rogers, 2003). Rogers (2003) noted diffusion as a specific type of communication in which the meaning involves the exchange of a new idea: typically involving two or more individuals with similar backgrounds. Lee (2004) used Rogers' (2003) DOI model in a qualitative study to explore nurses' perceptions of care plans made available by computer. The author concluded that DOI properly described how nurses' perceived the adoption of the new method.

Background of the Problem

Staff nurses may be chosen for leadership positions based primarily on clinical skills which they exhibited as a floor nurse. NMs selected in this manner might not have an education which includes the managerial skills required in complex organizations (Branden & Sharts-Hopko, 2017). The AONE identified five groups of competencies for nursing

leaders (“AONE nurse executive,” 2005; Waxman et al., 2017). The competency areas are communication, relationship building, organizational alignment, culture, leadership, professional practice environment, business skills, and relationship with self (Waxman et al., 2017). Waxman et al. (2017) suggested that academic institutions have incorporated these competencies at the masters and doctoral levels. The skills included in these curricula could be absent at the bachelor’s degree level and do not specifically address innovation as a competency.

Innovation is essential to the long-term survival of the urban acute care hospital. Rapid change and uncertainty create challenges for nurse leaders in their ability to influence and shape improvements in areas such as productivity and performance. Nurse leaders hold positions from which they can positively affect quality, given mastery of the appropriate skills (O’Lunaigh & Hughes, 2016). NM job descriptions may require a bachelor or master’s degree in nursing. White et al. (2016) discovered that many academic curricula fail to include business and managerial skills necessary to support the innovation. The adoption and diffusion of ideas which are innovative was determined to be challenging in nursing (Rogers, 2003).

The Context of the Problem

NMs provide an essential link in the diffusion of innovation. Continuing the current pace of process improvement and cost-cutting activities is inadequate to sustain healthcare delivery organizations (White et al., 2016). NMs must have the competencies necessary to influence and guide the acceptance of innovations among all caregivers. NMs are essential in recognizing and rewarding innovation and can encourage others to take creative risks (White et al., 2016). Al-Hussmani et al. (2017) found NMs who exhibited more leadership competencies had a more perceived readiness for change. Further, this connection was identified to have a positive influence on the retention of staff: 13% of staff staying on was explained by the NM’s leadership

style (Al-Hussmani et al., 2017). There is general agreement on the competencies NMs should have (Davis, Stremikis, Squires, & Schoen, 2014; Waxman et al., 2017). Experience and dedication of people to the innovation process are essential to a collaborative effort (Thune & Mina, 2016). Spano-Szekely, Quinn, Clavelle, and Fitzpatrick (2016) noted most NM leadership competencies are developed, unreliable, through training, coaching, and mentoring. Further, the study identified TL as a style that creates a larger commitment from subordinates. Emotional intelligence (EI) was identified as a characteristic which NM need to develop TL methods (Spano et al., 2016).

Complicating factors related to providing these resources include the rate of retirement of experienced nurse leaders in academia and practice (Branden & Sharts-Hopko, 2017). Studies have shown the effects of generational differences among those who desire and will consider a NM position (Branden & Sharts-Hopko, 2017; Kelly, 2017). Branden and Sharts-Hopko (2017) addressed a need for new and experienced academic faculty. An increase in retirements of baby boomers and a corresponding decrease in those who desire a leadership role brought an insufficiency of qualified and educated NMs (Braden & Sharts-Hopko, 2017). In their Canadian study, the authors identified the need for an additional 67,000 NMs globally. Asamani, Naab, and Ofei (2016) found the need to study the role of NMs given this shortage identified by Braden and Sharts-Hopko (2017).

The patient care team in a hospital consists of three primary participants: physician, NM, and nurse. Collaboration is essential to creating change in healthcare organizations (Marsiello & Cristelli, 2014). These collaborative relationships are essential to improve access and cost reduction efforts (Hess, Barss, & Stoiller, 2014). Fischer (2016) associated high performance of teams with TL.

The Significance of the Study

The public, patients and governments expect hospitals to reduce costs and improve quality of care even as the cost of healthcare increases steadily. Hospitals have operating margins in proximity to zero and inadequate resources (Marsiello & Castelli, 2014). Hospital leaders have found savings to the extent possible under historical conditions and delivery models (Hess et al., 2014). Leadership efforts in cost savings have plateaued and hold close to the status quo. Health care corporations struggle to further reduce costs and increase quality on an ongoing basis. Further progress might be limited if change does not occur at a rate which outpaces ongoing cost increases. It is imperative hospitals become innovative to survive (Marsiello & Cristelli, 2014; White et al., 2016). The issues of limited resources and the rate of implementing new technology exacerbated the problem (Marsiello & Castelli, 2014). While some leaders have received education and training in the innovation processes, most NMs (middle managers) have not had an opportunity to learn how to support change.

NMs are uniquely situated within a hospital hierarchy to lead employees and physicians in innovative organizational efforts (Leach & McFarland, 2014; Marsiello & Castelli, 2014). Unfortunately, many who seek the NM role are selected for their success as a clinician and have no training (structured or informal) in business or innovation skills (Whaley & Gillis, 2018). Innovation skills are absent in many academic programs (Mackoff et al., 2107; Meissner & Radford, 2015). Collaboration is critical to innovation. Collaborative efforts must be understood and championed at all levels of an organization to make changes effective and sustainable (Rose, Adams, & Johnson, 2016). This identified gap in leadership skills may create a failure point and barrier to innovation, as well as an obstacle to the NM's success.

One specific challenge for NMs is different expectations of staff and physicians (Claussen et al., 2017). Studying the competencies required for the role of the NM in innovation helps determine those skills which affect the leadership success of NMs; so, readers might create more effective training and development opportunities for nurses taking on the role of leader. In a study of middle managers, Meissner and Radford (2015) concluded middle managers did not perform well in the areas of self-awareness (a competency closely associated with EI) and change management (a competency associated with innovation).

This scholarly task is well worth the effort for several reasons. First, Congressional efforts may prove ineffective in expanding and funding access to healthcare. Second, turnover in the NM role is rapidly increasing as nurses age and retire (Branden & Sharts-Hopko, 2017). The authors emphasized an imminent shortage of NMs at 67,000 and a lack of knowledge around succession planning (Branden & Sharts-Hopko, 2017). Given the difficulty of the leadership position, qualified candidates from younger generations (i.e., millennials) are uninterested in pursuing the role. The organization of this study shall include a thorough review of the existing literature, a conceptual framework, methodologies, limitations, and trade-offs.

Review of the Research Literature and Methodological Literature

A review of the extant literature regarding innovation and nurse leaders showed articles and studies which address various aspects of the research question. According to my research, there are no studies regarding the strategies that nurse leaders might use to influence innovation. The literature includes research studies and articles from around the globe; these geographically dispersed studies looked at similar questions and provided similar, though different, lenses from which to view the research question. Because some countries have fewer resources or tend to use them differently (e.g., public health systems), the literature provides an exciting array of

information to consider. Research addressing the competencies of NMs include the categories of culture, emotional intelligence, epistemology, skills, and leadership styles.

Culture

Hospitals use a command-and-control structure in their organizations, reminiscent of industrial age organizational charts. Nurse leaders must be competent in using a shared leader style to support teams made up of varying professionals (Crawford et al., 2017). Hospitals are complex organizations made up of various and conflicting constituencies: business, patient, nurse, physician, and support staff. Nurse and physician collaborators have different objectives as they each look to address the agendas of their professions (Claussen et al., 2017). Quality outcomes can be adversely affected when organizational structures or constituency plans interfere with a nursing practice (Fischer, 2016).

The hospital culture is one of conflict at all levels of the organization. Tyczkowski et al. (2015) found a small number of nurses interested in a leadership role noting the absence of support and associated high stress weighed heavily into the decision not to pursue a leadership role. This issue negatively affects culture as studies have shown a significant shortage of NMs (Asamani et al., 2016; Branden & Sharts-Hopko, 2017).

Executives and physicians are not always in agreement when developing strategies: NMs may find themselves between two opposing forces which results in high job-related stress (Karimi, Leggat, Donohue, Farrell, & Couper, 2013). NMs are not taught the skills to deal with conflict in the workplace efficiently as concluded in a study of new managers (Edmonson, McGough, Phillips, Blaine, & Mackoff, 2017). This lack of training in conflict resolution may create a vulnerability in leadership for NMs.

A command-and-control structure places the NM in a position of dealing with conflict on a regular basis. Waxman et al. (2017) found competencies for nurse leaders may not be entirely generalizable throughout a system and suggested local adjustments. A hierarchical culture might be detrimental as effective leadership in the NM role was shown to have a positive effect on the areas of patient outcomes, patient safety, as well as, nurse recruitment and retention (Cope & Murray, 2017). A study conducted in Taiwan concluded a culture which supported patient safety and innovation were found useful in mitigating any misunderstandings in the relationship between TL and innovative behavior (Weng et al., 2015). Moore, Banks, and Neely (2014) supported with study findings the theory that organizational climate has a significant impact on innovation and action, and NMs' skills in writing and presenting a business case. Although the literature provided examples of a clinical nurse leader's (CNL) ability to produce positive effects on cost and quality, hospitals leaders were found to lack an understanding of the CNL's value (Moore et al., 2014). Weng et al. (2015) found an organization's climate had profound effects on a nurse leader's ability to lead and impact others behavior toward innovation.

Emotional Intelligence

The literature provided a range of written material about the importance of emotional intelligence (EI) as it relates to nursing manager competencies and innovation (White et al., 2016). NMs are shown to possess the ability to become a driver or hindrance to transformation, creativity, and innovation: whether a NM becomes a hindrance depends on the NM's readiness for change (Al-Hussmani et al., 2017). The centric position of the NM is of particular interest as hospitals must be innovative to survive in a continually changing environment of scarce resources, reimbursement constraints, and higher expectations for quality. Goleman (1995)

emphasized skills in self-awareness, self-regulation, self-motivation, social awareness, and social interactions to be essential elements of EI.

The ability to of a NM to promote resilience is critical to the emotional stability of staff in the workplace (Cline, 2015). The NM's individual resilience may contribute to success and endurance in a stressful environment. Delmatoff and Lazarus (2014) explained that the leaders responsible for creating organizational change might not have the skills to understand the resistance to change which existed among staff. Delmatoff and Lazarus (2014) argued the importance of developing a leadership style grounded in EI to address the significant challenges which healthcare organizations encountered. Cope and Murray (2017) emphasized that TL is the standard against which we measure all leadership styles. Further, the authors posit the TL style and associated attributes of EI were essential to nursing leadership because of the effects created on patient outcomes.

Transformational Leadership

Transformational leadership includes attributes of EI: self-awareness, self-management, social awareness, and social skills (Pillay & Morris, 2016). New NMs are often chosen from the staff ranks. Nurses transitioning to the NM role did not receive adequate preparation for management or leadership as shown in several studies. White et al. (2016) identified several barriers to the NM's ability to be innovative and concluded there were significant gaps in the competencies NMs require to support innovation. Lack of development leaves the NM at a disadvantage of being successful. At the epicenter of conflict in the hospital is the NM: the one individual who deals with executives, physicians, staff, patients, and family agendas on a daily basis. Individuals unable to manage their own emotions or recognize emotions in others are not likely to achieve collaborative relationships with others (Salovey & Meyer, 1990). Serrat (2017)

noted some of the constructs of EI to be self-awareness, the ability to recognize and deal with emotions in self and others, self-motivation, social awareness, and social skills. Based on Goleman's (1995) seminal work on EI, Serrat (2017) includes innovativeness as an EI construct. Fischer (2014) emphasized the importance of TL in the ability of a NM to create teamwork which effectively addressed quality.

Hospitals remain under unyielding pressure, public and governmental, to create change in the areas of cost, quality, and access (Fischer, 2014). Foster and Roche (2014) found clear connections between EI and TL which predict transformational leadership ability. The authors concluded that EI contributed to the perception of an individual's ability to transformational as a leader Foster & Roche, 2014). In a study of Chinese NM's, (Meissner & Radford (2015) concluded that managerial skills were more important than clinical skills when considering the daily responsibilities of a NM. To transform the work environment into one which supports innovation, educating current and future NM's is essential if these leaders are to influence the adoption of innovation.

Education

The clinical education remains dominant in academic nursing programs (Meissner & Radford, 2015). Health industry chief executives are not pleased with epistemology in innovation for healthcare administrators, and many academics agree (Herzlinger et al., 2014). Competencies for NMs are essential to leadership as identified in the literature ("AONE" nurse executive, 2005; Kelly, 2017; Luo, Shen, Lou, He, & Sun, 2016; Waxman et al., 2017). There may be scant agreement on pedagogical theory related to teaching these competencies.

Evidence of support for the use of case study and immersion-based approaches was evident in several studies (Fischer, 2016; Moore et al., 2014; Pillay & Morris, 2016; White et al., 2016). Competencies in innovation and EI may be absent in the Associate Degree in Nursing (ADN), Bachelor of Science in Nursing (BSN), or Master of Science in Nursing (MSN) curriculum. Pillay and Morris (2016) concluded that current didactic approaches to nurse leader education did not include instruction in the skills necessary for innovation. Case study and immersion might become widely adopted; a few healthcare administrations and nursing doctoral curricula include such methods. The successful diffusion of innovation requires the teaching of competencies in creativity, innovation, and the ability to think entrepreneurially (Pillay & Morris, 2016).

Competency

Researchers have reached agreement: NMs lack the competencies necessary to become the transformational leaders who support innovation (Pillay & Morris, 2016). Academics and practitioners agree there are competency gaps in university programs and teaching of these skills is rare (White et al., 2016). Experience being relevant to management and innovation, it stands to reason that staff retention is also essential. Documentation exists regarding the effect NMs have on nurse retention, productivity, and the hospital environment in general (Keys, 2014). Zydziunaite and Suominen (2014) conducted a study of 278 NMs, which included NMs associated with university affiliated hospitals. The authors found associations between transformational leadership and authority while other leadership styles were more closely related to improving competencies.

Further, consideration of encouraging and training the next generation of NMs has received little attention. Keys (2014) noted the scarcity of research regarding Generation X.

Individuals born between 1946 and 1964 value things which current NM roles do not provide: a flexible schedule, a consistent absence of micromanagement, and smooth operations on a continual basis (Keys, 2104). Hess et al. (2014) summarized a study conducted at The Cleveland Clinic which found a need to create a surplus of physicians who had the same competencies which NMs require.

The inclusion of NM competencies in university programs, in-house training and development, and programs developed by the American Organization of Nurse Executives (AONE) has been insufficient to close identified gaps. Recognition and development of orientation programs for nurses moving into NM roles are crucial to NM and ultimately, hospital success through innovation. Efforts to provide programs which create smooth transitions are more likely to ensure success by identifying and strengthening necessary competencies (Hsu, Lee, Fu, & Tang, 2010).

In summary, a review of literature associated with the study of NM success through competency training is vital to the future of the Nursing Profession, the longevity and quality level of hospitals, and nurse-physician leaders' collaboration (Hess et al., 2014). Preparing future nurse leaders consistently and efficiently to deal with innovation is a crucial task only now being addressed by academia. As more NMs retire, newly qualified NMs must take over and prepare for success. Studying the competencies required of NMs and determining those most essential to the role of supporting innovation is vital for closing this gap in the education of NMs.

Review of Methodological Issues

The selection of methodology for a study is critical to an understanding of the aspects related to research, limitations, and a study's generalizability. Qualitative methods appear most prevalent in the literature. Two studies used a phenomenological design and qualitative

methodology to study the decision-making and communication experiences of NMs (Caro, 2016; Malabi, 2015). Phenomenological design and qualitative method allow for the use of data gathering instruments which can capture the thoughts and experiences of the participants (Malabi, 2015). Quantitative methods, though supportive, are not ideal for the study of views and experiences among study subjects. In his phenomenological review of emergency services leaders in Japan, Caro (2016), used a qualitative design, grounded theory, and triangulation to corroborate findings and ensure the validity of the model.

Quantitative methods have been used to evaluate leadership development programs post-intervention (Edmonson et al., 2017). Leadership has been shown to be an essential determinant of job satisfaction among nurses. In turn, job satisfaction is shown to affect staff retention and care quality (Asamani et al., 2016). In a quantitative study of how NM leadership styles changed turnover of nurses, it was determined 29 % of the variance in job satisfaction was attributable to leadership style (Asamani et al., 2016). A mixed-method study found patient outcomes improved while costs decreased (Chaimongkonrojna & Steane, 2015). Chaimongkonrojna and Steane (2015) used a mixed-method study in Thailand and a specific population. Further, the authors noted that the small sample size might make the results inapplicable in other cultures.

Qualitative approaches measure the insight and perspectives of specific populations (Keys, 2014). Chaimongkonrojna and Steane (2015) employed quantitative data collection with the Multifactor Leadership Questionnaire (MLQ 5X Short) and individual semistructured interviews in their effort to understand the effects of Full Range Leadership Programs. This study, conducted in Thailand, is limited in generalizability, cultural, and environment aspects by its small sample size (Chaimongkonrojna & Steane, 2015). In a phenomenological designed quantitative study undertaken to determine the effects of NMs sharing experiences, it was found

NMs felt insulated from other managers (Edmonson et al., 2017). Edmonson et al. (2017) used an instrument with eight questions to collect perceptions: clear communication, staff conflict, difficult people, conflict with superiors, higher expectations with lower costs, improvement in metrics, and one open-ended question. One significant finding indicated support of NMs by the sharing of their experiences with each other (Edmonson et al., 2017). This study of the NM role is weak in that it offers conclusions not readily supported by interview or other qualitative measures. Edmonson et al. (2017) provide only percentages in the way of quantitative measures.

Several studies linked the importance of relationship building, EI, and TL: these aspects include one's ability to recognize emotions in others. The follower trait, associated with EI, was found to have the ability to predict TL ratings of supervisors (Foster & Roche, 2014). A 2016 research study evaluated a training program designed to enhance a manager's ability to perceive emotions: learning was found to exist after six months (Herpetz, et al., 2016). Recognizing emotions is seen to be a vital competency of NMs, especially in the practice of TL (Tyczkowski et al., 2015). In his seminal work on EI, Goleman (1995) expressed the management of emotions (self and others) as being a constant task.

