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Health Care Organizations' Research Capacity and Culture's Effect on Nurses' Evidence-Based Practice Implementation

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
2023

Abstract

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Abstract

In health care, the research-to-practice gap occurs when the best evidence-based practices (EBPs) are inadequately implemented into clinical practice. This results in less effective practices in patient care delivery and clinician decision making, and decreased health care outcomes. Nurses are critical to bridging this gap and finding effective strategies to promote EBP implementation (EBPI) in health care. Research capacity/culture development may be an effective implementation strategy to improve EBPI, but additional research was needed. The purpose of this quantitative prospective correlational study was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. The organizational theory of innovation implementation, in the context of implementation science, was used to guide the study. Survey data were collected from 175 nurse participants across the United States. Results showed significant positive associations between research capacity/culture and EBPI. Results may be used by health care organizations and leaders to invest in building research capacity/culture as an effective strategy to increase nurses' EBPI, which may improve patient outcomes.

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Dedication

This dissertation is dedicated to my incredible mother, Darlene Kovalchek, who was unwavering in her support, love, and motivation. She was called to Heaven before I was able to finish this dissertation, but her voice and encouragement remain a constant drive in my life, and I am forever blessed to be called her daughter.

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Chapter 1: Introduction to the Study

Evidence-based practice (EBP) is the integration of clinical expertise, patient preference, and research evidence into the decision-making process for patient care and is linked to improved quality of care and patient outcomes such as reduction of patient pain, pressure ulcers, and length of hospital stay and increased patient satisfaction (Dagne & Beshah, 2021; Melnyk et al., 2017). EBP is based on accurate and current evidence from research. Use of EBP is essential to patient care and should be considered an investment by health care organizations that will yield high-quality outcomes (Fineout-Overholt et al., 2004). EPB implementation (EBPI) increases the likelihood that ineffective practices are removed from patient care and health policies (Chiwaula et al., 2018; Quinn et al., 2019). EBPI is the most difficult stage of the EBP process and is the reason for the existing gap between research evidence and use in practice (Dagne & Beshah, 2021; Hecht et al., 2016). In health care, the research-to-practice gap refers to when best research EBPs are infrequently or inadequately implemented into clinical practice. This results in less effective or outdated practices in patient care delivery and clinician decision making, resulting in decreased health care outcomes (Dagne & Beshah, 2021; Melnyk et al., 2016; Melnyk et al., 2017) Nurses are critical to the mission of bridging this gap and increasing the understanding of effective strategies to promote EBPI within health care organizations (Crable et al., 2021; Matus et al., 2018; Trepanier, 2021).

Research capacity/culture development may be an effective implementation strategy to improve EBPI among nurses, but additional research needs to be done. Research capacity/culture, which is facilitated by health care organizational support, is

the generation, translation, and implementation of new evidence-based knowledge to improve the health of patients (Cooke et al., 2018). Health care organization environments with strong research capacity have clinicians who embrace a culture in which health care is based on the best available evidence from research findings, rather than prior education or custom (Borkowski et al., 2017; Cooke et al., 2018; Matus et al., 2018). Although commonly separate terms, in my study "research capacity" was combined with "research culture" to demonstrate alignment with the instrument that was used. Research capacity is the ability to engage in, perform, or carry out quality research that is fundamental to enabling research culture within health care, and is reliant on the continual development of individual skills and organizational infrastructure and process in research (Alison et al., 2017; Cooke et al., 2018; Harding et al., 2017; Matus et al., 2018). Research culture is the environment within the organization that supports the growth of new scientific knowledge and provides opportunities for staff to translate research into practice (Alison et al., 2017; Frakking et al., 2021; Matus et al., 2018).

Research capacity/culture in a health care organization includes clinician engagement in research of varying degrees ranging from complex experimental clinical trials to basic knowledge that supports foundational skills of EBPI (Cooke et al., 2018). In a health care organization with a robust research capacity/culture, all clinicians are consumers of research through generation or translation of evidence into practice (Borkowski et al., 2017). In my study, the relationship between research capacity/culture and nurse EBPI was examined.

