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Increasing Nurse Leader Knowledge and Awareness of Information and Communication Technologies

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This is to certify that the doctoral study by

Cory Stephens

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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Technologies

by

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MSN, Walden University, 2018

BSN, Indiana University, 2015

ASN, Ivy Tech Community College, 2014

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Due to the recent coronavirus disease (COVID-19) pandemic, rapid technological

innovation and nursing practice transformation exposed a deepening divide in the

knowledge and awareness of information and communication technologies (ICT) among

nurses. This technological skills gap undermines the benefits of ICT to nursing practice

such as increased nurse satisfaction, improved care quality, and reduced costs. Nurse

leaders are positioned to promote the use of ICT among nurses but may suffer from the

same knowledge deficit of ICT as their followers. Guided by Locsin's technological

competencies as caring in nursing theory, Staggers and Parks' nurse-computer interaction

framework, and Covell's nursing intellectual capital theory, this DNP scholarly project

was conducted to determine if an educational intervention focused on ICT increases

knowledge and awareness among nurse leaders in a federal clinical research hospital.

Twenty-eight ($N = 28$) voluntary participants completed a pretest and posttest on the

content of a virtual group learning session about ICT and nursing practice. Using a

Wilcoxon Signed Rank test to estimate data measuring learning, an increase in

knowledge of ICT ($z = -4.72$, $p < 0.001$), an increase in awareness of the benefits of ICT

to nursing practice ($z = -3.50$, $p < 0.001$), and an increase in awareness of the role of

nurse leaders to promote ICT ($z = -3.57$, $p < 0.001$) were indicated. This project

contributes to positive social change by increasing the knowledge and awareness of ICT

among nurse leaders, thereby, narrowing the technological skills gap in the nursing

workforce and paving the way for increased nurse satisfaction, improved care quality,

and reduced costs.

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Dedication

I dedicate this DNP scholarly project to Mrs. Firth, my fourth-grade teacher, who endured my incessant questions about the human brain and gave me a stage on which to sing. Though I did not become a neurosurgeon nor a famous vocalist, I have pursued my intellectual curiosity with a song in my heart because - as I learned from Mrs. Firth - science and art can work together to help humanity.

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Section 1: Nature of the Project

Introduction

Information and communication technology (ICT) is a "diverse set of
technological tools and resources used to transmit, store, create, share or exchange
information" (UNESCO, 2021, p. 1). ICT is merging with nursing practice (Shih &
Rosenblum, 2017). Rouleau et al. (2017) identified 19 nursing care themes that are
influenced by ICT including knowledge updating and utilization, communication and
care coordination, and nurse satisfaction. Moreover, the forward direction of nursing
practice is toward increased integration of ICT into everyday work (Redley et al., 2020;
Sensmeier, 2011; Warshawski et al., 2019) such that ICT is a frictionless part of patient-
centered care (Locsin, 2017). Recently, the coronavirus (COVID-19) pandemic
accelerated the evolution of nursing practice toward increased use of ICT via physical
distancing requirements that transformed how, when, and where nurses communicate,
collaborate, and care (Dykes & Chu, 2021).

A knowledge deficit related to ICT negatively impacts self-efficacy and attitude
toward ICT, which are strong predictors for adoption and use (Gonen & Lev-Ari, 2016;
Shoham & Gonen, 2008; Warshawski et al., 2019). The rapid transformation of nursing
practice during the COVID-19 pandemic exacerbated the pre-existing unreadiness for
ICT among the nursing workforce (Bembridge et al., 2011; Dykes & Chu, 2021) further
undermining the benefits of ICT. When nurses are prepared to use ICT as part of their
innovative, problem-solving toolkit, they can tackle the most pressing workforce issues
as evidenced by multiple studies that demonstrate that ICT increases nurse satisfaction,

improves care quality, and reduces costs (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019). Indeed, how proficiently nurses use ICT will be a determining factor in whether nurses have an expanded or diminished role in future states of healthcare (Bembridge et al., 2011; Sensmeier, 2011). Thus, nursing workplaces should encourage professional development in ICT, foster a culture that is supportive of ICT, and implement other strategies to promote ICT use among nurses (Bembridge et al., 2012).

Nurse leaders have a critical role in the professional development of their nurse followers and in promoting a tech-friendly culture (Bembridge et al., 2011; Gonen & Lev-Ari, 2016; Sharpp et al., 2019). However, nurse leaders may also lack self-efficacy and have a poor attitude toward ICT due to a knowledge deficit undercutting their ability to promote ICT use among nurses (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). One strategy to overcome this practice problem is to increase knowledge and awareness of ICT among nurse leaders (Fagerstrom et al., 2017; Sharpp et al., 2019; Shoham & Gonen, 2008). Therefore, the purpose of this DNP scholarly project is to determine if an educational intervention focused on information and communication technology increases knowledge and awareness among nurse leaders in a federal clinical research hospital.

Problem Statement

The setting for this doctoral project was a large federal hospital devoted to clinical research. The nurses in this hospital are specially trained to care for domestic and international research participants with diverse medical conditions on experimental

treatment protocols in a blend of inpatient and outpatient visits with providers from 27 different institutes and centers. The hospital is well-equipped with health information technology (HIT) having used electronic health records (EHRs) and integrated clinical information systems (CIS) for over 40 years (Department of Clinical Research Informatics, 2020).

Like other health care organizations, this setting was forced to rapidly shift to new ways to communicate and collaborate at the onset of the COVID-19 pandemic. At that time, a new communication and collaboration tool was introduced to staff to facilitate virtual teams. A new telehealth program utilizing ICT was also implemented. However, there was little time to train nurses on the use of this new technology. Many nurses struggle to use it 2 years later and have been underrepresented in some decisions that affect nursing and patient care (G. Wallen, personal communication, January 24, 2022).

Technology and nursing practice are increasingly intertwined in day-to-day work as well as care provision. Nurses must be proficient in ICT to provide patient-centered care whether that is in person or virtual. In addition, nurses must realize the benefits that ICT has on many other nursing care themes including nurse satisfaction. Without adequate knowledge and skills in ICT, nurses are at a disadvantage in the current state and may find it difficult to be engaged in decisions involving ICT that impact nursing practice. Thus, there was an urgent need for increased ICT knowledge and awareness among nurses so they can practice fully and be equal partners in future decision-making.