Some considerations are necessary for methodological selection as no method is perfect. A study was undertaken to understand perceptions of nurses about leadership styles used by their managers and included Multi-Factor Leadership Questionnaires (MLQ) and focus groups (Morsiani, Bagnasco, & Sasso, 2017). The authors explained that the links between leadership styles and job satisfaction were understood. The authors emphasized that few studies exist which explored the effects of these attributes on the study participant's job satisfaction.

Researchers consider the strengths and weaknesses inherent in each methodological approach when choosing a methodology for a study. Quantitative methods cannot describe an

experience. A qualitative approach allows a researcher to understand detailed descriptions of how someone interprets (through a particular lens) the world they inhabit and how that world is experienced (Asamani et al., 2016; Morsiani et al., 2017). The ability to understand how one experiences their world is useful in understanding the phenomena of NM competencies.

Sample size and geographical issues also limit studies (Asamani et al., 2016; Kodama, Fukahori, Sato, & Nishida, 2016; Natan & Noy, 2016). These three studies drew samples from different cultures yet came to similar conclusions. Asamani et al. (2016) concluded leadership styles affect job satisfaction. One original study to determine a link between NM leadership styles and nurse commitment suffered from the limitations of a convenience sample taken from similar sized hospitals (Kodama et al., 2016). The study repeated in the U.S. could provide practical implications for hospitals in the 50 states.

Design Feasibility in the Literature

The design of a study can affect study outcomes, applications, and limitations. Researchers should develop strategies with care and regard to a researcher's understanding of the research question and how the research is to be conducted (Keys, 2014). The use of a multi-round Delphi Technique was used in one study to identify competencies which were key to innovation (Pillay & Morris, 2016). The feasibility of this technique is evident when applied to cull 305 potential skills to a list of 19; three rounds of surveys were used (Pillay & Morris, 2016). This approach proved useful in highly complex situations such as the study completed by Pillay and Morris (2016). Lavoie-Tremblay et al. (2017) found the use of a descriptive multiple case design appropriate in the study of characteristics that might influence the adoption and acceptance of an innovation.

Issues Relating to Inferential, Interpretative, and Hermeneutical Aspects

The sample size and selection of participants can affect results and findings. Numerous studies included in the literature note the limitations placed on generalizability due to small samples from a single organization or geographical region. A study conducted to explore staff nurse perceptions of management was limited to a geriatric setting in Israel (Natan & Noy, 2016). This study had a sample size up to 10.

Effects of Researcher's Methodological Choices on Findings

As part of the methodological selection, researchers consider the impact of their choices on their findings. For instance, a qualitative study including a sample drawn from a small geographic area is not generalizable to the entire state or country. This issue is evident in studies such as one performed to examine middle managers, their importance, and performance (Meissner & Radford, 2015). Pettersen (2013) completed an examination of perceived management practices. The perceptions were based on methods which managers self-reported and are questionable on this basis alone.

The selection of a study methodology is not a trivial pursuit. A researcher must consider some issues of import and think how the choice may affect results. In a different geographical or functional setting, a researcher should consider the ease of replicating a study. In the case study research design, the design of the study is considered more applicable to method choice than is the method of sampling (Yin, 2018). The single case study design is an acceptable method of research design.

Synthesis of Research Findings

The literature shows inconsistencies between the need for innovation in healthcare and the skills possessed by those essential to lead it. The research identified the competencies

necessary to influence innovation and concluded that many healthcare leaders had significant gaps (Pillay & Morris, 2016; White et al., 2016). Waxman et al., (2015) noted that the competency model developed by the AONE (2005) is being used in academic, hospital, and health system organizations. Conversely, Pillay and Morris (2016) emphasized that the competencies have not been widely accepted in academia. These differences may be explained by the approach of academic institutions teaching these skills only at graduate and post-graduate levels.

An inadequate translation of research into practice regarding influence, adoption, and diffusion of innovations continues to confound healthcare leaders (Green, Gibbons, Hoagwood, Pailinkas, & Wisdom, 2015). Nurse leaders must be competent in using a shared leader style to support teams made up of varying professionals (Crawford et al., 2017). Nurse and physician collaborators have different objectives as they each look to address the agendas of their professions (Claussen et al., 2017). The different objectives in which nurses and physicians may have to create an organizational climate that is not conducive to innovation. Weng et al. (2015) found organization climates had profound effects on a nurse leader's ability to lead and impact others' behavior toward innovation. Additional research using DOI (Rogers, 2003) may help close the gaps in competency among hospital leaders, especially NM's.

Al-Hussmani et al. (2017) concluded that NM's may drive or hinder innovation depending on the NM's readiness for change. A hierarchical culture might be detrimental as effective leadership in the NM role was shown to have a positive effect on the areas of patient outcomes, patient safety, as well as, nurse recruitment and retention (Cope & Murray, 2017). The literature provided a range of material about the importance of emotional intelligence (EI) as it relates to nursing manager competencies and innovation (White et al., 2016). Goleman (1995)

emphasized skills in self-awareness, self-regulation, self-motivation, social awareness, and social interactions to be essential elements of EI. Cope and Murray (2017) emphasized that TL is the standard against which we measure all leadership styles.

Transformational leadership includes attributes of EI: self-awareness, self-management, social awareness, and social skills (Pillay & Morris, 2016). Nurses transitioning to the NM role did not receive adequate preparation for management or leadership as shown in several studies. Individuals unable to manage their own emotions or recognize emotions in others are not likely to achieve collaborative relationships with others (Salovey & Meyer, 1990). Based on Goleman's (1995) seminal work on EI, Serrat (2017) includes innovativeness as an EI construct. Fischer (2014) emphasized the importance of TL in the ability of an NM to create teamwork which effectively addressed quality.

Critique of the Previous Literature

The literature displayed some areas of commonality. Healthcare takes place on a global scale, is complex, and is rapidly changing (Claussen et al., 2017). Geographically, several studies are affected by location and scope. One survey of NM competencies was geographically limited to the city of Amman, Jordan (Al-Hussami et al., 2017). Such a geographically limited study, as noted by the researchers, is not generalizable to all NMs in the city of Amman. Qualitative case studies may be limited in generalizability due to differences in location and custom (Merriam, 1988).

Sample Issues and Methodological Issues

Several studies had issues related to samples and entity type. In a study performed by Natan & Noy (2016), the sample was taken from 150 staff nurses. Natan and Noy (2016) concluded the required competencies of NMs varied based on the perceptions participant's

role. The facilities studied were several large geriatric centers in Israel which included Jewish and Arab districts. Another study conducted in Norway used a representative sample from five of 20 institutions (Pettersen, 2013). The Pettersen (2013) study, based on managers' perceptions of duties the managers carried out, suffers from a small sample. The data in the studies discussed were collected from public sector clinical managers. This limitation may affect transferability and generalizability of findings.

The majority of studies were of a phenomenology nature using qualitative research designs. There were a few studies which used quantitative and mixed-method designs. One mixed method study concluded a severe gap in competencies related to innovation (White et al., 2016). This mixed method study also included a high number of participants at the doctoral and academic levels. This fact causes the investigation to rely more heavily on the input of academics and not practitioners. A study regarding leadership with influence appeared to be neither quantitative nor qualitative (Bradley, 2014). The methodology used in the study was the collection of data by a survey. In summary, some studies have robust theories, frameworks, and methods; some make weaker cases than others. Some data collection methods may have produced findings which were pertinent and not generalizable.

Chapter 2 Summary

Leadership training and development efforts in hospitals must include instruction in the development of a transformational culture (Weng et al., 2015). Evidence showed that leadership and innovation competencies necessary for leaders to be transformative are often absent in academic programs (Pillay & Morris, 2016; Waxman et al., 2017; White et al., 2016). Waxman et al. (2017) identified communication, management of relationships, professional demeanor, environment knowledge, business skills, and leadership as critical constructs to the development

of innovation competencies. Significant gaps in 18 of 19 innovation competencies were identified in a study of nurse leaders and innovation competencies (White et al., 2016).

Collaboration to create better access, cost reduction, and improvement in the quality of patient care was inextricably linked to emotional intelligence and transformational leadership (Serrat, 2017). The organizational cultural in hospitals may create barriers to interdisciplinary collaboration. One of those barriers might be the differences in professional agendas. Physician and nurse leaders often have agendas which are at odds (Claussen et al., 2017). The authors concluded that nurses were in a position of influence regarding collaborative efforts with physicians; professional nurse and physician leaders who collaborated had positive effects on both cost and quality (Claussen et al., 2017). Further, the authors concluded that a nurse's ability to coach and communicate were essential in transforming the collaborative relationship.

Foster and Roche (2014) concluded EI correlated with perceptions of the effectiveness of transformational leadership. In an Italian study of the adoption rate of robotic surgery, early adopters significantly influenced the spread of robotic surgery (Compagni et al., 2015). Several studies concluded that innovation efforts were critical to controlling costs, improving quality, and increasing access (Al-Hussmani et al., 2017; Fischer, 2016). Pillay and Morris (2016) noted the importance of several competencies associated with EI: ability to maintain focus and adapt, resilience, interdisciplinary collaboration, self-confidence, perseverance, and an ability use unconventional approaches.

Based on this review of the literature, which develops a unique framework that included EI, competency, and transformational leadership, there is sufficient reason for thinking that an investigation examining the impact of nurse manager influence on the adoption of innovations would yield socially significant findings. I can, therefore, claim that the literature review has

provided strong support for pursuing a research project to answer the following research question: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses?

Chapter 3: Methodology

The current literature shows nurses do not receive instruction in innovation and have a poor understanding of the competencies necessary to influence innovation (White et al., 2016; White & Pillay, 2016). The complex environments in which nurses operate require ingenuity, creativity, and communication; the ongoing appropriateness of current nurse practices need to be questioned (Clipper & Dawson, 2018). These gaps in understanding of how to influence innovation may require that NMs understand the strategies needed to influence innovation in critical care. The absence of formal education in innovation and the intense pressure to reduce cost, improve quality, and enhance access underlie the significance of this study. The diffusion of innovation theory developed by Rogers (2003) guided the study and helped validate the outcomes.

Chapter 3 is organized to provide detail of the research question and purpose of the study. A qualitative case study design for conducting the study is explained and supported. The research population is described, and sampling methods and participant selection are defended. Instruments of data collection and data analysis are fully considered. Finally, I address the limitation, delimitations, validity, and ethical issues which may be connected with the performance of the study.

Research Question

What strategies do nurse managers need to influence the adoption of innovation among critical care nurses?

Purpose and Design of the Study

The purpose of this study was to explore strategies which NMs may need to influence the adoption of innovation among critical care staff nurses. An improved understanding of these

strategies might help hospital organizations better address concerns in cost, quality, and access to healthcare. In a qualitative study of hospitals costs, Okpala (2018) discovered that hospitalization accounted for 40% of the overall increase in healthcare costs. Cianelli, Clipper, Freeman, Goldstein, and Wyatt (2016) emphasized the importance of innovation in efforts to improve quality noting that current incremental approaches to improvement are inadequate. This research could be important because acute care hospitals are under continual and intense pressure to create significant change in the cost, quality, and access to healthcare as evidenced in studies conducted by Al-Hussami et al. (2017); Clausen, Cummins, and Dionne, (2017); Fischer (2016); and Lavoie-Tremblay et al. (2017). Nurses comprise a significant portion of hospital workers and may be able to have a significant effect on these areas in hospitals.

NMs occupy a central position of and the potential to create change (White et al., 2016). Clipper and Dawson (2018) emphasized the need to question the present situation in which nurses operate to find better, more effective solutions to the pressing issues of cost, quality, and access. The results of this study may add to the knowledge of methods to prepare NMs to lead innovation in critical care. The NM's skills and competencies in innovation are essential to the successful adoption of innovation.

Pillay and Morris (2016) identified 19 key innovation competencies critical to a leader's ability to understand and exert influence over the adoption of innovation. White et al. (2016) found deficiencies in NMs' understanding of 18 of the 19 key innovation competencies. The inadequacy of formal education and continuous development of nurse leaders may make closing the innovation competency gap problematic. Results from my study might create meaningful progress toward useful strategies to improve cost, quality, and access until such time as academia

and continuing education narrow or eliminate the competency gap. Hospital and nursing leaders may find the results of this study helpful in addressing their most crucial concerns.

I used a qualitative single case study methodology to explore the strategies that NMs need to influence innovation. Marshall and Rossman (2016) identified case study as an appropriate design when a researcher seeks a straightforward study of a phenomenon with a focus on context and personal interactions. Case study methodology allows for data collection through interviews, focus groups, and archival document review (Yin, 2018). I limited the context of this study to critical care to create a workable environment for meaningful and in-depth data collection. Holloway and Galvin (2017) noted that case study methodology is particularly useful in nursing and healthcare where individuals experience a phenomenon in a similar context with shared characteristics. Critical care NMs and staff nurses shared specific experiences in similar settings which made the case study design a reasonable and robust approach to this study. The shared experience which NMs and staff share make the qualitative case study the best design choice for this study.

Research Population and Sampling Method

The study population included individuals who are critical care registered nurses (RN) and NMs from a metropolitan area in the southeast U.S. For purposes of this study, NM included the titles: chief nursing officer, assistant chief nursing officer, director of nursing, NM, ward or unit manager, and nursing or house supervisor. Participants had a minimum of one-year experience in critical care. The sample consisted of nurses from the metropolitan area, between the ages of 23 and 65 with minimum experience in critical care one year. To be considered a part of the population, individuals worked full-time (a minimum of 36 hours per work week) in critical care or have some managerial responsibility for critical care. Marshall and Rossman

(2016) explained that the choice of a certain population is less constraining on the selection of a site for a proposed study.

The choice of population in this study allowed for participant selection from any hospital where critical care is provided and managed. Aldosari, Al-Mansour, Aldosari, and Alanazi (2017) wanted to understand the perspectives of nursing staff on the adoption of an electronic medical record. Aldosari et al. (2017) chose a random sample of 230 nurses from a population in a single Saudi Arabian hospital and concluded that a positive correlation existed between perceived usefulness and perceived ease of use in the adoption of an electronic medical record. The perceptions of usefulness and ease of use positively affected nurses' acceptance of the new medical record system. In contrast to Aldosari et al. (2017), researchers using a large tertiary hospital in the Midwest found no relationship between stages of concern and trust, ease of use and perception of usefulness by critical care nurses (Berg, LoCurto, & Lippoldt, 2017).

The population for this study came from one hospital which provides critical care. The research site is considered a national leader in patient care, research, and training of healthcare providers. This academic and research focused medical center, located in the Southeastern U.S., employs over 16,000 healthcare providers of which approximately 700 are nurses who work in critical care. The university and medical center are known globally and attract individuals worldwide to the medical community.

I gained access to the population via the chief executive officer of the health system. This facility provides critical care and has experience in innovation. Saleh et al. (2018) and Vitello-Cicciu et al. (2014) conducted qualitative research studies that demonstrated population selection based on the study's research questions. Saleh et al. (2018) interviewed 35 participants from a population of 40 in a study of leadership styles. Full-time employment for a period of not

less than one year was the criteria for inclusion (Saleh et al., 2018). The researchers chose the population to gain a better understanding of the leadership styles used by nurse management. Saleh et al. (2018) explained the study findings may identify specific competencies which NMs needed to manage a culturally diverse workforce.

In the second study of behavioral changes among NMs, researchers identified a target population of 34 individuals from geographically convenient locations (Vitello-Cicciu et al., 2014). Researchers required that participants must have completed a leadership development program (LDP) and a focus group session five to nine months following completion of the LDP. The participants provided detail about their perceived leadership changes post program (Vitello-Cicciu et al., 2014). Researchers in the LDP study wanted to describe the long-term effects the intervention had on participants. The population I chose is similar to the populations identified in these two qualitative studies. Researchers in each study selected participants for semistructured interviews from identified populations to develop a better understanding of a specific phenomenon.

I selected study participants using purposive sampling. According to Merriam (1988), the use of purposive sampling is appropriate when a researcher's goal is to gain insight and understanding. Purposive sampling requires the identification of populations in specific sites (Marshall & Rossman, 2016). Focus on a precise site, population, and interview questions creates logical and systematic data collection which is inherent to qualitative, and case study methodology (Marshall & Rossman, 2016; Yin, 2018). Purposive sampling uses the judgement of a researcher to deliberately select participants based on identified traits (Etikan, Musa, & Alkassim, 2016). In this study, participants were selected based on shared experiences in critical care and length of experience in critical care.

I sought to gain a deeper understanding of the strategies that NMs need to influence the adoption of innovation among nurses in critical care. Etikan et al. (2016) concluded purposive sampling is best suited to studies which require participants whose knowledge is likely to provide a significant and in-depth contribution to the research question of interest. In this study, NMs and staff nurses were best suited to provide in-depth knowledge which helped answer the research question. Interviewing participants from similar settings with similar backgrounds, knowledge, and experiences in critical care provided rich data. Rogers (2003) posited that people who experience shared values and norms create an environment conducive to information sharing and the adoption of innovation. These similar experiences, shared backgrounds, and knowledge added to the body of knowledge of the adoption of innovation in critical care.

Data saturation occurred when no additional themes or patterns emerged during interview sessions and the document review associated with this study. Holloway and Galvin (2017) explained that reaching a point of data saturation depends on continuing data collection until redundancy is perceptible. Saumure and Given (2008) suggested that data saturation occurs when a researcher begins to hear a repetition of themes, phrases or patterns. The target sample for this study was at least 12 participants; a goal that was achieved. Interviews continued until data saturation occurred as previously described. In total 12 participants were interviewed which was consistent with the predicted target population. The interview questions were derived from the extant literature and focused on answering the research question. The methods used for data collection and analysis serve as logical and organized checks of validity and reliability (Denzin & Lincoln, 2013).