In Chapter 1, I address the relationship between nurses' perception of research capacity/culture and nurse implementation of EBPs. I also present background information, the problem statement, purpose, research questions, and hypotheses. The theoretical framework, nature of the study, important definitions, assumptions, scope and delimitations, and limitations are explained. I conclude the chapter by explaining the significance of the study.

Background

Nurses have a critical role in delivering quality patient care and improving health care outcomes through the implementation of EBP. Although EBPI should be a foundational component of patient care, many nursing decisions and practices are not based on the best available scientific research evidence. Nurses frequently problem solve and make decisions based on prior work experience, observation of other clinicians, and previous formal education, which is often outdated (Chiwaula et al., 2018; McKinney et al., 2019). The lack of effective strategies for improving nurse implementation of EBP continues to adversely impact the quality of health care delivery. Gaps continue to exist between what is EBP and what is done in practice (Crable et al., 2021).

Understanding how the concepts research capacity/culture and EBPI are related may help identify an effective implementation strategy. Prior studies focused on barriers to EBPI with lack of time, workload, limited knowledge, and poor hospital or leadership support being commonly cited (Frakking et al., 2021). Previous research also focused on benefits of EBPI for patient outcomes (Dagne & Beshah, 2021; Melnyk et al., 2017). The nursing profession has narrowly focused on promoting an EBP-focused culture as a

strategy to promote EBPI (Melnyk et al., 2016). Additionally, previous studies reported the benefits of building research capacity/culture on creating clinicians, mostly physicians and allied health professionals, with improved evidence-based care and decision-making abilities (Frakking et al., 2021; Harding et al., 2017; Luckson et al., 2018; Matus et al., 2018). There was a lack of studies on the impact of research capacity/culture on nursing (Berthelsen & Holge-Halzelton, 2018; Matus et al., 2018). The aim of my study was to examine whether health care organizations with strong research capacity/culture produced nurses who had increased levels of EBPI regardless of whether the nurse had individually participated in active research.

Despite awareness of the importance of EBPs, there is a lack of use of EBP and a lack of understanding of effective methods to promote EBPI within health care organizations (Crable et al., 2021; Matus et al., 2018). More research and evaluation of effective strategies for the implementation of research evidence into practice is recommended (Leeman et al., 2019; Matus et al., 2018). Further research needs to focus on documenting relevant research findings related to implementation science and nursing EBPI (Dagne & Basheh, 2021; Leeman et al., 2019). My study contributed to filling this gap in the literature to enhance nurses' knowledge related to improving EBPI.

Problem Statement

Inconsistencies among nurses and health care organizations related to EBPI and research capacity/culture are a social problem that impacts the quality of health care (Berthelsen & Holge-Hazelton, 2018; Melnyk et al., 2017). Patients who receive care based on EBP have improved outcomes such as increased satisfaction, increased pain

control, fewer pressure ulcers, and decreased length of stay (Dagne & Beshah, 2021; Melnyk et al., 2017). Health care organizations that support a research capacity/culture benefit from strong performance outcomes such as lower mortality, higher patient experience scores, reduced staff turnover, and increased organizational efficiencies (Harding et al., 2017). However, it was not known whether there is a relationship between research capacity/culture and nurse EBPI. The research problem that I addressed in this study is that it was not known whether there are relationships between nurses' perception of organization, team, or individual research capacity/culture and nurses' implementation of EBP. Organization research capacity/culture is the nurses' perception of the health care organization where they are employed, and that organization's capacity to support and foster research, including research culture (Holden, Pager, Golenko, Ware & Weare, 2012). Team research capacity/culture is the nurse's perception of that nurse's specialty's (oncology, cardiology, surgical, pediatric, etc.) capacity to support and foster research, including research culture. Individual research culture/capacity is the nurse's perception of self-capacity to support and foster research, including research culture (Holden, Pager, Golenko, Ware & Weare, 2012).

My study also addressed the research problem of it not being known whether there are relationships between nurses' perception of health care organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. My study examined the relationships between nurses' perception of health care organization research capacity/culture, team research

capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. In my study, educational background was the nurses' highest nursing degree such as diploma, associate of science in nursing (ASN), bachelor of science in nursing (BSN), master of science in nursing (MSN), doctor or nursing practice (DNP), and PhD. In my study, health care organization types included public/community access or private, and health care settings included hospital/health care system, academic center, ambulatory care, urgent care, rehabilitation facility, medical office, or school.