Purpose Statement

Many nursing care themes including but not limited to knowledge updating and utilization, communication and care coordination, and nurse satisfaction are influenced by ICT (Rouleau et al., 2017). However, because of rapid technological innovation and nursing practice transformation especially since the COVID-19 pandemic, a growing technological skills gap in the nursing workforce undermines the benefits of ICT (Bembridge et al., 2011; Dykes & Chu, 2021). Nurse leaders can promote ICT use among their followers (Bembridge et al., 2011; Gonen & Lev-Ari, 2016; Sharpp et al., 2019), but their ability to do so is diminished by their own knowledge deficit of ICT (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to determine if an educational intervention focused on information and communication technology (ICT) increases knowledge and awareness among nurse leaders in a federal clinical research hospital. It is hoped that the enhanced knowledge and awareness of ICT among nurse leaders is then translated into practice and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes.

Nature of the Doctoral Project

This DNP scholarly project synthesized the existing evidence in the CINAHL Plus database as a basis for an intervention to address the lack of ICT knowledge among nurse leaders. Thirty-five articles were selected from 281 primary, peer-reviewed results using the search terms *nursing* and *ICT*. The following themes were generated by the literature search: the role of nurse leaders in ICT adoption, the need for ICT education

among nurse leaders, and nurse satisfaction. After synthesizing the evidence, an educational intervention geared toward ICT was designed and delivered to nurse leaders at the field site. The difference between pretest and posttest scores were estimated to determine if there was an increase in knowledge and awareness of ICT among the participants because of the educational intervention. Nurse leaders who have increased knowledge and awareness of ICT can leverage their position to promote ICT use among their followers and improve many nursing care themes in the process including nurse satisfaction (Bembridge et al., 2011; Gonen & Lev-Ari, 2016; Redley et al., 2020; Sharpp et al., 2019; Warshawski et al., 2019).

Significance

This DNP scholarly project had the potential to impact multiple stakeholders. Many levels of nurse leaders were engaged including the Chief Nursing Officer (CNO), the Director of Nursing Education, other senior nurse leaders, and middle management who participated in the educational intervention. In addition, information and technology (IT) staff were engaged including the Chief Information Officer (CIO), Deputy CIO who is the equivalent to a Chief Nursing Informatics Officer (CNIO), and IT Support staff who support the technology utilized in the educational intervention. Additional stakeholders who did not directly contribute to nor participate in the educational intervention but may benefit from it included staff nurses and research participants.

This DNP scholarly project has the potential to have a profound impact on current and future nursing practice. When nurses are prepared to use ICT as part of their innovative, problem-solving toolkit, they can tackle the most pressing workforce issues

as evidenced by multiple studies that demonstrate practical applications of ICT to increase nurse satisfaction, improve care quality, and reduce costs (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019). Furthermore, knowledge and awareness of ICT will strengthen nursing's position as equal partners in decision-making when health care and technologies continue to evolve.

The results of this DNP scholarly project also have the potential to effect positive social change through nursing innovations when nurses are proficient in ICT. Innovations have helped humans become more advanced since the Stone Age (Roberts et al., 2016). Across disciplines, innovation is a concept whereby problems are addressed in new ways to achieve better outcomes (Carmeli et al., 2010; Nurten et al., 2015; Weberg, 2009). Rogers (1992) posited that nursing innovation is one strategy that can assist with constant change and generate new knowledge that will ultimately improve nursing practice (McEwin & Wills, 2019). When leaders stimulate, steer, and sustain a culture of innovation (Deschamps, 2008), "employees are more willing to transform their creative ideas into innovative outputs" (Weng et al., 2012, p. 428). This project aligned with Walden University's goals for promoting positive social change (Walden University, 2017) because ICT-enlightened nurse leaders can empower nurses to use ICT for innovative problem solving that will transform nursing practice leading to increased nurse satisfaction, improved care quality, and reduced costs (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019).

Summary

The scope and standards of nursing practice would be incomplete without acknowledging the importance of ICT in care and the day-to-day work of nurses. Nursing's dependency on ICT grew larger when the COVID-19 pandemic changed workflows and forced many hospital operations to use new virtual formats for telehealth and general day-to-day work that nurses perform. The resulting rapid transformation of nursing practice widened the existing technological skills gap afflicting the nursing profession. Alas, ICT is the key to solving some of the nursing profession's biggest problems and ensuring its future in health care. Therefore, ICT proficiency among nurses must be achieved. To address this opportunity for improvement, an educational intervention to increase knowledge and awareness of ICT among nurse leaders at a large federal clinical research hospital was proposed. Through their influence over their nurse followers, ICT-enlightened nurse leaders can promote ICT use among nurses to realize the many benefits for nurses, the organization, and the nursing profession. The next section further details the background and context for this DNP scholarly project.

Section 2: Background and Context

Introduction

Nursing practice has been permanently transformed by the rapid technological innovations that occurred due to the COVID-19 pandemic (Bembridge et al., 2011; Dykes & Chu, 2021). Unfortunately, nurses' lack of knowledge of ICT is detrimental to the nursing profession. Nurse leaders can leverage their influence over their nurse followers to enhance the use of ICT, but nurse leaders may also present with a knowledge deficit of ICT (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to determine if an educational intervention focused on ICT increases knowledge and awareness among nurse leaders in a federal clinical research hospital. It is hoped that the enhanced knowledge and awareness of ICT among nurse leaders is then translated into practice, and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes. This section describes the concepts, models, or theories that supported the project; zooms in and out on the practice problem; and outlines my role as the DNP student and the role of the project team.

Concepts, Models, and Theories

Information and communication technology is rapidly and constantly evolving and affecting nursing practice (Shih & Rosenblum, 2017). Achieving the right balance with technology is a work in progress leading some to wonder how technology fits into practice at all. To try to answer that, a map can be drawn using frameworks and theories leading to technological enlightenment, or the moment when technology brings nursing,

patient, environment, and health into alignment. With Watson's (1979) metaparadigms of nursing in mind, technology can be viewed as an essential part of the environment in nursing practice and as normal as wearing scrubs to work each day. Having an attitude like this toward ICT helps nurses feel in control of technology rather than technology having control over nurses. Two nursing middle-range theories (MRT) and one nursing framework connect the dots on this map to technological enlightenment including technological competencies as caring in nursing theory, nurse-computer interaction framework, and nursing intellectual capital theory.