Instruments

I was the primary instrument for data collection. Marshall and Rossman (2016) described a researcher in qualitative studies as the primary instrument for data collection. Holloway and Galvin (2017) further expressed that qualitative researchers bring subjectivity to the research process and must account for any influence their personal perspectives may bring to the process and outcomes of the research. Postholm and Skrøvset (2013) emphasized the relationship between researcher and practitioner can be challenging: a researcher formulates the research question to guide the participant interview. As the primary tool for data collection, I built a trust relationship with each participant and included a brief discussion of my background to establish my accountability for being objective and impartial during the interview and analysis processes.

Interviews were secondary instruments that I used to gather data. Yin (2018) regarded interviews as the predominant tool for gathering data in qualitative case study designs. A researcher provides for the collection of data via an interview which is specific to a study question and the depth of understanding of each participant (Stake, 1995). Yin (2018) explained that interview questions should be flexible enough to allow the interviewer the chance to solicit a dense amount of information from each interviewee. Each interview followed a path related to the participants' experience. Participants had varying experiences and levels of knowledge.

The primary reason for in-person interviews is the opportunity for the interviewer to guide the interview as appropriate for each participant and to use follow-up questions to solicit detail and clarity (Holloway & Galvin, 2017). Interviews may help a researcher understand how and why certain things occur in a given environment (Yin, 2018). The questions in the interview protocol were based on the literature reviewed in preparation for this study and addressed the context in which the participants experienced the phenomenon under study.

I used semistructured interview questions during the interview process. Gillham (2005) argued the importance of semistructured interviews relative to the quality of data which a researcher may obtain. Semistructured interview questions are commonly used in qualitative studies and are a part of a study's interview protocol (Holloway & Galvin, 2017). Absent undue influence from any organizational interference, semistructured interviews may help a researcher develop an atmosphere to engage participants in a way that encourages open and honest discussion (Ravitch & Riggan, 2017). In qualitative research a researcher's aim is to gather extensive data from people who have experienced the phenomenon under study (Marshall & Rossman (2016). The advance planning of semistructured interview questions put me at ease, created flow during the interview, and allowed for a comfortable interaction with participants.

Interview questions work best when they are open-ended, and the construction of questions is critical to obtaining the type of information a researcher requires to answer the research question (Merriam, 1988). Open-ended questions helped gather extensive input from interviewees. Stake (1995) suggested that a researcher write questions in a manner which encouraged an interviewee to explain their experience in great detail as opposed to offering a minimal answer of yes or no. Open-ended questions are also useful in soliciting elaborations and clarifications from interviews (Marshall & Rossman, 2016). The design of open-ended questions is critical to allow exploration and help trigger answers which assist a researcher in explaining and providing meaning to the phenomenon under study (Holloway & Galvin, 2017). Gathering rich data was essential to answering the research question; open-ended questions were the best technique to capture this data.

All interviews were conducted onsite and face-to-face at the participant's place of employment. I worked with the institution and participants to select a private onsite location to

conduct interviews. Gillham (2005) expressed that interviewees are more prone to share personal details in a face-to-face interview where trust is established between the interviewer and the interviewee. Providing interview information in a face-to-face setting allows a researcher to communicate more in-depth information about the research study than a written introduction and instruction (Gillham, 2005). I prepared questions that were based in the literature in advance of the commencement of interviews (see Appendix F).

I reviewed a comprehensive publicly available physical document which was coded during data analysis. The physical document was used during triangulation of data. Marshall and Rossman (2016) emphasized the use of documents as a way of gathering data which supports information collected during the interview process. I reviewed meeting minutes in which discussions about innovation were included as an additional means of data collection. Meeting minutes are an allowable source of data and helped me develop a better understanding of the organization under study and confirmed participants' experiences and views. Merriam (1988) noted that the review of documents in qualitative research helps provide contextual information which enhances the data gathered from interviews. A comparison and contrast of data collected in interviews with that collected via document review enhanced reliability.

I used an interview protocol and member checking to strengthen the reliability and validity of the data collection instruments used in this study. Member checking increases validity by providing assurances to the reader that any information collected during the interview is an accurate representation of the participant's experience with a phenomenon (Lincoln & Guba, 1985). I interpreted the interview transcripts and emailed a summary of my interpretation to each participant for their review. Each participant reviewed the summary to determine that the summary was an accurate representation of what the participant intended to convey in the

interview. Member checking allows the participant to identify any misinterpretation or misrepresentation on the part of a researcher (Holloway & Galvin, 2017). Providing my summary of the interview transcript to each participant allowed substantiation of interview data which added to the legitimacy of the data collected during the interview.

The interview protocol and questions which I developed for this study are contained in Appendix E. Stake (1995) emphasized rigor which can be created through research-based questions in an interview protocol that is designed to minimize deviations. The interview questions for this study were based on information garnered from the extant literature. Brereton, Kitchenham, Budgen, and Li (2008) noted that the use of an interview protocol might increase study rigor because a researcher is obligated to provide detail about his exploration of the research question. Holloway and Galvin (2017) recommended that interview questions be well-thought out in advance to improve reliability. An interview protocol enhanced the transferability of findings and the ability of others to confirm this researcher's findings. Questions which have a basis in the literature and were guided by the use of a protocol helped produce stronger and more reliable data that increased reliability and validity.

Reliability and validity of the instruments for data collection are essential to the integrity and authenticity of data (Merriam, 1988). The inclusion of rich narrative in case study findings adds to validity and reliability making the study findings trustworthy (Yin, 2018). As the primary instrument of data collection, I engaged ethically in all aspects at all times of data collection, interpretation, and analysis to foster a relationship of trust between researcher and participant. Marshall and Rossman (2016) suggested a researcher consider trustworthiness during the process of seeking access to participants and in assisting them in their decision to

participate. This ethical engagement enhanced the reliability and validity of the instruments of data collection.

I used member checking as a method to strengthen the reliability and validity associated with the interview process. Stake (1995) noted the ethical obligations of a researcher to keep any misinterpretations or misrepresentations to a minimum. Member checking allowed participants to review, react, and provide feedback about the participant's interview. Holloway and Galvin (2017) explained that member checking may be used to determine whether or not participants have the impression that a researcher has interpreted a participant's input in a correct and unbiased manner. Merriam (1988) cautioned researchers to be aware of personal biases and to take measures which prevent any biases from creating undue influence on study findings. The member checking of interview data gave me the opportunity to control and eliminate personal bias.

Data Collection

I identified hospitals that have used or attempted to use innovation and have documented these efforts. I contacted the chief executive officers of hospitals which appeared to meet the criteria for this study. I offered a clear explanation of the project and the study purpose. After identifying three organizations which met the above criteria, I determined if the population of potential participants was adequate to reach data saturation. Following this identification, I requested permission from each chief executive officer to pursue research in their respective institutions. Final selection of the host organization occurred when I was satisfied that the organization had experienced or attempted the adoption of innovation in critical care and could furnish archival documents associated with this innovation experience.

Data collection began once I received written project approval from the Concordia University–Portland Institutional Review Board (CUPIRB), and the host organization agreed to on-site interviews of participants (see Appendix B). Approval of the study was given by the Organization’s Chief Nursing Officer. All potential critical care NMs and staff nurses received a formal request to participate in the study from an authorized hospital representative. I emailed each participant a stamped informed consent form (see Appendix C) once I determined the participant met study criteria. Upon receipt of the executed informed consent form indicating “I consent to participate”, I determined a date and time for a face-to-face interview. Holloway and Galvin (2017) recommended the development of a relationship of trust to counter any potential negative reaction that participants may have to a researcher’s presence. A relationship of trust was formed by getting to know the participants in their unique work setting. The data collection process included individual interviews and document review: gatekeepers were engaged in the research, permission, and entry processes to facilitate participation.

Qualitative case study design depends on the collection of rich and accurate data (Yin, 2018). I gathered data from participants in a systematic manner via semistructured interviews. The quality of data is related to the advance preparation of relevant interview questions which help elicit the data a researcher needs to answer a research question (Gillham, 2005). Each participant was asked questions from a list of open-ended questions I prepared in advance and responses were digitally recorded. These questions were outlined in an interview protocol (see Appendix E) which helped ensure that interviews were conducted in a similar manner with each participant.

I solicited data from two distinct groups: NMs and staff that worked full-time in critical care. The data collected from each group differed. Individuals in each group had different

experiences with the same phenomenon and had different perspectives of their experiences. Marshall and Rossman (2016) noted the appropriateness of case studies in qualitative research as the case study might allow a researcher to focus on context and interactions that are dynamic. Interviews with participants from these two groups provided rich data from differing lenses. The interview questions for NMs were the same as those asked of staff nurses. I used additional participants, as necessary, to reach data saturation. I planned an interview length of 45 minutes to one-hour for each participant.

The third technique for data collection was the review of archival documents. Merriam (1988) noted that documents provide more objective data than other sources. I reviewed meeting minutes which contained information related to the research question. The review of meeting minutes provided relevant new information or information that served to corroborate data from interviews. Stake (1995) emphasized that documents are a good source of information which corroborate data collected from interviews. Marshall and Rossman (2016) explained that document review might augment data from interviews and assist a researcher in considering the values and beliefs of participants within specific contexts. Minutes of meetings which contained information related to innovation was useful in the triangulation of data.

Marshall and Rossman (2016) suggested the use of pre-established questions to reduce any influence a researcher's biases may have on the interview. To limit any bias that I may bring to the interview process, interview questions were based on information acquired during the literature review for this study. The pre-established interview questions for this study are included in Appendix F and were designed with a focus on answering the research question. Gillham (2005) noted that the semistructured interview provides a strict line of questioning which allows for a range of responses allowing the participant's unique experience to be

revealed. The questions I used in the interview were structured to elicit answers that helped explain the participants' experiences in relation to the phenomenon in question and how they experienced the phenomenon.

The aim of in-depth interviewing is to capture a correct understanding of how individuals experience a phenomenon and the meaning which each person attaches to that unique experience (Seidman, 2013). The selection of interview and document review as data collection tools was central to obtaining an in-depth understanding of the research question. Interviews allow a researcher to seek detailed exploration of a phenomenon (Serena, 2013; Yin, 2018). Marshall and Rossman (2016) emphasized that documents are a routine source of contextual information in qualitative research which help an investigator rationalize the selection of a study population within a specific setting.

The reliability and validity of study findings create the context in which those findings are considered to be trustworthy (Lincoln & Guba, 1985). Study findings that can be confirmed and considered credible contribute to the trustworthiness of a study (Yin, 2018). The comparison of data drawn from different sources increased the trust which a reader or researcher might have in a study. I used triangulation between the three data sources in this study. The triangulation of data sources and methods may help a researcher avoid injecting personal bias into the analysis process (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014; Song, Son, & Oh, 2015).

The trustworthiness which participants have in me, as the primary tool of data collection, produced a positive effect of the quality of the data collected and by extension the study findings. Trust in a researcher is essential to the level of trust a reader or researcher will give study findings (Marshall & Rossman, 2016). As a researcher who was transparent in all aspects of the study built stronger relationships with participants. When a researcher is transparent about

assumptions, perspectives, and biases the reader of a study can assess the effects these areas could have had on a study (Marshall & Rossman, 2016). Trust in me as the researcher for this study was vital to the acceptance of the study's findings and any ability to replicate the study.

Holloway and Galvin (2017) recommended the use of an interview protocol in qualitative studies. I used the interview protocol developed for this study (see Appendix E). The semistructured interview process contained in the interview protocol was detailed and used as a script to keep me focused on critical data gathering during interviews. The questions included prompts which I used to assist myself and participants. Participants did not always follow the expected path of questions as I had planned. A well written protocol was useful in guiding the flow of the interview and for the conduct of follow-up with participants.

Identification of Attributes

Rogers (2003) introduced DOI and a basic diffusion model which was originally defined as a process by which innovation is communicated through certain channels over time among the members of a social system. Rogers (2003) explained attributes of innovations that are useful in predicting reactions to innovations by individuals in the fifth edition of *Diffusion of Innovations*. Adoption of innovation is a point at which an individual decides to embrace an innovation and use it absolutely (Rogers, 2003).

Rogers (2003) described Relative Advantage as the degree to which an innovation is perceived by users as being better than the idea or procedure it supersedes; i.e., the new idea, device, or method is better than what is currently being used. The degree to which potential adopters perceive an innovation to be consistent with the adopters existing values, past experiences, and needs is known as compatibility (Rogers, 2003). The extent to which adopters can see the results associated with an innovation is defined as observability (Rogers, 2003). The

two remaining attributes are trialability and complexity (Rogers, 2003). The scale to which adopters can experiment or try an innovation on a limited basis defines trialability (Rogers, 2003). Last, Rogers (2003) described the extent to which an innovation is perceived as relatively difficult to understand or use as complexity. In this study I focused on three of the five attributes identified by Rogers (2003): relative advantage, trialability, and observability.

Weng et al. (2015) commented on the significant effect which the climate or culture of an organization had on behavior and innovation. Behaviors, norms, and customs may affect the environment in which innovation might flourish or be discouraged. Hospital leaders work in command-and-control structures designed to ensure adherence to policy, protocol, and regulations (Rosen, 2013). A tightly controlled environment might inhibit the communication and perceptions that an individual has in regard to the adoption of innovation. Nightingale (2018) noted that when conditions allow staff to communicate and share ideas freely, conditions are suitable for growth.

Data Analysis Procedures

The process through which a researcher organizes and makes sense of data collected during interviews, organizing, coding, and theme identification is known as analysis (Yin, 2018). Qualitative analysis requires that a researcher explore data to seek patterns and consistencies within the data to better understand the behaviors, issues, and context of the phenomenon under study (Stake, 1995). I used data triangulation for the analysis of data collected from semistructured interviews using open-ended questions with NM's and RN's involved in critical care. Data collected from the review of the organizations CNHA helped corroborate and confirmed interview data. Triangulation allowed the study of a phenomenon from multiple perspectives and sources. The most common method of triangulation in

qualitative research is data triangulation (Holloway & Galvin, 2017). Stake (1995) emphasized that during analysis, triangulation will help a researcher reduce analytical mistakes and validity. I used open coding, thematic analysis, and triangulation which were essential processes to successful data analysis.

Copious amounts of data were generated from textual sources. The analytical process is iterative and requires a researcher to move between data collection and data analysis (Holloway & Galvin, 2017). During rigorous analysis, a researcher may keep a list of significant themes which come from multiple data sources analysis (Merriam, 1988). Maintaining a high level of organization assisted me in the identification of themes which existed in the large amount of textual data.

Data analysis begins when a researcher starts to identify segments of data, words, or phrases to which a code can be assigned (Saldaña, 2016). The initial stages of data analysis produced numerous segments of data which were alike. Saldaña (2016) noted that the initial cycles of coding data are followed by secondary coding methods which help a researcher converge the larger data segments into categories.

I used open coding in the analysis process. Saldaña, (2016) emphasized that open coding uses words and short phrases attained from what a participant says. Codes are assigned to textual pieces which come directly from the interview transcripts making open coding appropriate for data analysis in this study. Open coding is also considered highly appropriate for researchers new to qualitative inquiry (Saldaña, 2016; Seidman, 2013). Codes consisted of words or phrases assigned by me. These initial codes give names to words and pieces of text which can later be reduced to concepts through an iterative process (Holloway & Galvin, 2017).

I chose to use thematic analysis (TA) in the exploration of data collected from interviews and document review. In qualitative research, TA occurs through a researcher's use of extended phrases and sentences as opposed to words and short phrases (Boyatzis, 1998; Saldaña, 2016). Condensing raw data to themes which are most relevant to the research question is of vital importance to analysis (Seidman, 2013). Open coding assisted me in the development of thematic groups during data analysis. Open coding is useful in TA as a researcher begins with many codes and through a reiterative process combines and pieces these codes into important concepts which make their way into the study findings (Holloway & Galvin, 2017).

Researchers often use computer-assisted qualitative data analysis software (CAQDAS) to identify and connect themes, concepts, and categories (Noble & Smith, 2014). I used the NVivo12® software® to organize, order, store, and analyze data from all sources. Using CAQDAS to organize, order, store, and analyze data allow for greater immersion and in-depth comprehension for a researcher (NVIVO Website, 2018). Computer storage of data sources makes for an easier performance of word and phrase searches, sorting, organizing, and labeling of raw data: these elements are essential to qualitative analysis (Holloway & Galvin, 2017).

The transcription of interviews was an essential step in beginning the analysis of data. Holloway and Galvin (2017) noted that researchers often use formal transcription systems to move data held in audio form to a textual document. The automated transcription assistant contained within the NVivo12® software application and a transcription service supported the transcription of digital audio files. I created a summary of each transcribed document and provide this summary to participants during member checking process.

I included data triangulation in the analysis of raw data. Data triangulation enhanced the validity, reliability, and trustworthiness of data by confirming the analysis. Denzin (2012) noted

the triangulation of multiple sources adds accuracy and richness to answering a research question. Marshall and Rossman (2016) wrote that triangulation might produce a stronger, less biased portrayal of the issue under study. Triangulation allows for assessment of the same phenomenon from different levels and perspectives and helps confirm the evolving findings (Merriam, 1988). Lincoln and Guba (1985), emphasized that the confirmation of data using different sources increases trustworthiness and authenticity. I used interview transcripts and the 2016 Community Health Needs Assessment document to corroborate data.

Limitations of the Research Design

Every study has limitations which arise from the design chosen by a researcher (Marshall & Rossman, 2016). The sample size for this study was small and may limit the use of study findings in other settings or contexts. The study was limited to hospitals of mid-size and to critical care as defined above. The research findings might not include assessments which are relevant to small or larger critical care settings. The limitation of the study population to one organization constrained the breadth of ideas during data collection. Finally, there was an inherent limitation in that the study design limited data collection of data to three sources: interviews with NMs, interviews with staff nurses and the review of documents.

A researcher may have a potential significant effect on data collection, analysis, validity, and reliability of the study. A researcher might bring bias to the study and therefore, has a responsibility to recognize and diminish any misrepresentation and misunderstanding during data collection and analysis (Stake, 1995). Personal experiences and knowledge can be useful to me in the study if these experiences and knowledge are dealt with in complete transparency. To ensure complete transparency, I informed the organization and each participant of my experience

as a hospital executive and minimized any bias through use of an interview protocol and member checking process.