Prior research reported a positive relationship between graduate educational degree and EBP attitudes and competencies (Rudman et al., 2020; Saunders & Vehvilainen-Julkunen, 2016). However, there was conflicting evidence in the literature regarding whether a graduate educational degree is a predictor for implementation of EBP (Abuejheisheh et al., 2020; Saunders & Vehvilainen-Julkunen, 2016). Also, prior studies did not consider organizational setting or health care organization type as a factor of EBPI (Rudman et al., 2020). Based on volume alone, health care settings such as community hospitals provide care for more patients than traditional academic-based medical centers; however, research and funding are primarily focused on academic centers (Gehrke, et al., 2019; Snihur et al., 2020). It has been hypothesized the community hospital engagement in research may improve evidence translation and implementation of EBP, but no studies regarding this could be found (Hacker et al., 2013).

Private health care organizations often prioritize profitability and opt not to offer services or certain specialties that result in break-even or decreased revenue (Duggan et al., 2023; Jeurissen et al., 2021). Public health care organizations rely on government funding based on a pay-for-performance structure that incentivizes organizations for achieving optimal quality outcomes. Prior research had been done comparing the benefits and challenges of private versus public health care organization types; however, none of those studies mentioned research capacity/culture as a factor (Duggan et al., 2023; Jeurissen et al., 2021). My study examined the relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

EBPI strategies have been inadequately studied through the lens of the organizational theory of innovation implementation (Addie et al., 2016; Quinn et al., 2019). Nurses are critical to the mission of bridging the research evidence to practice gap (Trepanier, 2021). Research capacity/culture improves physicians' and other clinicians' EBPI, but nurses are seldom included in those studies (Calvario, 2021; Cordrey et al., 2022; Faranoff et al., 2019; Harding et al., 2017; Majumdar et al., 2008; Matus et al., 2019). It was not known whether research capacity/culture development is helpful for improving nurses' EBPI; therefore, my study addressed this gap by examining the relationship between research capacity/culture and nurses' EBPI.

Purpose of the Study

The purpose of this quantitative study was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

Definitions

The following terms are defined as they were used throughout this study:

Evidence-based practice (EBP): A problem-solving and decision-making approach to the delivery of health care that incorporates evidence from well-designed studies as external evidence and integrates it with patient and/or family preference and clinician expertise, and includes internal evidence gathered from patient data (Melnyk et al., 2017).

Evidence-based practice implementation (EBPI): The use of the most valid, updated, and relevant research findings, which incorporates expert opinion, standard guidelines, and literature into clinical decision-making practice (Melnyk & Fineout-Overholt, 2011).

Individual research culture/capacity: Nurses' perception of self-capacity to support and foster research, including research culture (Holden, Pager, Golenko, Ware & Weare, 2012).

Organizational research capacity/culture: Nurses' perception of the health care organization where they are employed, and that organization's capacity to support and foster research, including research culture (Holden, Pager, Golenko, Ware & Weare, 2012).

Research: A process of investigating, developing, testing, and evaluating new or existing evidence for practice that adds to the profession's knowledge base through literature (Ginex, 2017).

Research capacity: The ability to engage in, perform, or carry out quality research that is fundamental to enabling research culture within health care, and is reliant on the continual development of individual skills and organizational infrastructure and process in research (Alison et al., 2017; Cooke et al., 2018; Harding et al., 2017; Matus et al., 2018).

Research capacity development: The generation, translation, and implementation of new evidence-based knowledge to improve the health of patients, facilitated by organizational support (Cooke et al., 2018).

Research capacity/culture: A practicing environment that embraces a culture in which practice is based on the best available knowledge from research findings, rather than prior education or custom (Borkowski et al., 2017). In organizations with high research capacity/culture, employees have observation of, access to, and knowledge of how to obtain research resources to evaluate, understand, and apply new knowledge (research evidence findings) into practice (Holden, Pager, Golenko, & Ware, 2012).

Research culture: The environment within the organization that supports the growth of new scientific knowledge and provides opportunities for staff to translate research into practice (Alison et al., 2017; Frakking et al., 2021; Matus et al., 2018). Research culture promotes integration of available evidence to inform health policy and service planning to ensure optimal patient and health system outcomes (Dimond et al., 2015).