Technological Competencies as Caring in Nursing Theory

Locsin's (2017) technological competencies as caring in nursing (TCCN) middle-range theory was used to explore the balance between technology and nursing and to focus nursing's view of technology as an essential competency. This helps nurses maximize technology in their day-to-day processes. The TCCN theory seeks to understand the coexistence of technology and nursing by incorporating the metaparadigms of nursing: nurse, person, health, and environment (2017). In TCCN theory, nurses practice knowing patients and their health status in the moment using technologies within the environment. When the right balance is struck in these fluid relationships, then outcomes are improved (2017). Accordingly, the educational intervention taught nurse leaders how ICT can improve many nursing care themes including nurse satisfaction.

Nurse-Computer Interaction Framework

Staggers and Parks' (1993) nurse-computer interaction (NCI) framework was used to impress upon nurse leaders the importance of appraising existing and future technologies with the nurse and patient in mind and the overall goal of technology being to support health. The NCI framework brings human factors and user-centered design into nursing practice with the purpose of optimizing nurse and computer behaviors at work (1993). In the NCI framework, nurses either initiate an action on a computer or respond to an action by a computer with information being exchanged in both scenarios (1993). Bidirectional information drives these interactions, while individual characteristics of both the nurse and computer determine how the interactions unfold (1993). The educational intervention taught nurse leaders the importance of increasing their knowledge and awareness of the interaction between ICT and nursing to participate fully in decision-making involving ICT that may impact nursing practice.

Nursing Intellectual Capital Theory

Covell's (2008) nursing intellectual capital (NIC) middle-range theory was used to demonstrate that leaders who support ICT professional development drive positive outcomes for patients and health care organizations. The NIC theory explains that individual and collective knowledge in nurses impact outcomes for patients and the organization (Covell, 2008). It states that knowledge can increase through continuing professional development (CPD). The four concepts within NIC theory that relate to this nursing practice problem include employer support of CPD, nursing human capital, nursing performance, and organizational performance (2008). Since nursing human

capital is the "knowledge, skills, and experience of nurses" (Covell & Sidani, 2013, p. 2432), this correlates to the ICT knowledge and awareness that are needed to improve the identified practice problem. Moreover, in NIC theory, nursing human capital influences nursing and organizational performance (2008). This means that when nurse leaders develop ICT knowledge and awareness, nursing outcomes and organizational efficiency can improve. In NIC theory, employer support for CPD directly influences nursing human capital (2008). It follows then that, through providing CPD in ICT, employers can help nurse leaders to improve knowledge and awareness of ICT in the organization. The educational intervention taught nurse leaders that, through professional development, they can empower nurses to use ICT leading to improvements in many nursing care themes including nurse satisfaction.

Relevance to Nursing Practice

A literature search was conducted in the CINAHL Plus database using the search terms *nursing* and *ICT* with 281 primary, peer-reviewed results. After eliminating duplicates and irrelevant content, 35 articles were selected generating the following themes relevant to nursing practice: the role of nurse leaders in ICT adoption; the need for ICT education among nurse leaders; and nurse satisfaction. With these themes in mind, a path to advancing nursing practice through the DNP scholarly project came into focus.

The Role of Nurse Leaders in ICT Adoption

Nurse leaders must ensure that nurses have a reduced anxiety towards and increased acceptance and understanding of ICT to promote adoption (Sharpp et al.,

2019). As nurse leaders endeavor to understand the impact of nurses' knowledge, skill, and experience known as nursing intellectual capital on patient and organizational outcomes (Covell, 2008; Poe, 2011), work climate, attitude toward using ICT, and self-efficacy are important factors to promote ICT use (Gonen & Lev-Ari, 2016; Shoham & Gonen, 2008). Opportunities for nurses to learn and use ICT should be supported by nurse leaders (Bembridge et al., 2011) to increase self-efficacy and improve attitude and competence in practice (Sharpp et al., 2019; Warshawski et al., 2019). Furthermore, since nurses are socialized into the profession and values and norms are internalized, nurse leaders need to incorporate a role for ICT use into the values held by the organization (Bembridge et al., 2011; Fagerstrom et al., 2017). Nurse leaders can foster a tech-friendly culture that leads to improved patient outcomes and increased workplace satisfaction (Bembridge et al., 2011). In addition, nurse leaders may be involved in the design, development, and implementation of ICT (Sharpp et al., 2019).

The Need for ICT Education Among Nurse Leaders

A challenge for nurse leaders is to be aware of new trends in ICT and integrate rapidly evolving ICT into practice (Shoham & Gonen, 2008). If nurse leaders have a lack of knowledge related to ICT, their own self-efficacy and attitude toward ICT can be negatively impacted, which can undercut adoption (Gonen & Lev-Ari, 2016; Shoham & Gonen, 2008; Warshawski et al., 2019). Moreover, nurse leaders must be aware of generational and educational differences that can create conflicting expectations of ICT both among their staff and themselves and be prepared to institute targeted initiatives to deal with professional disparities (Warshawski et al., 2019). Furthermore, nurse leaders

must be aware that the availability of ICT leads to evolving patterns of communication, which means that they may need to upskill to communicate effectively using ICT (Sharpp et al., 2019). In addition, since nurse leaders may be involved in the design, development, and implementation of ICT, they need knowledge and awareness of the ICT and its practical applications so that it can be developed based on the needs of nurses (Sharpp et al., 2019) in line with NCI framework (Staggers & Parks, 1993).

Nurse Satisfaction

Several aspects of ICT can benefit nurse satisfaction. ICT has been shown to enhance nurses' use of knowledge, experience, and judgement in all stages of the nursing process leading to improved patient outcomes with fewer errors (Redley et al., 2020; Warshawski et al., 2019). The positive impact of ICT use on patient outcomes reinforces nurse satisfaction (Bembridge et al., 2011). Moreover, ICT in nursing practice offers advantages for nurses' working situations that translate to increased nurse satisfaction. For example, ICT use can facilitate tasks, decrease stress levels, and save time (Fagerstrom et al., 2017). Furthermore, ICT use promotes strong relationships between team members and improves collaboration between nurses and colleagues (Fagerstrom et al., 2017; Sharpp et al., 2019) to support greater satisfaction in complex work environments. In addition, nurses who experience a tech-friendly culture report increased workplace satisfaction and a commitment to use ICT in their future clinical experiences (Bembridge et al., 2011).