An inherent limitation exists in data collected via interviews and documents. The term “hospital” is broad and may include various types of organizations. Hospital classifications may include the services offered, the profit motive, and geography. Generalizations and transferability of findings can be difficult between hospitals when size, revenue, and organizational structures are significantly different. As an example, a 100-bed community hospital located on the fringe of the specified geographical area is less likely to have adequate human and financial resources to engage in innovation at the same or similar level as a 350-bed facility located in a densely populated business-centered community. Individual hospitals might belong to more extensive systems of hospitals which can provide the resources for training and development, and the recruitment of persons with the education which enables participation in organizational and system innovation efforts. For the purposes of this study, the term hospital was limited to organizations that provided care to critically ill patients in work areas specific to the care of these patients.

No study can be designed without fault (Marshall & Rossman, 2016). Resources were too limited to include all the facilities of an entire hospital system. Hospital systems range in size from two to 100 facilities and made it impossible to include every entity of a system. Hospitals operate on a continual basis and have study populations which work around the clock shifts: workers might work one week and have the following week off. This schedule could have limited access to participants. To minimize these limitations, I chose to select one hospital which provided an adequate study population.

Validation

Lincoln and Guba (1985) noted that the trustworthiness of a study is based on the extent to which the study findings are considered valid. Yin (2018) explained validity as being the trust a reader can have that a study's findings are credible, verifiable, and transferable. The enhancement of validity was dependent on the use of methods which helped increase dependability, credibility, transferability, and confirmability of this study's findings. When the reader can trust that the study findings are credible, transferable to similar settings, and traceable to sources, the study is said to be trustworthy (Holloway & Galvin, 2017).

The validity of a study greatly depends on a reader's ability to develop trust in the study findings (Marshall & Rossman, 2016). Validity relates to the level of trust where a reader finds the analysis to be credible, transferable, and confirmable (Yin, 2018). In qualitative research, the investigator hopes to develop a rich and more profound understanding of the phenomenon under study than what currently exists (Marshall & Rossman, 2016). When readers learn more of the worldview and meaning surrounding a phenomenon, the research can be considered valid (Holloway & Galvin, 2017). A reader may not find a study convincing if they learn nothing new from the findings.

Study findings are critical to providing the reader with a high level of confidence in the credibility of data collected, and thus the findings (Seidman, 2013). Holloway and Galvin (2017) emphasized the importance of accuracy and authenticity rendered by a researcher toward the phenomenon as viewed by the study's participants. Study findings that are carelessly interpreted may create questions regarding validity. Stake (1995) commented on the ethical responsibilities which a researcher bears for any misinterpretation or misunderstanding of a participant's ideas and input. When a researcher carefully processes the data collected in a study

and is cautious with interpretation, the study might attain a level of rigor necessary for a reader to develop a high level of trust in the credibility and transferability of a study's findings.

I chose member checking to ensure trustworthiness through the minimization of any misunderstandings or misinterpretations in data analysis: data collected represented the participants' views and input. Lincoln and Guba (1985) suggested that member checking provided assurances that data collected in an interview accurately reflected the phenomenon under study as the participant understands that phenomenon. Further, the authors suggested member checking as a continuous process. Stake (1995) added that member checking may occur with the first draft of a researcher's written report or when a researcher expects to collect nothing further from a given participant. Each participant in this study was given an opportunity to review a written summary of the interview transcript, by secure email, within four days of the initial interview.

Credibility. Researchers may increase the credibility of a study with the use of member checking. Member checking increases rigor by substantiating that the interview results accurately reflect the phenomenon as that understanding is conveyed by participants (Lincoln & Guba, 1985; Stake 1995). The credibility of a study is strengthened when a researcher prepares an accurate representation of participants' experiences related to the phenomenon under study (Tong et al., 2013). Holloway and Galvin (2017) described member checking as a concept which parallels internal validity. The use of member checking assisted me in ensuring that a participant's perceptions were accurately represented in the study findings.

The accuracy of data collection and the interpretation of that data is essential to a study's credibility (Marshall & Rossman, 2016). A researcher's task is to relay the participants' meaning and reality in an unbiased and transparent manner (Seidman, 2013). The decision-

making processes of a researcher must have such clarity that a reader may evaluate the adequacy of the data analysis (Holloway & Galvin, 2017). Holloway and Galvin (2017) explained that readers were able to confirm the acceptability of analysis by clearly grasping a researcher's decision-making process. Member checking facilitated a high level of confidence in the accuracy of data collected and analyzed in this study.

Lincoln and Guba (1981) suggested that use of an audit trail to verify the findings of a study is essential. An audit trail may be useful to a new researcher in the establishment of trustworthiness, credibility, and transferability regarding a study's findings. Clear documentation of my decision-making processes throughout this study, using clear descriptions of participants, the context of the study setting, and methodological decisions assisted in providing clarity around my research decisions. Rogers and Cowles (1993) explained that a researcher could further enhance credibility with the provision of clear explanations of the chosen methodologies and reflections on the methods used in data analysis.

I used triangulation to augment the credibility of this study. Stake (1995) recommended the use of data triangulation as a process of confirmation. The triangulation process moves a researcher to examine a phenomenon under study from various points of view (Holloway & Galvin, 2017). Triangulation might include other interviews or information from document review. In this study interviews were conducted with NM's (leaders) and RN's (staff). These two data sources were triangulated with an archived, publicly available document. Confirming data via member checking and triangulation from the perspective of participants is essential to the credibility of a study's findings (Holloway & Galvin, 2017; Stake, 1995).

Transferability. Researchers desire their work to be useful to others outside the immediate context and research setting. The findings of this study may be useful to hospitals

and nurse leaders with similar backgrounds in like settings. Holloway and Galvin (2017) explained that findings might be transferable when the findings are useful in similar settings. Denzin and Lincoln (2013) emphasized that the transferability of study findings increased when a researcher systematically described the assumptions and context of the research: providing vivid detail. Rich descriptions of context, settings, experiences of study participants and an interview protocol helped provide information necessary for others to determine the transferability of the methods and processes used in this study.

Shared experiences help form generalities through the experiences of those who share a similar phenomenon (Stake, 1995). These generalities may help create validity which is externally focused or transferable. When a reader can use study findings with comparable participants in other situations, sites, and settings, transferability is possible (Holloway & Galvin, 2017). Morse (2015) emphasized that copious data tend to overlap, providing a researcher opportunity to see key issues repeated: replication strengthens rigor. Saturating each section of my study with detail assisted me in creating an acceptable level of transferability.

Confirmability. Lincoln and Guba (1985) and Trochin (2006) explained that the ability of readers to confirm study results is essential to a study's validity. During data collection and analysis, I attempted to minimize my experiences and presumptions (bias); such conscientiousness may be essential to confirmability. Researchers have a duty to acknowledge their subjectivity as it relates to a study (Holloway & Galvin, 2017). A researcher might increase confirmability by creating a path which others may follow. This path described a researcher's process of reaching the constructs, themes, and interpretations presented in study findings (Holloway & Galvin, 2017). The level of detail provided by a researcher could be essential to validity by allowing others to corroborate the results of a study.

A detailed plan for data collection and analysis was an essential part of this study. The strategies I used to safeguard corroboration are member checking, triangulation, and an audit trail. Marshall and Rossman (2016) defined member checking as the processes established by a researcher to ensure accuracy. Member checking allows participants to give feedback, identify mistakes, and to understand a researcher's interpretations and findings (Holloway & Galvin, 2017). Member checking is a preferred method to ensure accurate capture of the essence of how a participant experiences a phenomenon (Yin, 2018). Participants were given an opportunity to identify misinterpretations and misunderstandings: additional insights were identified through member checking.

Researchers may achieve corroboration using one or more sources. Marshall and Rossman (2016) explained triangulation as corroboration through the use of two or more sources regarding the same item. A comparison of interviews from different participants, time periods, and work units assisted me with corroboration in this study. Comparing interview results with archived documents helped illuminate the research question. There are several types of triangulation available to the qualitative researcher. The triangulation of data sources allows a researcher to determine consistency between time, place, and interactions (Stake, 1995). Stake (1995) explained that different circumstances (time of day, supervision, unit location) give a researcher an opportunity to determine if participant meaning is consistent. A researcher seeks a strong comprehension of the phenomenon under study with comparison of different sources (Denzin & Lincoln, 2013). The comparison of sources might increase the ability that a reader could confirm the reliability of the data collected in this study.

A reader's opportunity to track data to original sources may be essential to an ability to confirm the accuracy and authenticity of data and findings. The ability of a reader to determine

accuracy and authenticity might improve validity. An audit trail allows others to evaluate the rationality and soundness of a study (Holloway & Galvin, 2017). I created a clear path which provided detail regarding my research decisions and precise descriptions of the processes used in the study. The creation of a path for future readers and researchers to follow was critical to the documentation of reflexive considerations, methodological and data analysis choices, choice of organization, population, and participants.

Data Saturation

Data saturation may add to the validity of a study by ensuring that data collection is sufficient to achieve a sound and thorough analysis. Inadequate data may lead to poor interpretation and weak analysis. Seidman (2013) commented that data could be considered sufficient when a researcher hears no new concepts, themes, or reoccurring information in interviews. There are no precise rules in qualitative research to determine the number of required participants to reach data saturation (Holloway & Galvin, 2017). Data saturation requires a participant sample size which ensures the revelation of in-depth knowledge about the phenomenon under study (Holloway & Galvin, 2017). A sample of up to 12 nurse leaders and staff nurses who serve in the critical care units of general teaching acute care hospitals were used in the interview process of this study. Redundancy of information denotes saturation as no new concepts or themes are identified (Holloway & Galvin, 2017; Lincoln & Guba, 1985). Data saturation was reached in the nurse leader interviews at the sixth interview. I conducted two additional interviews to ensure redundancy, and no new themes emerged. The staff nurse interviews reached data saturation at the third interview, and I conducted an additional interview which yielded no new themes.

Ethical Research

There were no obvious ethical issues accompanying the conduct of this study and none expected to emerge during the study's progression. Marshall and Rossman (2016) concluded that a researcher who recognizes the potential impacts that his research may have on individuals conducts ethical research. There were no personal, professional, or financial conflicts of interest associated with the study. I have more than 20 years' experience as a hospital executive serving in roles such as chief operating officer and chief executive officer. I attested that there were no connections or obligations to the host organization (other than sharing study results), and the study created no financial interest. In preparation for the conduct of this research, I completed the Collaborative Institutional Training Initiative (CITI) for social and behavioral research.

Crow, Wiles, Heath, and Charles (2006) emphasized the protection of participants as a central element of all ethical research. A private setting sufficient to prevent those outside the interview area from overhearing any conversation was secured for the conduct of all interviews. Interviews were recorded for purposes of data accuracy and then transcribed using an automated transcription software or independent transcription service. Each participant's identity was protected by the assignment of a non-traceable identifier. This identifier was assigned to each participant at the time of the interview and was known only to me. All data and personal information gathered in interviews was password protected and available only to me.

Any conflict of interest or appearance of such conflict, which may have occurred during this study was addressed immediately with the appropriate parties, not limited to but, including the PI's Faculty Chair and the CUPIRB. The Belmont guidelines (The Commission, 1979) included an intent to provide a clear understanding of what a participant is committing to when agreeing to participate in a study. The Informed Consent Form (ICF) associated with this

research will provide a clear and understandable explanation of the study purpose and the participants' role in the study. A well-written and detailed informed consent was intended to avoid any conflict or misunderstanding regarding the study and the participant's role.

Unexpected issues of an ethical nature may have arisen during the conduct of this study. Two potential areas from which issues might have evolved were personal health information (PHI) and information considered to be proprietary. The study did not require the sharing of PHI, and no request for such information occurred. The nature of qualitative research and the use of interviews could have created a possibility of the accidental sharing of PHI. This risk was minimal, and no issues arose. Second, there was a possibility I might become aware of information that is considered proprietary. PHI and proprietary information which was discussed in any interview or document review received protection according to the procedures and processes set forth by the host organization, the CUPIRB, and the Health Information Portability and Accountability Act of 1996 (HIPAA).

Following the Belmont guidelines (The Commission, 1979) for the protection of study subjects, I include sufficient information to create a clear understanding of a participant's commitment when the participant agreed to participate in the study. Study participants were made aware of the ability to freely express any concerns which arose at any time during the study. The ICF associated with this study provided a clear and understandable explanation of the study purpose and the participants' role in the study. Potential participants received a letter introducing the purpose of the research and a copy of the ICF (see Appendices C and D). The ICF, approved by the CUPIRB, explained the study purpose, time commitment, and information about what a participant was asked to do. Any risks to the participant and benefits of participation received a clear explanation. An unequivocal right to withdraw at any time,

without prejudice, was made clear in the ICF. All participants had the opportunity to speak with the PI before signing the ICF. The decision to participate in the study was at the sole discretion of each participant. All documents associated with my study will be kept in a secure password protected computer file for a period of three years after completion of the dissertation. Once the three-year timeframe expires, these documents will be destroyed. Audio files of interviews were destroyed once a completed transcript was summarized and checked by the appropriate participant.

I have significant experience as an executive in acute care hospital settings. This experience helped in the building of a trust relationship. My experience brought with it personal preconceived ideas and assumptions. To reduce bias, the detail of the process for data collection and analysis was provided. Noble and Smith (2014) explained the importance of bias reduction through a clear explanation of the rationale in the choice of the research design. The code of ethics of the American College of Healthcare Executives guided ethical behavior in this study. All effort was made to ensure that no ethical concerns were present during the conduct of the study. Clear measures were presented in the ICF to emphasize confidentiality and to assure participants that I was aware of their best interest at all times.

Chapter 3 Summary

Chapter 3 consisted of a framework for conducting this study. Based on a review of the extant literature I chose the qualitative case study design and developed the research question based on the literature and the design. The primary purpose of the study was to seek a deeper understanding of the strategies that NMs use to influence the adoption of innovation by critical care nurses. I limited this study to the areas of critical care as this was the most expensive care provided in the acute care hospital setting. A better understanding of innovation in critical care

may contribute to improvements in quality, cost, and access to care. The literature's identification of the critical situation (high-cost, low access, and poor quality) facing the U.S. healthcare system, and hospitals in particular, served to support the need for my study.

Processes for identifying an appropriate research population and sampling methods in the study were detailed. The qualitative case study design directed the selection of appropriate instruments for data collection and the process of analyzing data. I chose the thematic analysis method to enhance trustworthiness and demonstrate a precise disclosure of the methods of data collection and analysis.

There are inherent limitations in all research design including the potential for bias and ethical concerns. Meticulous detail was set forth in this chapter concerning limitations and ethical issues. Safeguards against bias and assurances of ethical research were noted. The chapter ended with a comprehensive discussion of the study's reliability and validity. Chapter three serves as a comprehensive guide for readers and future researchers regarding the design, methods, and validity of the study. The guidance in this chapter provided a level of detail of the processes necessary to enter the field.

Chapter 4: Data Analysis and Results

The purpose of this research study was to explore strategies which nurse leaders need to influence the adoption of innovation in critical care. Hospitals account for 32% of the healthcare dollars spent in the U.S. (Kamal & Cox, 2017). Critical care accounts for 20% of expenditures for care provided in the hospital setting (Larson, 2013). Because programs in nursing education do not include innovation skills in their curriculum, this study addressed the gap in competencies required of healthcare leaders to lead innovation and lack of education in the area of innovation (Pillay & Morris, 2016; Waxman et al., 2017; White et al., 2016).

The setting for the study was the main teaching hospital of a medical university located in the southeastern U.S. The university and hospital have a global reach in the areas of research and patient care. Students, staff, faculty, researchers and physicians come from around the world. The hospital operates nine critical care units collectively containing 220 critical care beds which are located across the campus. According to the organization's 2016 Community Health Needs Assessment (CHNA), the hospital is one of the largest medical centers in the U.S. with over 12,000 employees and physicians providing a complete range of primary and specialty services, as well as, the most up to date treatments and innovations in health care. The research site is designated as a Magnet hospital, as awarded by the American Nurses Credentialing Center.

I used a qualitative case study research design to answer the stated research question: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses? The research process was guided by an interview protocol and the research question. Data collection included semistructured interviews and open-ended questions; interviews were conducted in a face-to face private setting. Each participant was assigned an

alpha-numeric code and all interviews were recorded and transcribed. A summary transcript was provided to each participant within 24–48 hours of the interview. All summary transcripts were acknowledged and approved via email with no exceptions. No changes to the interview transcripts were required.

Chapter 4 begins with descriptive data of the study sample followed by the procedure for data analysis. The methodology for analysis of the data is explained and grounded in the methodological strategies detailed in Chapter 3. The analysis is followed by a summary of the study findings and a presentation of the study results. Chapter 4 ends with a comprehensive summary of the chapter.

Description of the Sample

The study population consisted of 700 RN's (leaders and staff) employed by the site hospital. The population consisted of nurse leaders and staff nurses with experience in critical care ranging from less than one year to more than 15 years' experience in critical care. Nurse leaders and staff nurses held degrees which may include a Bachelor of Science in Nursing, a Master of Science in Nursing, or a terminal degree (Ph.D. or DNP). Access to the population was gained through contact with the health systems chief executive officer who left the decision to participate to the chief nursing officer. The chief nursing officer agreed and assigned a senior staff member as the organizational representative. I had no direct association with the research site or participants prior to the study.

Study participants were selected using a purposive sampling method. A purposive sampling method may prove to be effective when the research design limits the people who can serve as primary data sources (Asiamah et al., 2017). Purposive sampling occurs when a researcher determines what elements will be used to select the study sample (“Research

Methodology”, 2019). In this case study I determined that experience and full-time work status with critical care were most likely to provide rich data to answer the research question.