Team research capacity/culture: Nurses' perception of their specialty's (oncology, cardiology, surgical, pediatric, etc.) capacity to support and foster research, including research culture (Holden, Pager, Golenko, Ware & Weare, 2012).

Variables

For research questions (RQ) 1, 2 and 3, the independent or predictor variables were nurses' perceptions of organization, team, and individual research culture/capacity. The dependent or outcome variable was nurses' EBPI. For RQ4, the predictor variables were nurses' perception of organization, team, and individual research capacity; the outcome variable was nurses' EBPI. The covariates included for adjustment were educational background, health care organization setting, and health care organization type.

Research Questions and Hypotheses

RQ1: What is the relationship between nurses' perception of health care organization research capacity/culture and EBPI?

H_o1: There is no relationship between nurses' perception of health care organization research capacity/culture and EBPI.

H_a1: There is a relationship between nurses' perception of health care organization research capacity/culture and EBPI.

RQ2: What is the relationship between nurses' perception of team research capacity/culture and EBPI?

H_o2: There is no relationship between nurses' perception of team research capacity/culture and EBPI.

H_a2: There is a relationship between nurses' perception of team research capacity/culture and EBPI.

RQ3: What is the relationship between nurses' perception of individual research capacity/culture and EBPI?

H_o3: There is no relationship between nurses' perception of individual research capacity/culture and EBPI.

H_a3: There is a relationship between nurses' perception of individual research capacity/culture and EBPI.

RQ4: What is the relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type?

H_o4: There is no relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

H_a4: There is a relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

Theoretical Framework

I used the organizational theory of innovation implementation in the context of implementation science to examine the relationships between research capacity/culture and nurses' implementation of EBP in the health care setting. Organizational theory of innovation implementation applied to my study because it explains the influence of the complex interaction between the research capacity/culture of health care organizations and nurses and their implementation of EBP. Klein and Sorra (1996) noted that organizations that promote EBP alone do not reap the benefits of improved outcomes not because the research or innovation is ineffective but because the implementation is unsuccessful.

Organizational theory of innovation implementation proposes three determinants of implementation effectiveness: innovation–values fit, organizational context or readiness for change, and positive implementation climate. (DeMartino, 2019; Garner et al., 2022; Klein & Sorra, 1996; Turner et al., 2018). In the health care setting, organizational theory of innovation implementation is used to examine how organizational environment and factors including patient needs, resources, access to knowledge, and structural context impact practices, productivity, and outcomes (Leeman et al., 2019; Turner et al., 2018). Organizational theory of innovation implementation was

applicable in that organizational factors such as research capacity/culture may impact nurses' EBPI (see Leeman et al., 2019). I present more information about this theoretical framework in Chapter 2.

Nature of the Study

I conducted a quantitative prospective correlational study in which nurse participants completed a survey to assess the relationships between nurses' perception of organization, team, and individual research capacity/culture and nurses' EBPI. I measured nurses' perception of organization, team, and individual research capacity/culture using the Research Capacity in Context (RCC) tool (see Appendix A; Holden, Pager, Golenko, Ware & Weare, 2012). I measured nurses' EBPI using Melnyk, et al.'s (2008) EBPI scale (see Appendix B). I evaluated the relationships between predictor variables of nurses' perception of organization, team, and individual research capacity/culture with the outcome variable of EBPI using simple, general linear regression. I also evaluated the relationships between predictor variables of nurses' perception of organization, team, and individual research capacity/culture with outcome variable of EBPI using multiple linear regression models, adjusting for educational background, health care organization setting, and health care organization type.

Nurse participants were recruited from a variety of health care organizations (e.g., hospitals, academic medical centers, acute care settings, outpatient clinics). I contacted prominent professional nursing associations in the United States for possible participants for recruitment after the proposal and institutional review board (IRB) approval had been obtained. In addition, I obtained permission and used a recent Magnet Conference

attendee contact list to send email invitations for study participation (see Appendix C). I also recruited participants from social media (e.g., Facebook, LinkedIn). Having participants recruited through multiple outlets allowed for access to potential participants from a variety of health care organizations and states. Diversity of my target population was important because it allowed for and provided a greater chance in variety of health care organization types (public/community access or private), health care settings (hospital/health care system, academic center, ambulatory care, urgent care, rehab facility, medical office, school), Magnet status, and organizational cultures to be included, allowing for more meaningful results. To be eligible, nurse participants were required to have worked in a health care organization and have been employed in their current position for a minimum of 1 year.