Summary: Advancing Practice

This DNP scholarly project sought to advance nursing practice by increasing the knowledge and awareness of ICT among nurse leaders. Nurse leaders who increase knowledge and awareness of practical applications of ICT can leverage their position to promote ICT use among nurses by fostering a tech-friendly culture and encouraging nurses to learn about and use ICT (Bembridge et al., 2011; Gonen & Lev-Ari, 2016; Sharpp et al., 2019). Through ICT, nurse leaders and nurses by extension can improve many nursing practice problems including nurse satisfaction (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019).

Local Background and Context

The setting for this doctoral project was a large federal hospital devoted to clinical research (National Institutes of Health [NIH] Clinical Center, 2019). The nurses in this hospital provide care to research participants from around the globe who have rare medical conditions and who are on experimental treatment protocols. The nurses communicate and collaborate with health care professionals from the more than 27 different institutes and centers. The hospital is well-equipped with HIT having used EHRs and integrated CISs for over 40 years. Furthermore, the hospital has achieved HIMSS Analytics: Stage 7, the highest certification on the Electronic Medical Record Adoption Model (EMRAM) by the Healthcare Information and Management Systems Society (HIMSS), and has achieved Outpatient Electronic Medical Record Adoption Model Stage 7 (NIH Clinical Center, 2019).

Like other health care organizations, this setting was forced to rapidly shift to new ways to communicate and collaborate at the onset of the COVID-19 pandemic. At that time, a new communication and collaboration tool was introduced to staff to facilitate virtual teams. A new telehealth program utilizing ICT was also implemented. There was little time to train nurses on the use of this new technology. Many nurses struggle to use it 2 years later and have been underrepresented in some decisions that affect nursing and patient care.

The practice problem at this setting reflected a wider problem felt by nurses in other care settings. Technology and nursing practice will continue to merge, and nurses must be proficient in ICT to provide patient-centered care as consumer demand shifts to more virtual formats. In addition, nurses must leverage ICT to tackle many nursing care themes including nurse satisfaction. Without adequate knowledge and skills in ICT, nurses are poorly prepared to deal with today's challenges and tomorrow's decisions. Thus, there was an urgent need in this setting for increased ICT knowledge and awareness among nurses so they can practice fully and be equal partners in future decision-making. Given this setting's hierarchical organizational structure, an educational intervention to increase knowledge and awareness of ICT among nurse leaders was a strategically sound way to diffuse the technology to nurse followers.

Role of the DNP Student

As the DNP student in this DNP scholarly project, I blended my understanding of the world of nursing from the most concrete (evidence-based practice) to the most abstract (philosophy) and everything in between (nursing science, research, theory, and

knowledge development). The relationship between philosophy and knowledge development is dynamic. According to Gray et al. (2017), truth is relative and influenced by perceptions, which are influenced by philosophy. In other words, philosophy determines what nurses can be aware of and know. My philosophical view of the metaparadigms places technologies including ICT within the environment aligning with Florence Nightingale's patient-centric model that asserted a goal of nursing is to manipulate the environment to support health (Zaccagnini & Pechacek, 2021, p. 15). The way that ICT fits into my philosophy of nursing allows me to appreciate the importance of ICT to nursing practice. Through my educational intervention, I conveyed this philosophy of ICT to nurse leaders to shape their understanding of ICT.

As an informatics nurse specialist (INS), I focus my work on the effective and efficient use of technology to support nursing practice especially in the day-to-day processes that occur between and outside of patient care. My purpose, as a scholar-practitioner, is to help nurses get the most out of technology through evidence-based practice. Technology is a key tool for sustaining the nursing workforce; driving safe, high-quality, patient-centered care; and reducing the cost of care. My aim as the DNP student in this DNP scholarly project was to embody the role of a DNP-prepared nurse leading evidence-based practice and positive social change. Thus, I ensured that this DNP scholarly project aligned with global standards for nursing technology, the Nursing Informatics Scope and Standards of Practice (ANA, 2014), and competencies II, IV, and VI of the DNP Essentials (AACN, 2006).

The second competency of the DNP Essentials asserts that nurses are primed to be full partners in health care redesign and improvement efforts and can become transformational leaders shaping the evolving landscape of health care (Zaccagnini & Pechacek, 2021). From a systems-thinking perspective, embracing ICT will help nurse leaders to promote ICT as a mechanism that can increase productivity, quality, and sustainability of change across organizational and policy levels (2021). Building upon competency six of the DNP Essentials, which assumes that teams interact in a shared physical space (2021), this project acknowledged that the concepts of communication, collaboration, and team development occur increasingly in virtual spaces both synchronously and asynchronously (Dykes & Chu, 2021).

At the intersection of information science, nursing science, and computer science (ANA, 2014), nursing informatics is a vital part of every nurse's professional role. Computer literacy, one aspect of nursing informatics, is an essential Technology, Informatics Guiding Education Reform (TIGER) competency for all registered nurses (RNs; 2014) aligning with the fourth competency of the DNP Essentials (Zaccagnini & Pechacek, 2021). As an INS, I used my expertise in ICT and what I synthesized from the latest science to develop nurse leaders' knowledge of ICT at the field site (Sharpp et al., 2019).

Role of the Project Team

An interdisciplinary approach to evidence-based practice projects like this DNP scholarly project is recommended by Newhouse and Spring (2010). Therefore, the project team consisted of my preceptor who is a director of Clinical Informatics, the Chief

Information Officer, the Chief Nursing Officer, and the Chief of Nursing Research and Translational Science. Each member provided perspective on the practice problem and approach. In addition, my preceptor and the Chief Nursing Officer or her surrogate helped in selecting participants for the educational intervention. Finally, the project team established the content validity of the educational intervention, pretest, and posttest per Polit and Beck (2006).