Participants varied in age, years of experience, and level of education achieved. Nurse leaders and staff nurses were selected from the identified population of 700 individuals which met pre-established criteria: full-time work with critical care and a minimum of one-year experience in critical care. Twelve participants agreed to be interviewed. There were 11 female participants and one male participant. Interviews were conducted with eight nurse leaders and four critical care staff nurses. The nurse leaders represented senior and middle management; staff nurses included participants from two of the nine critical care units.

Research Methodology and Analysis

Methodological Approach

I chose a qualitative study methodology using case study design for this study. Qualitative methodology was the methodology which appeared most often in the literature review conducted for this study. A qualitative methodology allows for the use of data gathering instruments which can capture the thoughts and experiences of study participants who experience the phenomenon under study (Malabi, 2015; Yin, 2018). The lens through which data gathering and analysis occurred was DOI (Rogers, 2003). DOI attributes include relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003).

Data Analysis Procedures

The analysis of data began with the transcription of audio files collected during the interview of study participants. A summary of each transcript was prepared and emailed within 24–48 hours to participants for their review. Each participant was asked to reply to the email with one of two options: “the summary accurately represents what I meant to convey” or “some

corrections are needed.” A second email requesting a reply was sent to those who did not respond to the request for transcript summary review. If there was no response after the second email, the transcript was considered by me to be accurate. No changes were required to any of the interview transcripts following participant reviews.

Initial reading. Each transcript received an initial read through by me with no effort to apply codes. The purpose of the initial reading was for me to gain a general idea of the raw data available for analysis. During this initial reading, I looked for common words, phrases, and concepts within and between the transcripts. Although unplanned, conducting interviews with nurse leaders first helped me with probing questions during the interviews with staff nurses.

Open coding. The primary function of open coding is to categorize pieces or data (Saldaña, 2016). After the initial reading, I spent time reflecting on the transcripts. I considered words, phrases, constructs, and context. I reviewed memos I had written during field research. Each transcript was read again: text was highlighted and open coded by hand. Codes were assigned to datum based on my judgment regarding the use of words, participant experiences and context.

Codes consisted on single words or short phrases: i.e. culture and knowledge sharing. Saldaña (2016) described this process as open coding: a process used in the beginning stages of data analysis to dissect raw data into segments to which a researcher assigns codes. I also generated memos to capture thoughts, impressions, potential connections, and gaps which may exist in the data. Comparing the codes and memorandum helped in assessing the quality of the data. Merriam (1988) explained the importance of a researcher assessing the quality of his data. In this stage, data quality was assessed by comparing data from one transcript against others to confirm reliability and validity.

Some pieces of text were coded simultaneously; for example, a single passage was assigned more than one code. Although simultaneous coding is recognized as useful and appropriate when multiple meanings might apply to the data, Saldaña (2016) cautions on its use. Overuse of simultaneous coding could make a researcher appear indecisive and complicate the process of reducing codes to categories and themes (Saldaña, 2016).

Preparation for software coding. A systematic method was used to gain a better understanding of the words, phrases, and connections contained in the raw data. After all transcripts were coded by hand, I used the NVivo12® software to prepare the transcripts for software coding. The initial coding of data was transferred to the NVivo12® software. Data from each transcript was open coded using the software during this round. Seidman (2013) warned against reading and coding only on a computer screen. Working first on paper and transferring a researcher's work to computer helps a researcher avoid missing nuances contained in the text (Seidman, 2013).

Computer assisted coding revealed three critical things about the coding effort. First, initial coding produced approximately 73 individual codes. Second, some codes were similar or near duplicates (e.g., driver versus drivers). Third, further review indicated some coded text did not go to the nexus of answering the research question.

Reduction and elimination. A representation of initial codes and number of references prior to any collapsing of codes is shown in Appendix I. Appendix I depicts data which supports the necessity of reducing the number of codes to bring clearer meaning to the data. Saldaña, (2016) warned against overuse of simultaneous coding. Appendix I bears evidence that Saldaña's (2016) warning was appropriate. The sole purpose of interviews and coding text from the interviews is to answer the research question (Yin, 2018). Using a structured and iterative

process, codes were reduced to five primary codes with appropriate sub codes. The sub codes assisted me in determining whether or not the text sub coded contributed directly to answering the research question. Codes with similar names and meaning were combined under one code or renamed under a new code. To ensure that coded text contributed to answering the research question, the text under each code and sub code was carefully examined. Text which may contribute to answering the research question was retained. Any text which made no clear contribution to answering the research question was eliminated. Codes were further analyzed to warrant they reflected the context and experiences expressed in the transcripts.

Clustering and themes. An understanding of how codes may be categorized was essential to the creation of themes during software analysis. I used an iterative process to create clusters of categories. During this iterative process, codes were categorized, reviewed, and categorized again until five themes emerged, and no further categorization seemed possible. The five themes were (a) organizational culture, (b) innovation resources and drivers, (c) importance of formal and continuous education, (d) willingness of staff nurses to adopt innovation, and (e) interdisciplinary collaboration. Each theme is discussed in greater detail in the results section.

Completion of Coding. Coding was completed through a review using the explore, comparison, and charting functions available in the NVivo12® software. Data from all participants were aggregated and critically examined during the final stages of analysis. The aggregated data were compared with the research question; time was included for me to reflect on the results. Finally, coded references which focused on answering the research question were explored using the NVivo12® software. Through this process, I was able to draw conclusions about the data and research question. A discussion of the results includes the themes which emerged during the analysis process.

Summary of Findings

This section contains a presentation of the results obtained during data analysis. The section begins with a summary explanation of the coding and analysis process used.

Organization of the results was directed by the themes which emerged during analysis. Figures and quotes from study participants are used to illuminate each theme. This presentation of themes is grounded in the research question: What strategies do nurse managers need to influence the adoption of innovation in critical care?

The use of open coding was central to answering the research question. During initial coding I continuously compared text with DOI attributes, context and the research question. Codes were assigned to each piece of text from participant transcripts during open coding. During coding I continuously compared the codes and text segments of previously coded transcript text. This process may have enhanced the reliability and validity of the data. An iterative and simultaneous comparison allowed me to identify similarities and potential connections within the text.

This work was completed using the comparison, explore, and analysis tools within the NVivo12® software. Themes and sub themes were identified using the parent and child code function within the software. Codes were reduced by combining subthemes into primary or parent themes. Parent codes were then combined into appropriate categories to create the emerging themes. Some codes were eliminated based on two criteria: the codes did not help answer the research question or text coded to certain codes resulted in a small number of coded references. Table 1 illustrates the breakdown of references per code which were eliminated or recoded to a more appropriate code.

Table 1

Coding References, Aggregate Coding, and Resulting Themes

Code	References	Aggregate references	Items coded
Culture	294	441	13
Collaboration	110	125	13
Leadership	77	77	13
Resources	74	74	13
Engagement	39	120	11
Education	121	202	12
Drivers	51	202	11
Willingness to adopt	39	120	11
Trialability	15	15	6
Experience / Experiential	12	12	6
Observability	8	8	6
Relative Advantage	5	5	5

An archived document, the organization's 2016 Community Health Needs Assessment (CHNA), was also coded and analyzed. Analysis of the CHNA indicated that all transcripts and resulting themes were supported. The CHNA is a document required by federal law and must be completed every three years. While the site organization will be completing a new CHNA in 2019, it was not completed and available before this study concluded. The CHNA was prepared using a specified methodology.

According to the CHNA for the research site, an internal team was established with specific roles and responsibilities. Data were gathered from de-identified data sets supplied by the hospital. Secondary data were secured from various public services following the identification of the hospital's primary service area. The internal team identified key informants for collaborating in the preparation of the CHNA. Key informants included public health experts, local officials, and community leaders. Based on analysis of the initial data sets, topics and interview questions were developed for use in gathering input from the key informants. The internal team and key informants collaborated to analyze the data. The final step included

identifying a list of priorities that the organization would address. These priorities were access, diabetes education, and hypertension /stroke prevention and education. The mission statement included in the CHNA noted that the hospital is committed to improving the health of the regional population, increasing quality and providing innovative care. Further, the organization sought to create an outstanding educational environment for training health providers. The following sections present the data analysis by theme.

Presentation of Data and Results

During data analysis, five themes emerged which were associated with the research question: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses? These themes are presented in order of significance as supported by the data collected. In the following thematic presentation NM and RN participants are identified by alphanumeric codes. For example, L1 corresponds to the first NM (leader) interviewed and N2 corresponds to the second RN interviewed. Demographic data collected consisted of position (NM or RN) and experience (at least one year). Additional demographic information was outside the scope of this study and was not collected.

Theme 1: Organizational Culture

Organizational culture (i.e., climate) emerged as the top theme during data analysis. Theme 1 was coded from all 12 (100%) transcripts and provided 441 aggregate references. The word environment was substituted for culture by seven (58%) of the participants. Eight (100%) NMs mentioned culture while three of the four RNs (75%) used the term environment. Table 2 indicates the number of participant references in Theme 1.

When asked about culture of the organization, L7 noted, “So in order for innovation to become more of a culture in a unit, I think we need to focus on it.” Regarding culture, L1 added,

This facility is recognized for advances in care regularly, that is not only an ingrained part of the culture, but it's expected. It's expected that people are going to work here and find better ways to do things so that people model themselves after what we do here instead of the other way around.

Understanding emotions were expressed by NMs and RNs as important. Speaking about a strategy for creating a culture of communication which recognized emotions, N3 added,

I think that being honest with the staff is a good communication strategy. Telling them where this change is coming from. I think sending emails with updates of how the change is going and keeping the staff updated on where we are, where we need to be, and I think just being literally in constant communication, maybe sending out questionnaires of how it's going, just honest upfront communication, direct with the nurse, letting them know how it's honestly going and listening to feedback.

Conversely, L4 noted, “We do struggle with any kind of accountability for the doctors to adopt some of the innovative practices.” L2 added, “We have to articulate what it is and the why behind it, and then offer it to the stakeholders who are affected by or asked to address it or work toward a common goal.”

L7 noted, “So in order for innovation to become more of a culture in a unit, I think we need to focus on it.” L1 stated, “This facility is recognized for advances in care regularly, that is not only an ingrained part of the culture, but it's expected.” L8 described the shared leadership culture supported by Magnet Status: “in a Magnet organization with shared governance being our platform, that we would always be able to, to tell you things about how people have input and make a difference.”

Commenting on a culture of shared leadership, supported by Magnet status, N1 said,

And with the congress, if you chose to do so, you can be a representative for it (nurse congress) and go to the meetings, take your ideas to the meeting; encouraging that as well as a way to, kind of, get people to bring up their ideas.

Twelve (100%) of the study participants characterized organizational culture in terms of communication, open-door policy, and approachability. N1 said, “Encouraging the use of, like, the between the bedside nurse and the resident . . . because a lot of them are like, we don't know: You're at the bedside all day. Like, what would you suggest?" Data indicated that NMs and RNs felt the organization had a culture open to communication and that NMs were approachable.

Table 2

Organizational Culture (Frequency)

Participant	Interview questions	Total number of references
L1	5,6,7,8	12
L2	1,2,3,4,5,6,7	35
L3	2,7	5
L4	1,2,4,5,6,7,8	17
L5	1,2,3,5,6,7	15
L6	3,4,6,7	13
L7	1,3,4,5,6,7	16
L8	1,2,4,6,7,8	22
N1	1,2,3,4,6,7,8	13
N2	2,5,6,7	14
N3	2,3,4,5,6,7	13
N4	2,3,5,6	15

Archival document analysis. The document indicated support of innovative practices in the organization’s mission statement. The archived document supported a culture where consensus was developed and creation of win-win situations for collaborators was encouraged. Words in the document like superior, education, and well-being characterized the organizational culture.

A culture of interdisciplinary teamwork, access, innovation, and advances in patient care were mentioned by several participants (L2, L4, L7, L8, and N4). Eight (67%) participants mentioned the open-door policies of leadership as being real and leaders as easily accessible even within a highly structured organization.

Theme 2: Innovation Resources and Drivers

Theme two had 202 aggregate references regarding resources and drivers associated with innovation. All 12 (100%) participants offered comments which fit within the theme. The importance participants assigned to resources and drivers was evidenced through the 114 references coded to this theme. Leadership was mentioned 40 times by eight (100%) leaders and 34 times by three (75%) staff nurses which indicated the importance of leadership as a resource to guide innovation. Table 3 illustrates the frequency at which participants mentioned resources and drivers; the data indicated the importance that participants assigned to this theme.

Both nurse leaders and staff nurses expressed certainty in the level of resources the organization directed to innovation efforts. Regarding resources, L7 said, “There are a lot of things available in [the organization] for innovation and for innovation grants.” L7 further noted, “Definitely, you need to understand what resources that you already have within the organization that can provide those supportive systems that we were talking about.” N3 reported,

So, we have a lot of resources and teams that are specifically in the hospital that solely focus on rolling out new education . . . and making sure that they’re doing the skill correctly when it is changed.

Participants, L4, L5, L8, and N2 reported on available resources which drove personal and leadership growth, team efforts, and innovation processes. The university associated with the research site created an on-campus center for innovation which drives an innovation agenda

and provides innovation resources. L5 commented, “We’ve never introduced that science [innovation] into our curriculums and we have very structured curriculums.” The leadership style used by NMs may have a positive or an adverse effect on innovation as leaders work to connect resources to potential innovation opportunities. Data indicated a disconnect between NMs, RNs, and the resources available through the center for innovation.

When discussing strategies that NMs needed to increase personal innovation among critical care RNs, participants mentioned several resources. Participants touched on funding, an innovation board, a chief innovation officer, a center for nursing excellence, shared governance (also referred to as nurse congress), a simulation center, and an innovation academy. I asked participants if they were familiar with the center for innovation, the innovation board, or nurse congress. NMs were more familiar than RNs with these resources. L8 expressed a high level of familiarity with the center for innovation: “I do think testimonials from [the center for innovation staff] program would be great.” Commenting on a doctoral level nurse, L8 stated, “She’s also a clinical nurse leader. Her brain thinks differently about process and improvement and innovations all the time.” Conversely, L5 emphasized,

We have an innovation officer here, a chief innovation officer who is a Ph.D. Oh, my goodness, it’s [the center of innovation] disconnected. Very disconnected. It’s siloed. It is not integrated. They [magnet status and the center for innovation] go hand in hand, but it [sic] is siloed.

Three participants (L3, N1, and N2) had heard of the center for innovation but were unfamiliar with the center and had no personal interaction with the center. L3 had never interacted with the center for innovation and offered, “We haven’t in particular, but I do know of people who have taken ideas there and gotten grants.” N1 commented, “I’ve heard about it

[Center for Innovation] . . . I don't know much about it.” Agreeing N2, stated, “I have heard of it [center for innovation], but I am not familiar with it.” Other participants were not familiar with the center for innovation or the chief innovation officer. N4 was only able to offer the following concerning the center for innovation,

From what I've heard, from what I've been told, if you have certain ideas of some research projects or something you would like to do, maybe the state has certain funds set aside and people in the clinical nurse excellence area can help us. If it's doable and worth studying or researching you can get a grant. I guess it's funding. I guess maybe the state has certain funds set aside and people in the clinical nurse excellence area can help us. So, I think if you don't know the right steps to take, there's plenty of people who are willing to guide you, if not help you.

L5 and L7 expressed a basic familiarity with the center for innovation and the chief innovation officer: neither participant was able to elaborate on the role of the center or the chief innovation officer.

There were four participants (L2, L3, L7, and L8) who expressed some familiarity and offered thoughts on how the center for innovation could best be used. L8 had the most familiarity and emphasized,

I think staff would tell you that they, that they would, the majority of staff would probably feel that that's [center for innovation] something above their level. I don't know that they would know how to map their own innovation to one of those things.

Participants who commented on being familiar with the center for innovation (except L2 and L8) did so only after being prompted by me. Participant responses on the center for innovation, excepting L8, indicated a lack of knowledge and interaction with the key innovation resource.

The shared governance model and nurse congress, both aspects of the organization's Magnet status, were mentioned more often as drivers of and resources for innovation activity. Twelve (100%) of the participants referenced nurse congress or congress on 303 occasions. Shared governance was mentioned by five (63%) NMs and one (25%) of the RNs. L8 commented, "I think also our shared governance model encourages people to think outside the box and innovate." N3 commented on nurse congress and evidence-based nursing: "Those are the two main ones that come to mind, the evidence-based proactive meeting and then the nursing congress." L8 said,

I always ask if they know, does everybody know evidence-based practice? They all of course say, Yeah, I do. I say, Really, what that means is that somebody else did it and it worked, and all we have to do is steal it.

Only L8 and N3 expressed clear understandings that innovation and evidence-based practice were synonymous. The center for innovation received no significant recognition among participants even though it was located in a newly constructed high-profile building on campus.

Another resource, the innovation academy was mentioned less often. Three (37%) NMs mentioned the innovation academy. L8 stated, "First of all, we have an innovation academy. We are encouraging people to participate." Participants reported that these academies provide additional training to NMs and RNs over a period of several months and have options which end with the individual earning a certification. L3 said, "We have an innovation academy, but I haven't had anybody do that." Data indicated that NMs were more familiar with these resources

than RNs. Both groups failed to express a deep understanding of what drove the need for innovation.

Table 3

Innovation Resources and Drivers (Frequency)

Participant	Interview questions	Total number of references
L1	1,2,5,6,7	8
L2	2,3,5	2
L3	1,2,4,5,6	7
L4	3,4,5	5
L6	2,3,4,6,7	2
L7	1,5,6,7	1
L8	1,2,3,4	10
N1	3,5,6	3
N2	4,5,7	6
N3	1,2,3,4,5	1
N4	1,3,5,6	3

Archival document analysis. Participants spoke of factors which they perceived to drive the desire and accomplishment of innovation. According to the Centers for Disease Control and Prevention, the CHNA is an organized process which culminates in a document identifying the most important health needs and issues of a community. The CHNA is a public archived document. The archived document used for this study provided information on organizational factors which affected innovation in the research site. First, the CHNA is a requirement of the Medicare program and is required to be completed every three years. The driving factors mentioned in the CHNA were based on the needs of the community which is external to the organization. Education was recognized as an essential driver for innovation. Education included both community health education and education for health care providers. According to the CHNA the site organization is recognized as a Magnet status facility that includes a center for nursing excellence and the adoption of evidence-based practices.