Assumptions

This study was based on the following assumptions:

1. Nurse participants were willing to take the survey and answer honestly.
2. Recruiting from multiple professional nursing associations and social media would garner the number of survey respondents needed to reach significance.
3. Nurses valued EBP.

Scope and Delimitations

The scope of my study was a quantitative prospective correlational design using survey tools. I chose a correlational design because it addressed the research questions by assessing relationships between nurses' perception of organization, team, and individual research capacity/culture with EBPI (see Creswell & Creswell, 2018). I chose the use of

surveys because of the availability of validated, reliable survey tools pertaining to EBPI and research capacity/culture (see Holden, Pager, Golenko, Ware & Weare, 2012; Melnyk et al., 2008). I reviewed and considered numerous theoretical frameworks for my study including but not limited to diffusion of innovation, theory of basic values, organizational theories, and implementation theories. I selected organizational theory of innovation implementation because it most closely aligned with the research questions and considered organizational determinants that are associated with effective implementation such as implementation climate and innovation-values fit (see Turner et al., 2018). This theory also applied to my study because it explains how internal and external factors of an organization should be considered when considering implementation strategies (see Birken et al., 2017; Leeman et al., 2019). Study participants were licensed nurses (LPN, RN, and advanced practice RN [APRN]) who worked in health care organizations in the United States and had been employed in their current position for a minimum of 1 year.

A delimitation of my study was that qualitative data were not collected. Only closed-ended responses were included in the survey instruments. Another delimitation was that recruitment was based on a convenience sample of nurses who agreed to participate. My study excluded nurses who had not been employed in their current role for at least 1 year.

My study results are generalizable to licensed nurses (LPN, RN, and APRN) in the United States who have held employment within a health care organization for a minimum of 1 year. More specifically, my study results are generalizable to the sample of

nurse participants who responded to the survey. There may have been selection bias because there may have been certain people who were more or less likely to respond to the invitation to participate and complete the survey. In Chapter 4, I describe the demographic data collected from the sample of nurses who participated in the study. This will further clarify the generalizability of my results.

Limitations

The main challenge of my study was getting a variety of nurses to participate. To minimize this threat, I distributed the survey publicly via professional nurse associations, social media (e.g., Facebook, LinkedIn), and mailing lists such as the recent Magnet Conference attendee contact list (see Appendix C) as well as those found through the public state board of nurses websites for select states (e.g., Florida, Ohio). The use of these recruitment outlets facilitated access to a larger nursing population from multiple health care organizations. A limitation to this study was that the data were self-reported, so the accuracy of answers could not be objectively assessed. The Hawthorne effect was a possible threat to validity because participants may have altered responses based on what they thought I would consider a correct response (see Greener, 2018).

Significance

My study was significant in that it helped fill a gap in understanding the effects of health care organizations' research capacity/culture on nurses' implementation of EBP. Clinicians who actively participate in research have been positively associated with improved patient outcomes and overall better clinicians (Calvario, 2021; Faranoff et al., 2019). However, these studies focused on the benefits to a clinician participating in

research. I wanted to examine the relationship between nurses' perception of health care organization research capacity/culture and nurses' EBPI. My study was different than previous studies because I sought to understand this relationship, regardless of whether the nurse had individually participated in active research.

Through the lens of organizational theory of innovation implementation in the context of implementation science, I examined the effects of research capacity/culture on nurses' EBPI. My study generated information and increased the understanding of the impact of health care organizations' investment in research capacity/culture development on nurses' EBPI. Improving EBPI improves patient outcomes. If my study showed significant, positive correlation between research capacity/culture and nurses' implementation of EBP, an argument could be made that health care organizations and leaders should be investing and establishing more research capacity/culture within their health care services. If there was not a significant correlation, then further research could be done to determine what factors impact EBPI. The findings of my study may lead to positive social change related to an increase in nurses' implementation of EBP, which may improve quality outcomes in health care.