Summary

This section detailed the background and context for this DNP scholarly project. Guided by nursing theories and frameworks, relevance to nursing practice in the context of the local problem, and the role of the DNP student and project team, this project took shape. Making room for ICT in the philosophy of nursing is an essential step the profession needs to take to progress. In the next section, the collection and analysis of evidence are outlined.

Section 3: Collection and Analysis of Evidence

Introduction

Rapid technological innovation and nursing practice transformation due to the COVID-19 pandemic exposed a deepening divide in ICT knowledge and awareness among nurses undermining the benefits of ICT to nursing practice (Bembridge et al., 2011; Dykes & Chu, 2021). Nurse leaders are positioned to promote the use of ICT among nurses but may suffer from the same knowledge deficit of ICT as their followers (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to determine if an educational intervention focused on ICT increased knowledge and awareness among nurse leaders in a federal clinical research hospital. It is hoped that the enhanced knowledge and awareness of ICT among nurse leaders is then translated into practice and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes. In this section, the sources of evidence and methods for analysis and synthesis are expounded in relationship to the practice-focused question.

Practice-Focused Question(s)

Nurses in this large federal clinical research hospital, like many nurses in many other settings, were forced to rapidly shift to new ways to communicate and collaborate during the COVID-19 pandemic. A new communication and collaboration tool as well as a new telehealth program utilizing ICT were implemented. In addition to the well-known technological skills gap in the nursing workforce, there was little time to train nurses on the use of this new technology. Many nurses struggle to use ICT 2 years later and have

been underrepresented in some decisions that impact nursing and patient care. This practice problem contributes to a gap in practice that may impact several nursing care themes including nurse satisfaction. In addition, nurses may be left out of future decision-making involving ICT due to a lack of knowledge.

Nurse leaders can promote ICT among their followers (Bembridge et al., 2011; Gonen & Lev-Ari, 2016; Sharpp et al., 2019), but a knowledge deficit of ICT among nurse leaders may diminish their ability to do so (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to determine if an educational intervention focused on ICT increases knowledge and awareness among nurse leaders in a federal clinical research hospital. It was hoped that the enhanced knowledge and awareness of ICT among nurse leaders is then translated into practice, and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes. Hence, the purpose and approach of this DNP scholarly project were guided by the following practice-focused question: Did an educational intervention focused on information and communication technology increase knowledge and awareness among nurse leaders working in a federal clinical research hospital?

Sources of Evidence

Several sources of evidence were consulted throughout this DNP scholarly project. First, a literature search was conducted in the CINAHL Plus database using the search terms *nursing* and *ICT* with 281 primary, peer-reviewed results. After eliminating duplicates and irrelevant content, 35 articles were selected generating the following

themes: the role of nurse leaders in ICT adoption; the need for ICT education among nurse leaders; and nurse satisfaction. These themes elucidate the relevance of ICT to nursing practice and the importance of nurse leader knowledge and awareness of ICT in promoting ICT use among nurses.

Evidence Generated for the Doctoral Project

In addition to the literature review, the other sources used to address the practice-focused question posed by the DNP scholarly project included participants of the educational intervention, pretest data, and posttest data. In addition, the project team guided the project as well as reviewed the educational intervention, pretest, and posttest to establish the content validity using the Individual Content Validity Index (I-CVI) and Scale Content Validity Index (S-CVI; Polit & Beck, 2006).

Participants

Following IRB approval and approval from the stakeholder group, a convenience sample of nurse leaders working in a federal clinical research hospital located in the Mid-Atlantic region of the United States of America were invited to participate in the educational intervention. Inclusion criteria included (a) having an active RN license and (b) working in either middle management, clinical education, or senior leadership to participate in the educational intervention. Email communications were sent with the time and date of the intervention. The live, instructor-led educational intervention was offered virtually during a prescheduled nursing leadership meeting that was widely attended. Participation in the intervention was voluntary and the participants did not

receive any type of compensation to attend. A participant was permitted to leave the intervention at any time if needed.

Procedures

Following Walden IRB approval, my preceptor and I identified three to five stakeholders who provided support and further insight into the DNP scholarly project. With the insight of the project team, an additional review of the literature was conducted to understand relevance of available evidence. A customized educational intervention was created in the form of a live, instructor-led, virtual, group training session. A Microsoft Teams meeting was created with a unique join link for each session. I created a presentation about ICT using Microsoft PowerPoint that was used in the session. I also created an online pretest and posttest using Microsoft Forms that reflected the educational intervention's content. The pretest included five demographic questions (i.e., age, gender, ethnic background, education, and years working at the facility) to describe the sample; 10 true/false questions focused on information and communication technology; and two Likert-style questions on a scale of 1 to 7 with 1 = *No awareness* and 7 = *Full awareness*. The first Likert-style question asked the participant to rate his/her awareness of the benefits of information and communication technology to nursing practice. The second Likert-style question asked the participant to rate his/her awareness of the role of nurse leaders in promoting information and communication technology. The posttest contained the same 10 true/false questions as the pretest as well as the two Likert-style questions regarding the participant's awareness. Personal identifiable information was not asked for nor collected by the pretest nor posttest, and

all data was reported in the aggregate. Once developed, the project team reviewed and established the I-CVI and S-CVI (Polit & Beck, 2006) for each component. Feedback from the project team was collected, and the materials were edited until content validity was achieved.

Once content validity was established, a project team member and I created a list of nurse leaders from a convenience sample who met the inclusion criteria. I composed an invitation email soliciting the educational intervention with the join link for the session. In the invitation email, potential participants were instructed to attend the session by clicking the join link on the day and time of the session. I sent the invitation email to the list of nurse leaders two weeks before the session. I followed up with a reminder email with the same instructions as the invitation email one day before the session. It was estimated that there were 15 nurse leaders and at least 80% of the nurse leaders would be interested in attending for an estimated sample size of 12.

Voluntary participants who met the inclusion criteria clicked the join link on the day and time of the session with the educational intervention. At the start of the session, I instructed each participant to create a unique identifier for their pretest and posttest that was only known to that person. The unique identifier was used in my analysis to match the participant's pretest with posttest to determine if there was a difference in scores (total number correct), which served as a proxy for increased knowledge and awareness. Then, I provided 5 minutes for completing the anonymous Microsoft Forms pretest that participants accessed by clicking a link that I shared in the meeting. After 5 minutes, I presented the 35-minute educational intervention that consisted of the presentation about

ICT and time at the end for participant questions and answers (Q/A). After the educational intervention, I provided 5 minutes for completing the anonymous Microsoft Forms posttest that participants accessed by clicking a link that I shared in the meeting. The participants were asked to identify their posttest using the unique identifier. Once the posttest was complete, participants were able to leave the session. I ended the session when no participants remained.