Theme 3: Importance of Formal and Continuous Education

When commenting on education, study participants used words such as development, experience, scholar, and academy when discussing education and continuous learning. There were 109 participant references coded to this theme. All 12 (100%) participants commented on one or more aspects of the importance of education. L3 commented on best practices to help critical care nurses understand the need for innovation: “I think engagement through lunch and learns, education, journals, and journal clubs.” The use of case study and immersion-based approaches may provide better learning than lecture and testing approaches. L7 acknowledged, “I think it [experiential education] would be through continuing education opportunities. We are encouraged attendance in leadership academies: for the staff, quality academies.” Data indicated that education was highly encouraged and left to individual discretion to pursue that education.

Several participants (L1, L2, L3, L5, and N4) commented on the frequent use of metrics to improve quality of care. Participants mentioned the importance of communication and collaboration in the improvement of care. L3 commented,

We meet every month as a quality group for MICU, and I don't know what my peers do, but we meet with respiratory, pharmacy, infection prevention, me, our educator, and our physician leaders every month. We go over our quality metrics and where we are, and then we also discuss what our next thing we should tackle and prioritize.

N4 stated,

They don't understand about the quality metrics and how that relates back to your patient safety goals. . . . So, I think keeping people informed and educated is another way to make sure that best practices are fostered to where it's not just, Oh great, another rule. It's, this is why we're doing this.

The statements made by N4 were supported by L8's recognition that evidence-based practice was equivalent to innovation.

L4 observed,

your new grads are kind of more in tune by innovation because they've just come through a lot of that fresh education. I have nurses that have been here twenty-plus years, when they went to school innovation wasn't a big part of it.

Participants mentioned both scholar courses and academies as resources and drivers of innovation. These educational opportunities included attaining new knowledge and experiential exercises, which were interdisciplinary. Seven participants (L2, L3, L4, L5, L6, L7, and L8) mentioned academies for quality, geriatrics, and diabetes. N4 used the term scholar to describe educational programs in wound care and geriatrics. These eight participants described these programs in terms of increasing the knowledge and skills of NMs and RNs. L3 said,

We have a geriatric scholar and a diabetes scholar and that kind of thing. I've had people have completed that. They tend to be more engaged and more of my cheerleaders when I need somebody to help me create that.

Data indicated that many educational opportunities existed with no mandatory directives to attain new knowledge and experiential learning. Data indicated that the pursuit of education was left mostly to individual discretion.

L6 described an adaptation of the more robust innovation academy curriculum:

We even did a mini academy here for some of our staff nurses, just because we wanted to give them the tools, but we're concerned about time . . . we really just did like a four-hour mini course on innovation and challenging them to come up with innovative ideas on how to produce an outcome.

All eight (100%) NMs and three (75%) RNs commented on the experiential collaboration between teams and disciplines within the organization.

Three participants (L3, N2, and N4) commented on specifics of EI. All three participants reported that feedback and being recognized for making a difference were essential to creating change. N2 and N4 commented on elements of EI as EI related to encouragement and creativity. N2 emphasized,

I think it's really important to have a nurse manager that supports personal growth because I have felt stifled before as if you don't feel like there is opportunity for growth; then there is not going to be any innovation.

According to participants, the site organization offered various opportunities for personal growth and learning which participants expressed as being essential to innovation.

Table 4

Importance of Formal and Continuous Education (Frequency)

Participant	Interview questions	Total number of references
L1	1,2,4,8	8
L2	3	1
L3	1,4	2
L4	1,3,8	7
L5	1,3,4	8
L6	1,3,7	5
L8	1,2,3,4,8	7
N1	2	1
N2	2,7	3
N3	6	2
N4	2,4,7	8

Archival document analysis. According to the research site's CHNA, the organization strives to provide an environment which is outstanding for educating health professionals. The document emphasized that hospital resources and staff expertise established a national standard for health care delivery. One graph in the archival document indicated that the county where the

site organization is located has a population where 30 % hold a bachelor's or advanced degree which compares favorably to the national average of 29%. The school of medicine and site organization together seek to serve as a model for health education, according to the CHNA document.

Theme 4: Willingness of Staff Nurses to Adopt Innovation

There were three (38%) NMs and three (75%) RNs who made 120 references which were coded to this theme. Table 5 illustrates the frequency at which participants mentioned buy-in or willingness to adopt. The data indicated the importance that participants assigned to this theme.

N3 commented on the effects of the lack of information,

But we don't see the data, we don't see the improvement or the non-improvement. If they would present data like that to us, maybe at our meetings or email format or just day-to-day, I think that it would make more sense to the bedside nurses.

L4 emphasized, "We have to show the evidence behind the science of why we're wanting to change." When speaking about trying something before adopting it, L8 responded, "I think trial and error, unfortunately, is [sic] they learn and know what works and what doesn't work."

A text search of the top 100 words contained in participant transcripts revealed four words or phrases associated with this theme: buy-in, observe, see, and evidence-based. L6 commented,

I'm thinking more of using evidence-based practice to show them the why. I think critical care nurses typically have that mentality of show me that outcome, and if that outcome is good, then I can adopt that.

Participants required information to make full use of innovations under consideration. L5 commented, “We do a lot of pilot studies before we do large scale implementation.” N3 observed, “When we see leadership taking into consideration how this may affect our workflow, it helps us almost be more ready and prepared when the change does take place.” L3 further emphasized, “It’s got to work in their workflow without a doubt, and they need to be able to see the outcomes.” The authors concluded that observability and trialability were significant characteristics which affected adoption in critical care.

There were eight references coded to the subtheme observability. There were seven (88%) NMs and one (25%) RN that made comments about observability which were coded to Theme 4. Observation of an innovation may reduce any uncertainty about adoption by the members of a critical care group. N3 commented on the effects of a lack of information,

But we don’t see the data, we don’t see the improvement or the non-improvement. If they would present data like that to us, maybe at our meetings or email format or just day-to-day, I think that it would make more sense to the bedside nurses.

L4 added, “They have to first of all see it being done, the impact of [sic] a unit that has been what we call innovative.” L4 emphasized, “We have to show the evidence behind the science of why we’re wanting to change.” Participants indicated that metrics and information were essential to the adoption of innovation.

Three (38%) NM participants made one or more references to pilot programs. L5 commented, “We do a lot of pilot studies before we do large scale implementation.” NMs who communicated openly and frequently were considered to be influencers by nine participants (L1, L2, L3, L7, L8, N1, N2, N3, and N4). L2 commented on being a frequent communicator, “It is more staying in frequent communication with my team, explaining what the problem is or what

the goal is and how we're doing and what. why we need to make changes.” L3 stated, “When you have that feedback loop, then that tends to feed itself and keep your momentum going and your buy-in because other people will tell the new people.”

According to N4, the clinical nurse excellence group often asks for ideas: “Tell us what your ideas are. We’ll help you whether it be something that they need to actually perform a clinical trial or some type of research.” Data indicated that the use of frequent communication via different delivery mechanisms made NMs feel more in control. RNs felt that NMs who communicated frequently and sought feedback were more influential in all aspects of leadership as it related to the willingness to adopt an innovation.

L3 and N3 commented on the ease of conducting a trial for a new practice or product and the willingness of NMs to seek support from senior leaders to commence a trial. When speaking about trying something before adopting it, L6 and L8 commented that trials provide staff nurses the opportunity to learn what does and does not work in their work area. Seven participants (L1, L3, L4, L5, L6, L8, and N3) remarked on the effectiveness of presenting evidence from prior trials and other organizations, also known as an evidence-based practice. L6 said, “I think critical care nurses typically have that mentality of show me that outcome, and if that outcome is good, then I can adopt that.”

The final subtheme of Theme 4 related to status quo versus the advantages of adoption. Three (38%) NMs and two (50%) RNs referred to this DOI (Rogers, 2003) attribute. N3 observed, “When we see leadership taking into consideration how this may affect our workflow, it helps us almost be more ready and prepared when the change does take place.” L3 emphasized, “It’s got to work in their workflow without a doubt, and they need to be able to see

the outcomes.” Data also indicated the importance of an ability to observe change before attempting that change in the context in which the individual experienced the change.

When RNs perceived a new technology or practice as easier than current practice they were more likely to buy-in or adopt. N3 stated,

Knowing the need for innovation is knowing that if we can provide better care that's more efficient for the patient, safer for the patient, throughput is increased, we get the patients in and treat them more quickly, more efficiently and decrease their hospitalization.

An increase in throughput may affect both cost and access to care. The ability to see and to try an innovation were related by participants as important aspects in their willingness to adopt an innovation in a given context.

L4 noted, “We have to articulate what it is and the why behind it. And then offer it to the stakeholders who are affected by or asked to address it or work toward a common goal. L2 commented, “I’m talking about things that are easily observable.” L4 emphasized the effects of different agendas,

Sometimes the docs just want to change it because they want to do it that way. Well, if we’re already in the top five in the nation on this particular initiative, I’m not going to get a lot of buy-in to change that practice.

Data indicated that the willingness to adopt (buy-in) was affected by RN perceptions that an innovation offered something better (relative advantage), an opportunity to gain experience with the innovation (trialability), and an ability to see clear and positive results (observability).

Table 5

Willingness of Staff Nurses to Adopt Innovation (Frequency)

Participant	Interview questions	Total number of references
L1	1,3,4,6	4
L2	1	2
L3	2,3,7,8	5
L4	2,3,5	8
L6	1,5	3
L7	7	1
L8	3	2
N1	2	1
N3	1,2,3,6	6
N4	4	1

Archival document analysis. When an innovation offers a perceived improvement over current practices adoption may be more likely to occur (Rogers, 2003). According to the organizations CHNA, organizational values supported ownership and collaboration through accountability, the value of ownership, teamwork and consensus building. The CHNA included statements that emphasized employees embrace the organizations values which lead to collaboration, ownership, and teamwork to create an environment of excellence.

Theme 5: Interdisciplinary and Team Collaboration

The fifth theme emerged as the concept of collaboration between disciplines. Participants in this study were consistent in their comments regarding collaboration between disciplines within critical care. Eight (100%) NMs and four (100%) RNs contributed 95 references to Theme 5. Table 6 depicts the coding frequency by question and participant.

L3 commented, “I have a medical director, so he’s over MICU, and I have an assistant medical director, so I work really closely with both of them.” Two participants (L4 and L5) mentioned the importance of interdisciplinary collaboration between nurse and physicians: working together as managers and as care providers. L5 emphasized, “You have to have the

interprofessional collaboration and ownership.” According to L4, “We’re very active, we have several teams, we’re trying to work on decreasing our unintended extubations.” Data indicated that interaction between stakeholders was important to participants’ perceptions of the likelihood to change.

L4 stated, “Sometimes the docs just want to change it because they want to do it that way.” L1 added, “So, you have to have people from all parts of the care team that are willing not only to implement change if that's what's needed, but at least to be able to sit down and discuss it.” Data indicated that the interdisciplinary aspects of collaboration were recognized as significant by participants.

L6 observed,

First of all, I think there’s got to be trust between both parties. That they’re all in this for the right reason. I think the nurse, from an innovative idea [sic], I think the nurse and physician, I think you would have a nurse that would be comfortable knowing that he or she was on an equal ground with that physician.

Two participants (L1 and L4) commented on challenges which surrounded communication and the willingness of team members to discuss a change. L1 noted,

Everyone's goal is to optimize patient outcomes and maintain level 1 status [sic] and I think the overall is the same even if some of the smaller goals to achieve the larger goal aren't the same that you're able to kind of refocus.

L4 emphasized a practice of inclusion,

I usually try to make sure that all the stakeholders are involved in the beginning of the project, and we really get their input, and kind of get the buy-in and try to take care of all the barriers that we possibly can.

The culture of collaboration was described by N2, “Well, I just didn’t understand how good we have it, not just resources, but just the culture of teamwork and how if you work together, you can do anything that you put your mind to.” Regarding barriers and collaboration, three participants (L3, L4, and L5) commented on the importance of involving stakeholders from all disciplines so that collaboration created ownership among interdisciplinary team members. N4, observed, “knowledge sharing, I don’t think we do enough of that here.”

Concerning collaboration, L1 stated,

So, you have to have people from all parts of the care team that are willing not only to implement change, if that’s what’s needed, but at least to be able to sit down and discuss it, which is sometimes challenging.

The data indicated that collaboration may make RNs more willing to take on leadership roles when NMs acted in ways that eliminated barriers to communication and collaboration.

Table 6

Interdisciplinary Collaboration (Frequency)

Participant	Interview questions	Total number of references
L1	1,2,5,6,7,8	10
L2	1,2,3,5	10
L3	3,5,7	4
L4	1,3,4,5	13
L5	1,5,6	10
L6	5	2
L7	1,3,5,6	11
L8	1,3,4,5,7	11
N1	1,2,5,6	4
N2	5,7	2
N3	5,6,7	8
N4	5,7	4

Archival document analysis. The organization expressed a mission and vision in the CHNA document that addressed coordinated inter-organizational and interdisciplinary

environments. According to the CHNA the organization, in cooperation with the medical school, sought to create innovative and interdisciplinary education and service delivery models. The document provided further evidence of interdisciplinary collaboration in a description of the methodology used to create the CHNA. The research team which created the CHNA consisted of hospital management, strategic planners and stakeholders from a statewide organization which assisted with data and quality improvement advice as it related to the immediate community.

Chapter 4 Summary

I used a qualitative case study research design to explore the perceptions of NM and RN participants regarding influence on the adoption of innovation. In this chapter, findings were illustrated in context as they related to the research question. The research process was guided by an interview protocol (see Appendix E) and data were collected for each question from all 12(100%) of the participants. I used NVivo12® software to process data collected from 12 participants. The purpose of this research study was to explore strategies which NM's need to influence the adoption of innovation in critical care.

Thematic analysis, the methodology for analysis, was explained and grounded in the methodological strategies detailed in Chapter 3. There were five themes that emerged during analysis which informed the research question. Analysis indicated that all 12 participants perceived a culture that supported innovation resulting in Theme 1. Theme 2 surfaced as participants acknowledged importance of leadership and resources to support innovation. Results indicated the importance perceived by participants of education resulting in Theme 3. Theme 4 indicated that participants perceived relative advantage, trialability, and observability as attributes present in the workplace. Finally, 12 (100%) participants identified the importance of collaboration and interdisciplinary teamwork resulting in Theme 5. Data analysis and results

presented in Chapter 4 underscored the collective perceptions of study participants and provide a solid foundation on which implications and conclusion are drawn in the Chapter 5.

Chapter 5: Discussion and Conclusion

The purpose of this qualitative study was to gain a better understanding of the experiences of critical care nurses in the adoption of innovation and the strategies that NMs may use to influence that adoption. Thomas, Seifert, and Joyner (2016) emphasized that innovation involved products, systems, business models, and services. The literature reviewed for this study supported the need for innovation in decreasing costs, improving quality, and increasing access to care. Kamal and Cox (2017) emphasized the scope and rate of increase in healthcare costs. Thematic findings garnered from this study are discussed in relation to the DOI developed by Rogers (2003). I will offer a summary of the research study, consideration of the advancement of the research topic in the future and possibilities for further research in this area of study.

This study was composed with a focus of addressing the research question based on the experiences of participants with the adoption of innovation. Literature addressing the competencies of NMs included the categories of culture, emotional intelligence, education, skills, and leadership styles. The pool of research participants was derived from a population of nurse leaders and staff nurses in an acute care hospital. The hospital was associated with a medical university with an identifiable commitment to innovation and significant involvement in the delivery of critical care to patients in various settings.

Represented in this chapter are findings from the data collected with an intent to answer the research question. The research question was designed to solicit rich experiential information about the encounters of participants regarding leader influence and adoption of innovation by staff nurses. I also sought to identify strategies which may be useful in addressing nurse leader influence given the competency gaps identified by the literature.

Summary of the Results

The purpose of this qualitative study was to gain a deeper understanding of how NMs influence innovation in the absence of solid competency in innovation skills. More specifically, the research focused on identifying strategies for NMs which may be useful until such time as current and future leaders receive formal education and training in the skills associated with the adoption of innovation. Additionally, this study explored the connection between the innovation skills of NMs and an ability to decrease the cost of care, increase access to care, and improve the quality of care. Hospitals comprise 32% of the total annual healthcare expenditures in the U.S. (Kamal & Cox, 2017). Critical care is the most expensive care available (Larson, 2013). For these reasons careful site, population, and participant selection was critical. NMs and RN's were asked to share their experiences to allow me to discover important contexts between leader preparedness to influence innovation and the adoption of innovation by critical care nurses. I sought to identify strategies to compensate for the lack of formal education in innovation competencies.

Semistructured interviews with 12 volunteer participants yielded a significant amount of data. Each participant was assigned an alpha-numeric code to protect their identity; following interviews all audio files were then transcribed. I read each interview transcript twice looking for any significant variances, connections and consistency. Anderson (2010) explained that a thorough examination of study data with a focus on objectiveness and credibility is essential to ensuring the validity of research findings. I used an iterative process and NVivo12® software to analyze data and discover themes and sub themes.

To ensure accurate and convincing findings, an archival document was reviewed and coded in the same manner as data from interviews. The CHNA document was used to

corroborate interview data and ensure that interview data were complete. Yin (1994) and Houghton, Casey and Smythe (2017) emphasized the use of multiple data sources, such as an archived document, allowed for a case study that is more conclusive and truthful. A section regarding document analysis accompanied the presentation of each theme in Chapter 4.

The study results provided evidence that NM's and RN's alike perceived the organization culture supported communication, collaboration, and individual development. NMS' comments indicated that middle and senior level leaders tended to be more familiar with the organizations desire to innovate, the resources available, and that RN's were less familiar with these aspects. Further, leader comments reflected a lack of innovation language as being a barrier which could be eliminated by a common accepted language. The review of RN comments indicated that staff nurses were more familiar with incremental change through process improvement, that 'buy-in' to any change was dependent on being able to see the benefits of change and there was an importance to have an opportunity to try something before adopting it.