Summary

In Chapter 1, I addressed the background, problem, purpose, important definitions, and research questions. I presented the study's theoretical framework, nature of the study, assumptions, scope, delimitations, limitations, and significance. Research capacity/culture development may be an effective implementation strategy to improve EBPI among nurses, but additional research needed to be done to demonstrate this. For

my study, the relationship between research capacity/culture and nurses' EBPI was examined. In Chapter 2, I provide a review of the literature and an in-depth explanation of the organizational theory of innovation implementation because addressed the relationship between nurses' perception of research capacity/culture and nurses' implementation of EBPs.

Chapter 2: Literature Review

Inconsistencies among nurses and health care organizations related to EBPI and research capacity/culture is a social problem that impacts the quality of health care (Berthelsen & Holge-Hazelton, 2018; Melnyk et al., 2017). Patients who receive care based on EBP have improved outcomes such as increased satisfaction, increased pain control, fewer pressure ulcers, and decreased length of stay (Dagne & Beshah, 2021; Melnyk et al., 2017). Health care organizations that support research capacity/culture benefit from performance outcomes such as lower mortality, higher patient experience scores, reduced staff turnover, and increased organizational efficiencies (Harding et al., 2017). However, it was not known whether there is a relationship between research capacity/culture and nurses' EBPI. The purpose of my quantitative study was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. In Chapter 2, I present literature search strategies and theoretical underpinning related to organizational theory of innovation implementation in the context of implementation science. I explain two key concepts including research capacity/culture and EBPI, and connections between these two key concepts of research capacity/culture and EBPI and health care organizations.

Literature Search Strategy

To examine the relationships between research capacity/culture and EBPI, I conducted a review of the literature. I searched MEDLINE/PubMed, CINAHL, Directory of Open Access Journals, Science Direct, Emerald Insight, APA PsycInfo, Academic Search Complete, Business Source Complete, and Health and Psychosocial Instruments databases. In addition, I searched Google Scholar to find articles using similar search terminology to detect any key articles missed by the original database search.

I searched using these key terms: *evidence-based practice, evidence-based guidelines, evidence-based practice implementation, nurses' evidence-based practice implementation, evidence-based practice implementation scale, barriers to evidence-based practice implementation, benefits to clinical trials participation, effect of clinical trial participation for patients, effect of clinical trial participation for nurses, effect of clinical trial participation for clinicians, effect of research participation, effect of research participation for nurses, effect of research participation for clinicians, research organizational culture, research active culture, research culture, research active nurses, hospitals' participating in research, value of research, value of evidence-based practice, research capacity, research capacity building, research capacity and culture tool, research capacity in context tool, implementation science, implementation research, organizational theory,* and *organizational theory of innovation implementation* in the context of health care settings. Health care setting also was termed *clinical health care setting, hospital,* or *clinical practice*. Boolean operators included "and" and "or" to guide my search.

I initially restricted my literature search to scholarly sources published within the previous 5 years. After my initial review of the literature, the scope of search was expanded to include previous scholarly work related to organizational theory of innovation implementation, implementation science, research capacity/culture, and EBPI to broaden the knowledge base related to foundational work in these concepts of interest and enhance the understanding related to the current research plan to examine factors that influence nurses' EBPI. Also, the literature search initially was restricted to a focus on nurses; however, I expanded this to include clinicians after it was determined that the concept of research capacity/culture had limited previous research related to nurses. In Chapter 2, I separate the concepts research capacity/culture related to clinicians and then nurses. I separate this again with the concepts EBPI related to clinicians and then nurses to demonstrate congruence throughout the review. I explore the key concepts of research capacity/culture and EBPI in the context of health care organizations. Later in Chapter 2, I make a distinction between EBP culture and research capacity/culture, which was significant my study.

Theoretical Foundation

Organizational Theory of Innovation Implementation

Organizational theory of innovation implementation applied to my study because it explains the influence of the complex interaction between the research capacity/culture of health care organizations and nurses and their implementation of EBP. March, who is considered the father of the field of organization theories, studied and applied organization theories to multiple disciplines for over 5 decades (Starbuck, 2013).