Protections

There were no known ethical concerns related to this doctoral project. This project was of a minimal risk to the participants and protected the human subjects involved. Walden IRB approval was obtained before the project's inception. Participation was voluntary, no identifying information was asked or collected, and all data was reported in the aggregate. All questionnaires (pretest and posttest) were identified by a unique identifier known only to the participant and secured per Walden University IRB regulations.

<div align="center">

Analysis and Synthesis

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Each pretest was matched to its posttest using the participant's unique identifier. Each test was reviewed, and the total number of questions answered correctly were counted as the pretest and posttest scores. Demographic data along with the pretest and the posttest results were uploaded from an Excel spreadsheet into SPSS for analysis. Descriptive statistics were used to describe the sample and inferential statistics were used to determine if there was a difference between pretest and posttest scores of the

educational intervention as well as pretest and posttest scores of awareness. No

identifying data was collected, and all data was reported in the aggregate.

Summary

This section described the sources of evidence and procedural methods in relation

to the practice-focused question. The proposed educational intervention to increase

knowledge and awareness of ICT among nurse leaders fit with the need to increase ICT

proficiency among nurses. The next section covers the findings and recommendations of

this DNP scholarly project.

Section 4: Findings and Recommendations

Introduction

The technological skills gap in the nursing workforce must be bridged to realize the many benefits of information and communication technology on nursing practice (Bembridge et al., 2011; Dykes & Chu, 2021). Once they overcome their own lack of knowledge or awareness of ICT, nurse leaders can effectively encourage their followers to use ICT (Orhan & Serin, 2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008; Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to determine if an educational intervention focused on ICT increases knowledge and awareness among nurse leaders in a federal clinical research hospital. It is hoped that the enhanced knowledge and awareness of ICT among nurse leaders is then translated into practice and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes. In this section, the major findings and recommendations are reviewed.

Findings

Prior to the implementation of the educational intervention, a group of stakeholders reviewed and rated the content validity (Polit & Beck, 2006) for the educational intervention, pre-test, and post-test. The I-CVI and the S-CVI were calculated and established for the educational intervention, pretest, and posttest (Table 1).

Table 1

Item Content Validity Index and Scale Content Validity Index

	Item-Content Validity Index (> 0.90)	Scale-Content Validity Index (> 0.90)
Educational Intervention	1.0	1.0
Pretest	1.0	1.0
Posttest	1.0	1.0

Following the establishment of content validity, 28 ($N = 28$) nurses were recruited and voluntarily agreed to participate in the educational intervention focused on information and communication technology. One hundred percent ($N = 28$) of the participants were female, and the average age of the participants was 53.89 ($SD = 9.48$) with a range of 34 to 69 years of age. Seventy-one percent ($n = 20$) of the participants identified themselves as White; four participants (14.3%) identified themselves as Black; three of the participants (10.7%) identified themselves as Asian; and one participant (3.6%) identified herself as mixed. Seventy-five percent of the participants ($n = 21$) were MS/MSN prepared with 10.7% ($n = 3$) being Bachelors/BSN prepared; and four individuals (14.3%) identified themselves as having doctoral degrees. On average, the participants were employed at the facility for 15.93 years ($SD = 10.54$) with a range of 2 to 38 years. Upon completion of the educational intervention, the pretest and posttest were reviewed and scored for number of correct answers. The average pretest score was 8.46 ($SD = 0.79$) and the average posttest score was 9.79 ($SD = 0.42$). Using a Wilcoxon Signed Rank test to estimate the data, there was a statistically significant difference in pretest and posttest scores ($z = -4.72, p < 0.001$) indicating an increase in knowledge.

As part of the pretest assessment, the participants were also asked two questions regarding awareness of ICT. First, the participants were asked to rate their awareness of the benefits of ICT to nursing practice on a Likert scale of 1 to 7 with 1 = *no awareness* and 7 = *full awareness*. The average pretest score of awareness of the benefits of ICT to nursing practice was 5.75 (SD = 1.53) and the average posttest score of awareness of the benefits of ICT to nursing practice was 6.64 (SD = 0.56). Using a Wilcoxon Signed Rank test to estimate the data, there was a statistically significant difference in pretest awareness of the benefits of ICT to nursing practice and posttest awareness of the benefits of ICT to nursing practice (z = -3.50, $p < 0.001$) indicating an increase in awareness of the benefits of ICT to nursing practice. Additionally, the participants were asked to rate their awareness of the role of nurse leaders to promote ICT on a Likert scale of 1 to 7 with 1 = *no awareness* and 7 = *full awareness*. The average pretest score of awareness of the role of nurse leaders to promote ICT was 5.61 (SD = 1.62) and the average posttest score of awareness of the role of nurse leaders to promote ICT was 6.68 (SD = 0.55). Using a Wilcoxon Signed Rank test to estimate the data, there was a statistically significant difference in pretest awareness of the role of nurse leaders to promote ICT and posttest awareness of the role of nurse leaders to promote ICT (z = -3.57, $p < 0.001$) indicating an increase in awareness of the role of nurse leaders to promote ICT (Table 2).

Table 2

Descriptive and Inferential Statistics (N = 28)

	Frequency	(%)	Mean (*SD*)	Range
Age			53.89 (9.48)	34 to 69
Gender				
Female	28	100%		
Race				
White	20	71.4%		
Black	4	14.3%		
Asian	3	10.7%		
Mixed	1	3.6%		
Education				
Bachelors / BSN	3	10.7%		
Masters / MS / MSN	21	75.0%		
Doctoral	4	14.3%		
Years at Facility			15.93 (10.54)	2 to 38
Knowledge of ICT*				
Pretest score			8.46 (0.79)	7 to 10
Posttest score			9.79 (0.42)	9 to 10
Awareness of Benefits of ICT to Nursing Practice*			5.75 (1.53)	1 to 7
Pretest score			6.64 (0.56)	5 to 7
Posttest score				
Awareness of Role of Nurse Leaders to Promote ICT*				
Pretest score			5.61 (1.62)	1 to 7
Posttest score			6.68 (0.55)	5 to 7

Note. *Statistically significant at $p < 0.001$.