The findings also revealed a genuine desire, on the part of the organization, to promote and support life-long learning as it related to innovation. NM and RN comments showed a strong familiarity with this desire for learning. Gaps were identified in NMs and RNs understanding available educational resources which promoted innovation. NM's and RN's had heard of the organization's center for innovation but could not make a solid connection between the activities of the center, the chief innovation officer, and activities within the hospital to bear change of cost, quality, and access. Increased opportunity to become a clinical specialist, to pursue individual development, and to be active in innovation, though encouraged, were not seen as highly critical to the organizations desire to innovate. Results regarding developmental opportunities was contradictory with the organizations vision regarding innovative, coordinated

services that are interdisciplinary and a model for health education and service delivery. The American Nurses Association standards recommended all RN's lead their profession to influence policy and encourage innovation (ANA, 2015). Participants discussed trying new products and methods which proved effective in reducing costs and improving quality in the care of critical care patients. Participants also mentioned the addition of services to increase access to critical care for premature infants and cardiac patients. These additions were consistent with the archived document, and innovation to decrease costs, increase quality, and improve access.

Discussion of the Results in Relation to the Literature

Research Question

The research question for this study was: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses? The participants in this study provided insight into their experiences with innovation in the context of critical care. These experiences included communication, organizational values, aspects of agreement to adopt a new idea or method, personal experience, barriers and gaps regarding innovation within the overall organization, the importance of inter-disciplinary collaboration and the prominence of education in the pursuit of change. The participants' answers to the research question produced a deeper understanding of how nurse leaders can better influence the adoption of innovation. The answers informed me about potential strategies which nurse leaders can use to influence the adoption of innovation in critical care.

The research question was designed to uncover information about the experiences of NMs and RNs with innovation and the adoption of innovation. The experiences of leaders and staff provided confirmation that the skills associated with innovation are not taught in most academic programs or that these skills are not explored in any depth unless at the doctoral level

of education (Pillay & Morris, 2016; Waxman et al., 2017; White et al., 2016). The literature review associated with this study showed the importance of culture (Avakame, et al., 2017; Nightingale, 2018), EI (Goleman, 1995; Karimi et al., 2013), TL (Caro, 2016; Fischer, 2016; Weng et al., 2015), and collaboration (Bender et al., 2015; Claussen et al., 2017).

Organizational Culture

The rapidly changing environments in which hospitals operate and the ever-increasing demand for lower costs, better access, and more consistency in quality is driving the necessity for innovation (Clausen et al., 2017). The increasing necessity for innovation is challenging the systems of education for healthcare leaders and compelling changes in the curriculums for nurse education (White et al., 2016). Pillay and Morris (2016) identified gaps in the competencies required for innovation: this study focused on the competency gaps and the experiences of nurse leaders and staff.

The cultures of hospitals may require that NM's make changes to create environments which support staff nurses in the process of innovation. Culture had a significant effect when innovative behaviors are guided by leaders who use a transformational leadership style (Weng et al., 2015). Theme 1 included evidence of a supportive culture which required more focus on innovation. Participants noted that an innovative culture at the unit level required additional effort and focus. Nightingale (2018) described a positive culture as one where staff receive direction and resources which create an environment where the individual can succeed. Highly structured organizations might create barriers to inter-disciplinary collaboration and knowledge sharing. The findings from theme 2 suggested a culture which encouraged creative thinking could allow nurses to think divergently and create innovative solutions. Weatherford, Bower,

and Vitello-Cicciu (2014) suggested that organizations must develop innovative cultures which were sustainable.

Leveraging Resources

When nurses have a desire for change, providing the resources to promote and support that desire are critical to success. Thune and Mina (2016) emphasized that hospitals are underutilized as fertile grounds for the development of innovations. Innovation which is to be carried out in a collaborative manner requires an organization provide dedicated resources (Thune & Mina, 2016). Nurses may not always recognize the resources available to them for innovation and might fail to acknowledge the impetus which makes innovation imperative. Evidence-based practice in nursing involves the adoption of proven practices from other organizations (Green et al., 2015). Albert (2018) explained that any nurse can be innovative, and that early adoption is a key element of change. The rapid pace of change in hospitals places increasing stress on nurse middle managers. Whaley and Gillis (2018) commented on the increasing pressures that challenged nurse middle managers and the necessity for programs to develop the skills of NMs. The ability to leverage resources was identified as one of the 19 competencies necessary for NMs to drive innovation (Pillay & Morris, 2016). Lúanaigh and Hughes (2016) emphasized the difficult role of NMs in influencing and motivating change which enabled organizations to improve. In a study of nurse leaders, researchers described NMs as organizationally situated to influence change within their institutions (Lúanaigh & Hughes, 2016). NMs may exert their influence on innovation both formally and informally. Rogers (2003) explained that the formal and informal structure of a social system facilitated or blocked the diffusion of an innovation.

Drivers of Innovation

In Theme 2, participants discussed the presence of resources and a lack of understanding and interaction with the resources identified to drive adoption. One particular driver of innovation, evident in the current literature, is the importance of the presence of EI in nurse leaders. Herpetz et al. (2016) concluded that training can increase the ability to recognize the emotional status of others in the workplace. NM's may be in a better position to promote innovation when strong collaborative efforts exist. Swensen et al. (2016) suggested that collaborative leadership promotes the improvement of processes and quality through innovative means. In a study of leadership design, Swensen et al. (2016) concluded that collaborative leaders worked across barriers and promoted an innovative environment centered on process and quality improvement.

Importance of Education

The education of nurse leaders is lacking in the development of skills in innovation (Pillay & Morris, 2016). White et al. (2016) identified the existence of a broad gap in the abilities of nurse leaders and academics regarding innovation. In 2005 the AONE developed a model for the education of nurse executives. Waxman et al. (2017) reported on the advancement and use of the competencies identified in the AONE Nurse Executive Competencies model, noting that the competencies have been included in the graduate level curriculum of many academic programs. The findings of research by Pillay and Morris (2016) and White et al. (2016) contradict Waxman's (2017) claims. NMs and staff nurses discussed the importance of formal and continuous education as they relate to growth and innovation. Participants further explained that educational opportunities in innovation (i.e. innovation academy) were available; conversely, leaders and staff were not required to pursue these opportunities. Nurses with BSN

degrees often have no education or training in the competencies associated with the AONE model which is viewed globally as the standard for practicing nurse leaders (Waxman et al., 2017). The use of leadership development programs was found to be key to persuasive leadership in nursing and to affect outcomes as healthcare systems rapidly change (Vitello-Cicciu et al., 2014). The importance of innovation in the creation of improvements in cost, quality, and access was reported in several studies (Pillay & Morris, 2016; Waxman et al., 2017; White et al., 2016). The authors of these studies concluded that the education of RN's does not include innovation skills. Study findings supported the research that identified competency gaps completed by Pillay and Morris (2016) and White et al. (2016). I sought to address the competency gaps identified in the literature.

Willingness to Adopt

Innovation requires a clear understanding of the changes that will occur and the depth of an individual's willingness to accept those changes (Rogers, 2003). Nurses work in a rapidly changing environment which may be highly stressful in an area like critical care. Berg, et al. (2017) found that issues affecting adoption included concerns of trust, perception of usefulness, and ease of use. Shared governance is a concept which may promote communication, input, and feedback with nurses. Findings from Themes 1 and 5 supported the impact of shared governance on buy-in and the willingness of nurses to adopt change and innovation. French-Bravo and Crow (2015) emphasized that the difference between nurses who commit to involvement and buy-in to a new idea is effective engagement of those individuals. Bourgault et al. (2014) discovered that working in an institution deemed as a Magnet hospital did not affect the adoption of innovation. Participants mentioned the importance of a shared governance model, as part of a hospital holding Magnet status, which promoted participation in numerous activities among RNs.

Interdisciplinary and Team Collaboration

In Theme 5, participants described the presence and importance placed on interdisciplinary and team collaboration. Staff nurses also described their NMs as interactive and good communicators. Interaction, approachability, and frequent communication were aspects identified in four themes (1, 2, 4, and 5). According to Spano-Szekely et al. (2016) the development of competencies among nursing leaders has been fragmented and unreliable. In Themes 2 and 3, NM's explained that there was a disconnect between the resources available and their effort to access those resources.

The engagement of many disciplines in collaborative efforts required an ability to perceive emotions in the workplace and to function effectively as a team member (Herpetz, et al., 2016). The perceived power gap between nurse and physician might interfere with collaborative efforts when the agendas of distinct disciplines may not align. Efficient and effective communication may be difficult in a large organization depending on the number of workers and available resources. Trust, respect, mutual familiarity, and power were found to be key to effective communication between individuals in the same organization and within separate organizations attempting to collaborate (Karam et al., 2018). Clipper and Dawson (2018) emphasized the importance of the elimination of barriers. Findings indicated that when barriers to communication were eliminated, innovation benefited, and creative solutions were generated even when numerous stakeholders were involved (Clipper & Dawson, 2018). In a study of interprofessional and interorganizational collaboration, Karam et al. (2018) found that communication played an essential role in collaboration.

Limitations

Sample

Analysis of the data collected for this study and the literature review combined to provide detailed rich information. The findings of this research provided a deeper understanding of the phenomena under study within the given context. Limitations with the study design existed and did affect the study. The use of face-to-face interviews created time and resource constraints typical of case study design. Yin (2018) noted that case study design results in fewer participants than other designs available to a researcher.

The site selected for the research provided a large population from which to attain participants. Two sources of participants were used in the study: NMs and RNs. There were nine critical care settings within the site setting. Staff nurse interviews came from only two of the potential areas where critical care is provided. The level of responsibility for NMs varied from middle management to senior executives with all having a minimum of one-year experience in critical care. The RNs were all individuals who provide care at the bedside. The educational levels of participants ranged from BSN to Ph.D. with all the doctoral level participants coming from senior leadership.

Participants were slow to volunteer as they had very busy work schedules and did not have a complete understanding of the study purpose. I offered to conduct interviews in a conference room located near the work areas and provided lunch for those who participated. Once participants began to volunteer, I provided blocks of time for back to back interviews. I considered offering a gift card to encourage participation and found this to be unnecessary once times were blocked for interviews near the participants' work area. The use of member checking strengthened the study through the corroboration of data. The organization has nine separate and

distinct critical care units on campus. Future research may be enhanced if participants come from all critical care areas.

I depended on honest and truthful input from all participants and avoided bias during the study by remaining cognizant of my preconceived assumptions. All participation was voluntary, and the accuracy of each transcript was confirmed through member checking. Merriam (1988) acknowledged that the depth of description, analysis, and findings is solely determined by a researcher.

Study Design

The study was designed as a case study using one physical setting. The design included face-to-face semistructured interviews, and open-ended questions. These interviews lasted from 30 minutes to one-hour and were guided by an interview protocol. There were eight questions and all questions were asked of each participant. I read each question to each participant to ensure that participants received the question as constructed prior to undertaking field research. An archival document was reviewed, coded, and used for triangulation to ensure reliability and validity. Use of an archival document can provide corroboration of the data collected from interviews (Yin, 2018). The study was designed to expand the collection of rich and thick data from participants at a single site. An interview protocol assisted me in avoiding bias, asking consistent questions, and probing where necessary to collect in-depth data.

The interview questions were developed based on the literature reviewed for this study. Participants were instructed to ask me to repeat any question or ask for clarification whenever they felt it necessary. The data collected were rich, deep and reflected the participants' unique experiences. Participants used different words and phrases to describe the same or similar subject or experience. For example, inter-disciplinary teamwork had the same meaning as

collaboration. The context in which words were used required me to decide when the participant meant the same thing as other participants or when participants conveyed a different meaning. I used probing questions and my judgement to ensure data were captured accurately. I used member checking of transcript summaries to corroborate the meaning attributed to words and phrases as described by Merriam, (1988), Saldaña, 2016, and Stake, (1995).

Finally, I chose only one theoretical framework for the study: DOI developed by Rogers, (2003). My choice of this framework limited the exploration to the parameters of a single theory. Other existing frameworks may have been used and might have produced more or different information. Combining other frameworks with the DOI model could have provided additional lenses through which this researcher may have analyzed data.

Implication of the Results for Practice, Policy, and Theory

Practice

This qualitative case study was driven by the gaps identified in innovation competencies as discovered by Pillay and Morris (2016). Implications for practice include a more focused and direct requirement for participation in innovation. Study findings indicated that engagement in innovation was ill-defined and left mostly up to the desire of the individual. The ANA (2015) called on the nursing profession to involve all practicing RN's to add their influence on policy development which encourages innovation. Findings also supported the creation of a common language surrounding innovation. Participants commented on the lack of a universal jargon to assist in the influence and promotion of innovation.

A lack of coordination in the understanding and use of resources was clearly identified in the findings. A clear understanding on the part of leaders and staff nurses regarding resources such as the center for innovation and the innovation board had clear implications for NM's to

influence innovation. Conversely, participants noted that the center for innovation was externally focused as evidenced by the reporting structure: The chief innovation officer reported to the chief executive officer. Hospital NM's and staff referred to evidence-based practice during interviews. Two participants (L8 and N4) commented that evidence-based meant that an innovation had been trialed, observed, and adopted elsewhere: the organization need only adopt the previously proven practice.

Implications for practice include a more focused and direct requirement for participation in innovation. Data indicated that participants were encouraged and not required to achieve competencies in innovation through additional education and training. The presence of the center of innovation and an innovation academy provides an actionable opportunity for the host organization. Organizational leaders may require participation in the innovation academy for all NMs and RNs; both tenured and newly employed. Requiring this participation might result in higher developed skill levels and increased use of the available resources such as the center for innovation. Refocusing educational efforts around innovation was supported by the data.

Policy

The most significant findings of the study may have been barriers to access, resources and disconnects between actual practice of the stated mission. In the short and long-term, academia must address curricula shortcomings related to innovative skills. I recommend beginning with guidance provided by the AONE Nurse Executive Model as described in Waxman et al. (2017). To enhance guidance on the nurse leader's role in innovation, the AONE can revise the Nurse Executive model. Hospitals must begin to focus on internal programs which prepare current and new nurse leaders for the complex aspects of the NM role (Kelly, 2017). Academic, research, and hospital organizations with the resources need to bridge the

gaps and barriers which exist between innovation commitments and those charged with creating and influencing innovation at the patient's bedside. Efforts to bridge educational gaps and organizational barriers might begin with a better focus on internal development programs.

The inadequate progress of healthcare leaders in decreasing costs, increasing access, and improving quality makes innovation competencies for leaders and staff essential. Findings showed that the site organization made appropriate educational opportunities available to critical care NM's and RN's. Pursuing these opportunities was strictly voluntary. Study findings showed that the importance placed on education and interdisciplinary collaboration did not align with actual practice in requiring education or creating collaboration. The organization needs to consider establishing policies which require all new critical care staff (NMs and RNs) complete an innovation academy within six months of hire. The policy must include short specified timelines for existing staff to complete the innovation academy.

The site organization must create curricula and development programs to address the skill shortfalls in innovation competencies: especially in the areas of cost, quality, and access. The research site was part of a university system which included the education of healthcare providers (nurses and physicians) in the organization. A collaborative and structured effort to undertake the revision of curricula is well within reach of the organization. Study findings supported the need to revise curriculum in nursing programs.

Participants L2 and L4 commented on the addition of critical care units to improve access to neonatal and cardiac critical care. L2 indicated inadequate experience and education in the process of developing a new unit from conception to full operation. Other participants suggested making project management skills more available to NM's. In the short-term, hospitals and healthcare leaders, including the research site, need to identify strategies that support leadership

in efforts to influence creativity, engagement, and innovation. Staff nurses mentioned the need for release time from patient care for the purpose of pursuing innovation and team efforts.

Theory

The primary theory used in support of this research was DOI developed by Rogers (2003). Five DOI attributes were identified as determining the rate of adoption (Rogers, 2003; Lee, 2004). Three of the five attributes of DOI were supported by study findings: relative advantage, trialability, and observability. These three attributes closely mirror the mental processes through which nurses reach 'buy-in' or the point of being willing to adopt an innovation as described by participants. Lee (2004) applied DOI in a study of nurses' behavior in workplace adoption of new technology and found that the model accurately described the behaviors of nurses involved in the adoption process. Participants communicated significant and multiple modes of communication. NM's may use the current communication processes to create structured instruments which can be used to collect useful data from RN's. A better understanding of the different stages of adoption might help NM's streamline the path to adoption.

Recommendations for Further Research

The findings of this study may contribute to extant and future research regarding closing the gap in innovation curriculum beginning at the level of a Bachelor of Science degree in nursing. Institutions which belong to larger systems must discover best practices to integrate innovation resources, e.g., centers for innovation, throughout the separate pieces of the system.

This study was limited by the number of participants and the type and size of the research site. The choice of one theory, DOI, limited how the data were analyzed. Other theories, individually or in combination with DOI, may add to the study findings and understanding of the

data in the given context. Lee (2004) suggested more detailed definitions of Rogers' (2003) DOI attributes might be useful in future study designs. Future researchers could include other variables, e.g., multiple cases, a multi-hospital system, expanded number and type of participants, different regions of the U.S.

Numerous opportunities are possible for research that may provide support for the thesis of this study and further illuminate the themes identified in this research. These areas of future research include:

1. Dealing with implementation barriers of an interdisciplinary innovation program in acute care hospitals.
2. Future researchers may study the remaining two DOI attributes: Compatibility and complexity.
3. Approaches to pedagogy in teaching healthcare leaders, nurses, and ancillary staff in the competencies of innovation.
4. Address the elimination of barriers to better connect staff and available resources within the same health system, community, or region.
5. Further study the impact that an ability to influence the adoption of innovation in critical care may have on the cost, quality, and access to care.

Healthcare organizations need to determine the best avenues for providing RNs time to be creative and develop environments that are psychologically safe (Zuber, 2018). According to the findings of this study these avenues might include time to participate in nurse congress meetings, innovation academies, and interdisciplinary work on a more frequent basis.