Numerous studies on the determinants of innovation adoption and innovation implementation by organizations influenced what is now known as Klein and Sorra's (1996) organizational theory of innovation implementation. Klein and Sorra noted that organizations that promote EBP alone will not benefit from improved outcomes not because the research or innovation is ineffective but because the implementation is unsuccessful. The organizational theory of innovation implementation explains that implementation effectiveness is a function of formal implementation policies and practices, positive implementation climate, perception that innovation use is aligned with user values, and the extent to which innovation fits within the organization's workflow (DeMartino, 2019; Klein & Sorra, 1996).

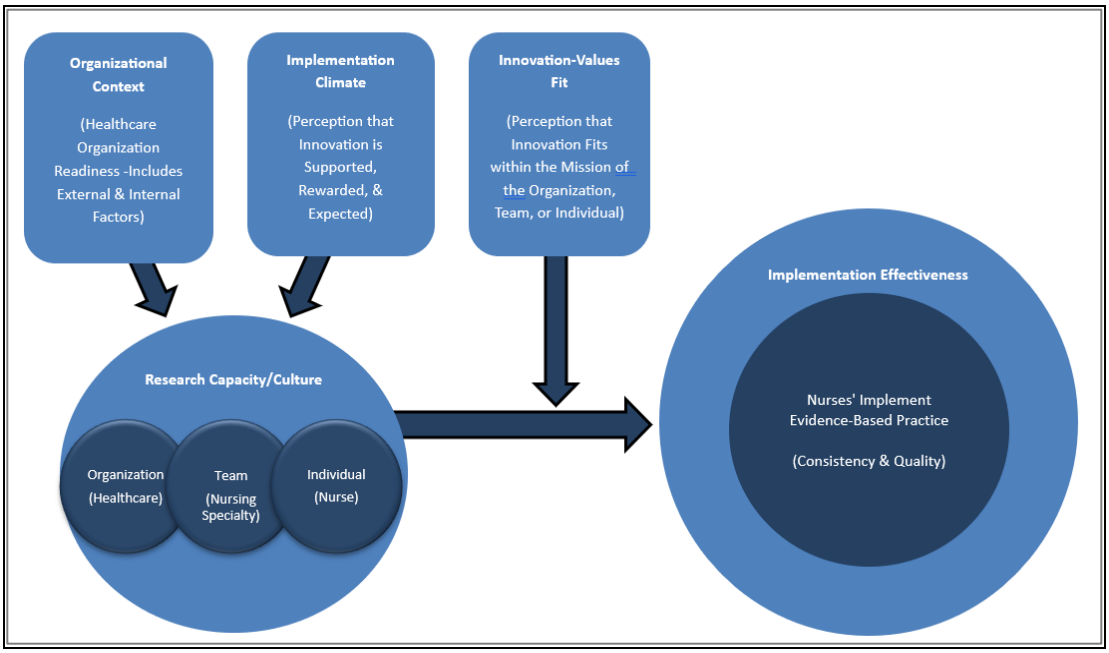
Organizational theory of innovation implementation proposes three determinants of implementation effectiveness: innovation–values fit, organizational readiness for change, and implementation climate (Garner et al., 2022). Innovation–values fit is the extent to which staff perceive the innovation use will align with their values. Organizational readiness for change is the extent to which staff are psychologically and behaviorally prepared to implement change. Implementation climate is the extent to which organizational staff perceive the innovation to be expected, supported, and rewarded within their organization (Garner et al., 2022; Turner et al., 2018). Positive implementation climate is critical to the successful implementation of EBP (Demircioglu, 2016; Garner et al., 2022; Peters et al., 2022; Powell et al., 2017). Organizations with strong implementation climates support EBPI by ensuring staff are adequately skilled, recognize the use of EBP, and remove any barriers to its use (Powell et al., 2017). The

organizational theory of innovation implementation also considers innovation climate, which is the result of employees' shared experiences, observations, information received, and discussions about their organization's implementation practices (Demircioglu, 2016).

I used the organizational theory of innovation implementation to examine the relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. The key concepts of organization, team, and individual research capacity/culture and nurses' EBPI fit into the organizational theory of innovation implementation as demonstrated in Figure 1.