Implications

The purpose of this DNP scholarly project, to determine if an educational intervention focused on ICT increases knowledge and awareness among nurse leaders in a federal clinical research hospital, was achieved. Moreover, this DNP scholarly project had far-reaching effect on multiple stakeholders from all levels of nursing leadership who received the educational intervention including the Chief Nursing Officer (CNO), Director of Nursing Education, other senior nurse leaders, clinical nurse specialists, nurse managers, and nursing shared governance chairs. In addition, this DNP scholarly project engaged members of hospital leadership in this nursing practice issue including the Chief Information Officer (CIO), Chief Nursing Informatics Officer (CNIO), and Chief of Nursing Research and Translational Science. It is hoped that the enhanced knowledge and awareness of ICT among nurse leaders that was achieved via the educational intervention is then translated into practice and ICT use is promoted among nurse followers, resulting in positive patient and organizational outcomes.

This DNP scholarly project has demonstrated potential to profoundly impact nursing practice by empowering nurse leaders and nurses by extension to use ICT as part of their innovative, problem-solving toolkit. Nursing innovation, as Rogers (1992) posited, is one strategy that can assist with constant change and generate new knowledge that will ultimately improve nursing practice (McEwin & Wills, 2019). The increased knowledge and awareness of ICT among nurse leaders as a result of the educational intervention has prepared them to stimulate, steer, and sustain a tech-friendly culture of innovation (Deschamps, 2008), where nurses are encouraged to transform their creative

ideas into innovative outputs (Weng et al., 2012) using ICT to increase nurse satisfaction, improve care quality, and reduce costs (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019). Furthermore, knowledge and awareness of ICT will strengthen nursing's position as equal partners in decision-making when health care and technologies continue to evolve.

Aligning with Walden University's goals for promoting positive social change (Walden University, 2017), this DNP scholarly project can effect positive social change by narrowing the technology skills gap. Nurses can use ICT in practice to improve care quality, reduce costs, and increase nurse satisfaction (Bembridge et al., 2011; Redley et al., 2020; Warshawski et al., 2019). Finally, public policy and legislation can be shaped by these results leading to better health and quality of life for all.

Recommendations

By increasing the knowledge and awareness of ICT among nurse leaders in a federal clinical research hospital through an educational intervention, this DNP scholarly project addressed the technology skills gap in the nursing workforce. With their knowledge and awareness of the benefits of ICT to nursing practice, nurse leaders should engage in appraising and selecting technologies that support nursing practice in line with the NCI framework (Staggers & Parks, 1993). Nurse leaders should also promote ICT use among nurses by including ICT as an essential nursing competency in nursing policies and providing continuing professional development in ICT to their nurse followers in line with the TCCN theory (Locsin, 2017) and the NIC theory (Covell, 2008) respectively.

To sustain nurse leader knowledge and awareness of ICT, it is recommended that nurse leaders complete ICT training for nurse leaders during onboarding and annually. Onboarding training ensures that nurse leaders receive this information when they begin employment. Up-to-date annual training provides the opportunity for nurse leaders to refresh their knowledge about ICT, addressing one of the challenges of keeping up with rapidly changing technology.

Finally, health care organizations should recognize the key role that nurse leaders play in promoting ICT use among nurses and the many benefits of ICT to organizational outcomes like increased nurse satisfaction, improved care quality, and reduced costs. These organizations should support ICT education for all nurses and include nurse leaders in the development, redesign, and implementation of ICT (Sharpp et al., 2019).

Contribution of the Doctoral Project Team

An interdisciplinary approach was used for this evidence-based DNP scholarly project as recommended by Newhouse and Spring (2010). The doctorally-prepared project team comprised the Chief Nursing Officer (CNO), Chief Nursing Informatics Officer (CNIO), Chief Information Officer (CIO), and Chief of Nursing Research and Translational Science (CNRTS). Each member provided perspective on the practice problem and approach. The CNO provided access to nurse leaders to participate in the educational intervention. The CIO defined the technical boundaries of ICT in the organization. The CNRTS supported the need to translate evidence into practice. The CNIO, my preceptor, provided guidance on meeting the milestones of the DNP scholarly project and connected me to the other members of the project team. Finally, the project

team established the content validity of the educational intervention, pretest, and posttest per Polit and Beck (2006).

Strengths and Limitations of the Project

There were several strengths to this DNP scholarly project. A major strength was in its alignment with global standards for nursing technology, the Nursing Informatics Scope and Standards of Practice (ANA, 2014), and competencies II, IV, and VI of the DNP Essentials (AACN, 2006). Next, with a response rate of 85%, the enthusiastic nurse leaders who participated experienced increased knowledge and awareness of ICT and engaged in stimulating conversation during the question-and-answer portion of the intervention. Most importantly, this DNP scholarly project guided by theory translated evidence into practice delivering meaningful results for the organization, nursing practice, and positive social change.

This DNP scholarly project has potential limitations. First, the results may have diminished generalizability because the nurse leaders who participated in the educational intervention were recruited from a convenience sample in one federal clinical research hospital. Moreover, with 100% of participants being female nurse leaders, this project does not generalize to nonfemale nurse leaders. I recommend, when replicating this project, an increase of the sample size across organizations to achieve greater diversity and generalizability.

Summary

This section reviewed the major findings and recommendations of this DNP scholarly project. The educational intervention increased knowledge and awareness of

ICT among nurse leaders in a federal clinical research hospital. This result has implications for the organization, nursing practice, and positive social change. Regular ICT education for nurses and nurse leaders is recommended to increase nurse satisfaction, improve care quality, and reduce costs. Organizations should recognize these benefits by supporting continuing professional development in ICT to nurses and include nurse leaders in the design, development, and implementation of ICT. The next section covers the dissemination plan for this DNP scholarly project.