Conclusion

My objective for this qualitative study was to identify strategies that nurse leaders, particularly middle managers, may use to influence staff in the adoption of innovative practices. I interviewed 12 participants using a protocol driven semistructured interview process with open-ended questions. To answer the research question, interview data were triangulated with data from an archival document: the organizations 2016 CHNA. Five themes emerged during data analysis: organizational culture, resources and drivers of innovation, the importance of formal and continuing education, willingness to adopt, and interdisciplinary collaboration.

Leadership skills in innovation may not be included in curricula or taught to leaders who are charged to lead innovation efforts. The themes which surfaced from the research were consistent with information discovered during review of the extant literature. Mackoff et al. (2017) reported that the complex environments in which healthcare organizations continue to operate require that leaders have the requisite skills to listen responsively and to think about the system as a whole. Further, hospital leaders must develop their self-awareness to foster an environment where inter-disciplinary collaboration empowers others to seek effective solutions (Goleman, 1995). Strategies which allow nurse leaders to recognize emotions, theirs and others, and understand the impact these emotions have are essential (Mackoff et al., 2017).

The literature identified a clear and present need for innovation in the continuous struggle to effectively reduce cost and harm and increase patient safety and access (Thomas, Seifert, and Joyner, 2016). Simultaneously, significant barriers exist in the hospital setting which interfere with making innovation a mainstream activity (Kelly, 2017). The findings of this study indicated, issues with the lack of a common language for innovation, the lack of integration

between innovative resources, i.e. a center for innovation, and the conflict between the desire to be innovative and setting aside time for staff to be creative.

As the healthcare industry seeks to innovate a pathway to prosperity and effectiveness, challenges continue to arise faster than the workplace can establish innovation as a core competency. All 12 (100%) participants commented on one or more aspects of the importance of education. Findings indicated that case studies (e.g., evidence-based practice) and immersion-based approaches (e.g., geriatric scholar and innovation academy) were effective strategies available to nurse leaders. The use of case study and immersion-based approaches was evident in several studies in the literature reviewed for this research (Fischer, 2016; Moore et al., 2014; Pillay & Morris, 2016; Swensen et al., 2016; White et al., 2016).

Failure to drive innovation in an interdisciplinary fashion may inhibit the missions and visions expressed by many 21st century healthcare providers. Nurse leaders must strive to help their organizations become integrated centers where innovation is a core competency. My findings demonstrate the need for academia to enrich educational programs in nursing with solid curricula in innovation. Nurse leaders must develop a universal vernacular regarding innovation and carve out time for experienced and new nurses to learn the competencies of innovation through simulation and immersion (e.g., academies) as they develop their own skills in EI. Nurse leaders will then be well positioned to be drivers of the innovation goals of their organizations and the healthcare industry as a whole.

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Appendix A: IRB Approval Letter

DATE: February 28, 2019

TO: Michael McEachern, BS, MS

FROM: Concordia University–Portland IRB (CU IRB)

PROJECT TITLE:[1297029-1] What strategies do nurse managers need to influence the adoption of innovation among critical care staff nurses?

REFERENCE #:EDD-20190116-Ghormley-McEachern

SUBMISSION TYPE: New Project

ACTION:APPROVED

APPROVAL DATE: February 27, 2019

EXPIRATION DATE: February 27, 2020

REVIEW TYPE: Limited Review

Thank you for your submission of New Project materials for this project. The Concordia University–Portland IRB (CU IRB) has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission. Attached is a stamped copy of the approved consent form.

You must use this stamped consent form.

This submission has received Limited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a MINIMAL RISK project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of February 27, 2020.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Amon Johnson at (503) 280-8127 or amjohnson@cu-portland.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Concordia University–Portland IRB (CU IRB)'s records. February 28, 2019

Appendix B: Organizational Approval Letter to Conduct Research

Organizational Approval to Conduct Research Concordia University–Portland

What Strategies do Nurse Managers Need to Influence the Adoption of Innovation in Critical Care?

[contact information redacted]

My name is Michael L. McEachern and I am a doctoral candidate at Concordia University, working to complete my Doctor of Education degree with a concentration in Leadership, Inquiry, and Transformation. I am conducting a dissertation research case study on the strategies which nurse managers use to influence innovation among staff nurses in critical care. My research will involve interviewing nurse leaders who have a minimum of one-year experience in critical care and full-time staff nurses who have a minimum of one-year experience in critical care and the review of the 2016 Community Health Needs Assessment for your organization (an archival document which is publicly available). Your organization was identified as meeting the necessary criteria for the study. Therefore, I am contacting you to determine the possibility of including employees from your organization in my study.

Upon your approval of the proposed study, I will email you a letter of introduction with a request to forward the invitation to participate to all nurse leaders and staff in the critical care units of your organization on my behalf. If permissible, all employees will contact me directly to express interest and receive an informed consent form for participation. All interviews will occur in a private setting i.e., the participant's office, a space designated by you or the participant) and be scheduled to prevent any disruption to their workday. You may terminate this agreement to conduct research at any time by providing written notice 30 (thirty) days prior to the expected termination date.

Once the study is finalized and approved by Concordia University–Portland, a summary of the findings will be provided for your review. The name of your organization, study participants, and requested archival documents will remain confidential and protected accordingly. If you will be willing to allow me to conduct this study with your organization, as described above, please sign below and return to me as soon as possible.

Sincerely,
Michael L. McEachern

Authorizing Representative
Signature on file

Appendix C: Letter to the Study Population

Hello,

My name is Michael McEachern and I am a doctoral candidate at Concordia University–Portland. I am working to complete a Doctor of Education degree with a concentration in leadership and transformation. I am conducting a dissertation research study on strategies that nurse leaders need to influence the adoption of innovation in critical care.

Nurse managers and staff nurses who work full-time and have at least one-year of experience in critical care are invited to participate in this study. The term nurse manager includes titles such as: director of nursing, nurse manager, ward or unit manager, and nursing or house supervisor.

Participation consists of a face-to-face interview conducted on-site. I acknowledge the value of your time and propose that the questions will take approximately 30 (thirty) minutes and not exceeding one (1) hour to answer. Your participation and experiences will be essential to the success of the research study.

Background Information:

The purpose of this study is to explore the strategies nursing leaders need to influence the adoption of innovation in critical care.

Procedures:

If you agree to be in this study, you will be asked to:

- Participate in a face-to-face interview not expected to exceed one (1) hour.
- Coordinate a mutually agreed upon time to be interviewed.
- Allow the researcher to audio record all interviews.
- Review the researcher's written summation of the interview for accuracy.

Sample questions:

- What communication strategies do you need (use) to increase critical care staff nurse's knowledge regarding understanding the use of innovation?
- What are the key components that influence the adoption of innovation in critical care?
- How can you enhance nurse-physician collaboration for the adoption of innovation in critical care?

Voluntary Nature of the Study:

Your participation in this study is voluntary. Should you choose not to participate your decision will be held in high regard without inquiry or penalty from the researcher or anyone at your institution. If you decide to join the study now, the option to withdraw from the study, prior to the completion of the member checking process, will remain in effect.

Risks and Benefits of Being in the Study:

There are no risks to participating in this study other than providing your information. However, your identity and information will be protected. You will be given a code and only the PI will know who this code is associated with. Any personal information you provide will be coded so it cannot be linked to you. Any name or identifying information you give will be kept secure via electronic encryption, password or locked within a file drawer accessible only to the PI. None of the data collected and retained by the PI will have your name or any other identifying information. A secret code will be used to analyze the data. You will not be identified in any report or publication which results from this study. Your information will be kept private at all times and all study documents will be destroyed 3 years after the conclusion of the study.

Benefits:

The existing literature provides little about innovation and the NMs ability to influence nurses in the adoption of innovation. The information you provide will inform your organization about the development of competencies and development programs to enhance the proliferation of innovation in critical care.

Privacy:

The information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. In addition, the researcher will not include your name or subsequent information that could be used to identify you in the study reports. The interview will be audio-recorded. Data will be kept password secured, only accessible by the researcher. Data will be kept for at least 3 years, as required by the university after which, the data will be destroyed. Audio recordings will be deleted following your review and approval of a researcher summation of the recording transcript.

Your Supervisor will determine if you are interested in participating in this study. If you have questions prior to agreeing to participate, please contact me at [redacted]. Following confirmation of your participation, you will sign the included consent form containing additional information about the study. Following the return of the consent form via email, I will work with UAB representatives to arrange a time and date for the interview. I look forward talking with you further.

Sincerely,
Michael L. McEachern

Appendix D: IRB Approved Informed Consent

Concordia University–Portland Institutional Review Board Approved: April 30, 2019; will
Expire: February 27, 2020

Research Study Title: Influence on the Adoption of Innovation in Critical Care
Principal Investigator: Michael L. McEachern
Research Institution: Concordia University–Portland
Faculty Advisor: Dr. Yvette Ghormley

Purpose and what you will be doing:

The purpose of this study is to provide an understanding of the strategies used by nurse leaders to engage critical care staff nurses in innovation in the general acute care hospital. I expect approximately 12 volunteers. No one will be paid to be in the study. Enrollment will begin on May 5, and end on July 30, 2019.

To be in the study, you will be asked to participate in interviews with the principal investigator (PI). The PI will ask questions, collect and analyze data, and report findings. You will be asked to respond to questions in person in one-on-one interviews with the PI. 3

The procedure will be to identify both NMs and staff nurses who hold BSN, MSN, or Doctoral degrees in nursing and work in a critical care area of the hospital (such as ICU, CCU, Neonatal ICU, Neuro ICU, and The Emergency Unit). You will provide your interest and grant permission to participate using this document. The PI will ask a standard set of open-ended questions and any follow-up questions needed. Your agreement to participate includes authorization for the PI to take notes, record each interview, and transcribe the recording.

The interviews are expected to take 30 (thirty) minutes to one (1) hour of your time with an opportunity to review a summary of the interview transcript to ensure the accuracy of the recording transcript.

All information you supply will be held in the strictest of confidence. Recordings will be deleted after the audio is transcribed and a summary of the transcription is reviewed by you.

Risks:

There are no risks to participating in this study other than providing your information. However, your identity and information will be protected. You will be given a code and only the PI will know who this code is associated with. Any personal information you provide will be coded so it cannot be linked to you. Any name or identifying information you give will be kept secure via electronic encryption, password or locked within a file drawer accessible only to the PI. None of the data collected and retained by the PI will have your name or any other identifying information. A secret code will be used to analyze the data. You will not be identified in any report or publication which results from this study. Your information will be kept private at all times and all study documents will be destroyed 3 years after the conclusion of the study.

Benefits:

The existing literature provides little about innovation and the NMs ability to influence nurses in the adoption of innovation. The information you provide will inform your organization about the development of competencies and development programs to enhance the proliferation of innovation in critical care.

Confidentiality:

This information will not be distributed to any other agency and will be kept private and confidential. The only exception to this is if you tell the PI of any abuse or neglect that makes the PI seriously concerned about your immediate well-being and safety.

Right to Withdraw:

Your participation is critical to this effort and greatly appreciated, but it is acknowledged that the questions asked by the PI are sensitive in nature. You are free at any point to choose not to engage with or stop the study. You may skip any questions you do not wish to answer. This study is not required and there is no penalty for not participating. If at any time you experience a negative emotion from answering the questions, inform the PI and he will stop asking you questions.

Contact Information:

You will receive a copy of this consent form. If you have questions you can talk to or write the principal investigator, at [redacted]. If you want to speak with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. OraLee Branch (email obranch@cu-portland.edu or call 503-493-6390).

Your Statement of Consent:

I have read the above information. I asked questions if I had them, and my questions were answered. I volunteer my consent for this study.

Participant Name	Date
Participant Signature	Date
Investigator Name	Date
Investigator Signature	Date



Principal Investigator: Michael L. McEachern
 Email: [redacted]
 c/o: Dr. Yvette Ghormley
 Concordia University–Portland
 2811 NE Holman Street
 Portland, Oregon. 97221

Appendix E: Interview Protocol

Interview: *What strategies do nurse managers need to influence the adoption of innovation among critical care nurses?*

What you will do	What you will say-script
<ul style="list-style-type: none"> • Introduce the interview and set the stage 	<p>My name is Michael McEachern, and I appreciate you taking time out of your busy life to participate in this research project.</p> <p>I am studying the strategies used by nurse leaders to influence innovation. My research question that will drive the focus of this study is: What strategies do nurse managers need to influence the adoption of innovation among critical care nurses?</p> <p>During the interview I will refer to innovation and personal innovation. Personal innovation is considered any idea, method, process, or device that YOU may have developed; innovation refers to innovations that are developed by others which you may be asked to adopt. There are 9 questions that will guide the interview.</p>
<ul style="list-style-type: none"> • Give the participant the opportunity to introduce themselves 	<p>I have been a student of Concordia University–Portland since January 2016. I have worked in acute care hospitals for some 25 years serving as CEO, COO, and Vice President. Prior to working in acute care, I was a certified Emergency Medical Technician, Special Skills.</p> <p>Just to reiterate, you have voluntarily consented to be a part of this research study and agreed to be interviewed.</p> <p>Remember, your participation is voluntary, and you may withdraw from the study at any time prior to the data analysis stage.</p> <p>Do you have any questions about the informed consent form that I provided you or the informed consent process?</p> <p>I will record (audio) this interview and take notes. Your participation, this interview, and your input is private, and I will keep the proceedings confidential. This includes</p>

	<p>assigning an alpha-numeric code in place of your name. Both known only to me and password protected on my personal computer.</p> <p>Do you have any questions or concerns about the confidentiality of your participation?</p> <p>Do you have any questions or concerns about anything that I have discussed with you to this point?</p>
Begin the interview with the interview questions	Let's begin with the questions
Wrap up interview by thanking participant	This concludes our interview session. I appreciate the time you have given toward this endeavor
Schedule follow-up member checking interview	<p>This interview will be transcribed in its entirety. Within 4 business days, I will provide you with a summary of the interview so you can be certain that I have correctly captured the essence of your responses to the questions.</p> <p>If there are inconsistencies or misrepresentations in the transcription summary which I provide, we will have a follow-up session so that you can provide clarification.</p> <p>Thank you for your time; I hope you have a wonderful rest of the day.</p>

Appendix F: Interview Questions

INTERVIEW QUESTIONS	PROMPTS
1 What strategies are used to influence the adoption of innovation among critical care nurses?	Plans? Policies? Written Procedures?
2 What are best practices to help critical care nurses understand the need for innovation?	Training? Metrics?
3 What strategies are needed to increase critical care staff nurses knowledge awareness regarding understanding the use of innovation?	Development? Care guidelines? Codified knowledge?
4 What strategies are needed to influence personal innovation amongst critical care staff nurses?	Training others (expert)? Travel?
5 What strategies are needed to enhance nurse-physician collaboration for the adoption of innovation in critical care?	Dyads? Agendas?
6 What communication strategies can you use to effectively influence the adoption of innovation in critical care?	Newsletters? Meetings? Written Procedures?
7 What are the key organizational factors associated with the adoption of innovations in critical care?	Culture of innovation? Policy Perception? Nurse-Physician Collaboration?
8 What other information can you add to benefit this study?	

Appendix G: Innovation Competencies

1. Recognition of an opportunity
2. Seeing the future / Vision
3. Maintain focus / ability to adapt
4. Resilience
5. Teamwork and collaboration between disciplines
6. Assessment of opportunity/ Building and using networks
7. Confidence
8. Tenacity and perseverance
9. Understanding of Healthcare Systems
10. Leveraging resources
11. Risk Management / Mitigation
12. Creativity problem solving / Ability to conceive
13. Create unconventional approaches
14. Design thinking
15. Change management
16. Shared knowledge across disciplines
17. Information management
18. Behavioral economics

Adapted from Pillay and Morris (2016)

Appendix H: Nurse Executive Competencies

1. Effective communication
2. Relationship management
3. Influence of behaviors
4. Ability to work with diversity
5. Shared decision-making
6. Community involvement
7. Medical staff relationships
8. Academic relationships

Adapted from AONE (2005) & Waxman et al. (2017)

Appendix I: Initial Coding Results

CODE*	References	Participants	CODE	References	Participants
Communication	106	12	Incentive	9	5
Collaboration	57	12	Nurse busyness	9	5
Resources	56	12	Change in practice	8	4
Leadership	46	12	Observability	8	4
Education	43	10	Quality	8	3
Involvement	40	9	Commitment	7	6
Gap	37	10	Core Values	7	3
Barriers	36	8	Innovation Resources	7	4
Knowledge sharing	36	9	Project	7	4
Culture	35	11	Competencies	6	3
Encouragement	35	8	Nurse age	6	5
Ideas	33	10	Simulation	6	3
Buy in	32	10	Magnet Status	5	3
Innovation	32	10	Personal investment	5	2
Development	30	11	Relative Advantage	5	5
Training	27	7	Scholar	5	3
Nursing Leadership	24	6	Storytelling	5	2
Language	23	8	Voice	5	4
Driver	22	10	Academies	4	2
Team	22	8	Adaptability	4	4
New Method	18	7	Drivers	4	1
Center for Innovation	17	9	Inexperience	4	4
Interdisciplinary	17	7	Lack of desire	4	4
Engagement	15	6	Opportunity	4	2
Environment	15	6	Problem Solving	4	1
Trialability	15	6	Research	4	3
Experience	13	9	Stakeholder	4	3
Empowerment	12	4	Consistency	3	3
Expectations	12	8	Innovation Board	3	1
Experiential	12	6	New Standard	3	3
Evidence-practice	11	6	Time restraint	3	2
Feedback	11	6	Adoption of change	2	2
Nurse Congress	11	7	Patient safety	2	1
Metrics	10	6	Standards	2	2
Accountability	9	3			
Creativity	9	4			

Note. Adapted from Nvivo12® report. Items after 'Standards' coded & referenced once

Appendix J: Statement of Original Work

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does “fraudulent” mean?

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

What is “unauthorized” assistance?

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

Statement of Original Work (continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.
2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*.

Michael L. McEachern

Digital Signature

Michael L. McEachern

Name (Typed)

October 14, 2019

Date