Section 5: Dissemination Plan

Introduction

ICT can improve many nursing care themes, but the technological skills gap made

worse by the COVID-19 pandemic poses a significant challenge to nursing practice

(Bembridge et al., 2011; Dykes & Chu, 2021). Nurse leaders play an important role in

promoting the use of ICT among nurses but may also lack knowledge and awareness of

ICT diminishing their ability to influence their followers to use ICT (Orhan & Serin,

2019; Sharpp et al., 2019; Shih & Rosenblum, 2017; Shoham & Gonen, 2008;

Warshawski et al., 2019). Thus, the purpose of this DNP scholarly project was to

determine if an educational intervention focused on ICT increases knowledge and

awareness among nurse leaders in a federal clinical research hospital. It is hoped that the

enhanced knowledge and awareness of ICT among nurse leaders is then translated into

practice and ICT use is promoted among nurse followers, resulting in positive patient and

organizational outcomes. In this section, the dissemination plan is outlined along with a

brief reflection on this experience.

Dissemination Plan

There are two paths for dissemination of this DNP scholarly project. First, the

results of this DNP scholarly project will be disseminated internally by presenting the

results to my project team as well as to the group of nurse leaders who participated in the

educational intervention. In addition, a summary of the results will be published

internally in a digital monthly newsletter that all hospital staff receive in their email

inbox. For external dissemination, this DNP scholarly project will be published within

ProQuest Dissertation Publishing. I will also collaborate with members of my project team to co-author articles for publication in nursing leadership, hospital administration, and technology peer-reviewed journals. In addition, I will submit abstracts to present at professional conferences such as the Health Information Management Systems Society (HIMSS) global conference. Finally, I will write to nurse lobbying groups like the American Nurses Association (ANA) as well as local, state, and federal government representatives to inform them of the findings, implications, and recommendations of this DNP scholarly project to solicit their consideration for shaping public policy and legislation around closing the technological skills gap in the nursing workforce.

Analysis of Self

As a Practitioner

As an INS, I have devoted my career to helping nurses get the most out of technology. This DNP scholarly project gave me my first opportunity to craft my own project in line with that goal. I used my experience and education to design and implement an evidence-based intervention that targeted an important and timely nursing practice issue, the technology skills gap. My interactions with the project team provided much needed experience with communicating and collaborating with executive leaders. As this DNP scholarly project closes, I emerge even more committed to this cause and enthusiastic about the role I will play in shaping the future of nursing practice. My long-term professional goal is to achieve technological enlightenment, or the moment when technology brings nursing, patient, environment, and health into alignment.

As a Scholar

As a scholar in this DNP scholarly project, I used my understanding of the world of nursing from the most concrete (evidence-based practice) to the most abstract (philosophy) and everything in between (nursing science, research, theory, and knowledge development). Philosophy determines what nurses can be aware of and know. My philosophical view of the metaparadigms places technologies including ICT within the environment aligning with Florence Nightingale's patient-centric model that asserted a goal of nursing is to manipulate the environment to support health (Zaccagnini & Pechacek, 2021, p. 15). The way that ICT fits into my philosophy of nursing allows me to appreciate the importance of ICT to nursing practice. Through my educational intervention, I conveyed this philosophy of ICT to nurse leaders to shape their understanding of ICT.

As a Project Manager

As the project manager of this DNP scholarly project, I had sole responsibility of its progress. I practiced systems thinking when creating and updating the plan for the project. There were many moving parts that required thinking big picture at the same time as remaining task oriented. Not only was I accountable for my own tasks, but I had to hold the project team accountable for tasks that I assigned to them. One challenge that I overcame was setting expectations for the project team. I was not accustomed to telling executives what to do and when to do it, so I asked them what they thought would be an appropriate amount of time for them to complete a task for my DNP scholarly project. This worked out well because with their input I felt more confident in making the

request, and I avoided placing them in an unnecessary time crunch. Another challenge

was that during the year-long DNP scholarly project, only I could push it forward. While

I had excellent mentors encouraging me and guiding me, at the end of the day, it was up

to me to find the time, the motivation, and the energy to move the project along. Thus,

there were sprints while trying to meet a deadline and then there were periods of no

movement. I learned that I felt better after a sprint than after a period of no movement, so

this prompted me to build sprints into my project plan. After making that change, I

noticed greater satisfaction and increased productivity on my part making it a strategy I

will use in subsequent projects.

<div align="center">**Summary**</div>

This section reviewed the dissemination plan for this DNP scholarly project as

well as a brief reflection about this experience. The future of nursing practice and

information and communication technology is bright. Nurses can use ICT to improve

care quality, increase nurse satisfaction, and reduce costs. However, nurses must close the

technology skills gap to fully realize these benefits. Nurse leaders play a vital role in

promoting the use of ICT among nurses but may suffer from the same knowledge deficit

of ICT as their followers. This DNP scholarly project demonstrated that an educational

intervention about ICT increased nurse leader knowledge and awareness of the benefits

of ICT to nursing practice as well as their role in promoting the use of ICT among nurses.

Major recommendations arising from this DNP scholarly project include health care

organizations recognizing ICT as an essential nursing competency in practice and in

policy, establishing regular training on ICT for nurse leaders and nurses, and engaging

nursing lobbying groups as well as local, state, and federal government representatives to

shape public policy and legislation to address the technological skills gap in the nursing

workforce. Indeed, how proficiently nurses use ICT will be a determining factor in

whether nurses have an expanded or diminished role in future states of healthcare.

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Appendix: Pretest/Posttest Questions

Awareness

1. Benefits of ICT to nursing practice

2. Role of nurse leaders to promote ICT

True/False

1. ICT is defined as a diverse set of technological tools used to automate workflows.

2. Microsoft Teams is an example of ICT.

3. ICT has no effect on care quality but does improve nurse satisfaction.

4. ICT enhances nurses' use of knowledge, experience, and judgement in all stages of the nursing process.

5. The ICT skills gap in the nursing workforce widened as a result of rapid change during the COVID-19 pandemic.

6. If ICT is giving staff anxiety, nurse leaders should stop promoting ICT.

7. Nurse leaders may need to upskill to use ICT effectively.

8. To increase nurse satisfaction, nurse leaders should foster a tech-friendly culture.

9. The need for ICT in nursing practice is supported by nursing theory.

10. Nurses can use ICT to problem-solve and innovate.