Figure 1

Research Capacity/Culture and Nurses' EBPI Concepts in the Context of Organizational Theory of Innovation Implementation



In a previous study using organizational theory of innovation implementation, Li et al. (2018) examined organizational contextual features that influence EBPI within health care and concluded that organizational culture affects implementation and leadership while exerting influence on other features that either enhance or hinder the implementation of EBP. Organizational contextual features have been recognized as determinants for implementation of EBPs across health care settings. Organizational culture that demonstrated an openness to trialing innovations and a learning culture were highly associated with implementation success; however, an absence of this type of culture was associated as a barrier to successful implementation (Li et al., 2018).

In another study using organizational theory of innovation implementation, Klein et al. (2001) studied why some organizations succeed and others fail in the implementation of innovations. To examine organizational performance, Klein et al. studied the implementation of a new manufacturing resource planning software system in 39 manufacturing plants. The results indicated that financial resources and leadership support for technology implementation led to quality implementation policies, practices, and a strong implementation climate. Klein et al. concluded that in the absence of effective implementation, innovation adoption is more likely to result in waste of resources and cynicism by employees rather than the intended effect, which is quality improvement.

Dong et al. (2008) conducted an empirical study to test the antecedents of implementation effectiveness as defined by Klein and Sorra's (1996) theory. The results confirmed that successful implementation depends on strong implementation climate and innovation–values fit, as well as fit between innovation and users' workflow. Jacobs et al. (2015) used structural equation modeling among physician participants to quantitatively test the theory's proposed relationship in which innovation–values fit moderates the effect of implementation climate on implementation. The results demonstrated a positive relationship between innovation–values fit and implementation climate. Dong et al.'s and Jacobs et al.'s testing of the theory served to enhance the constructs within the framework. Recent studies applied this theory as a framework to improve EBP implementation. Turner et al. (2018) studied the applicability of the theory's effectiveness to examine implementation of a community pharmacy's Medicaid

medication management program and identified factors such as patient needs, resources, access to knowledge, and organizational structural characteristics that influence implementation effectiveness. Implementation climate and innovation–values fit were found to be positively associated with implementation versus no implementation.

DiMartino et al. (2019) used the organizational theory of innovation implementation to further understand the role of formal and informal implementation policies and practices as determinants of implementation effectiveness within the context of increasing palliative care consultation in inpatient oncology. Klein and Sorra (1996) emphasized the importance of formal implementation policies and practices in innovation implementation, but DiMartino et al.'s research suggested that both formal and informal policies and practices can influence innovation implementation. Formal policies include written guidelines presented by leadership that staff are mandated to follow. Informal policies and practices in an organization include culture, which is the behavioral norms and underlying values that shape the way of doing things within an organization. Peters et al. (2022) studied implementation climate in Norwegian mental health care services using the organizational theory of innovation implementation. Garner et al.'s (2022) evaluation of the theoretical constructs of organizational theory of innovation implementation examined determinants of implementation effectiveness as part of an effectiveness implementation study on Positive Health Check, a web-based video doctor intervention developed to increase medication adherence, retention of care, and viral load suppression of people living with HIV. These studies provided the foundation for the use of organizational theory of innovation implementation by testing how it was applied to the

evaluation of new interventions or processes in health care. These studies also emphasized the need for implementation climate, which is found in an organization that supports research capacity/culture. Lastly, the findings supported the applicability of this theory to health care and other organizational climates and suggested that future research be focused on evaluating EBPI improvement strategies.

Building on this previous research using the organizational theory of innovation implementation, I used the theory to examine the relationships between research capacity/culture and nurses' implementation of EBP. In the health care setting, organizational theory of innovation implementation has been used to examine how organizational environment and factors, including patient needs, resources, access to knowledge, and structural context, impact practices, productivity, and outcomes (Leeman et al., 2019; Turner et al., 2018). Organizational theory of innovation implementation was applicable to my study in that organizational factors such as research capacity/culture impact nurses' EBP implementation (see Leeman et al., 2019).

Implementation Science

Gaps continue to exist between research and application of new evidence into clinical practice (Borsky et al., 2018; McKinney et al., 2019). The field of implementation science was developed to increase knowledge related to factors that facilitate or hinder EBPI and to help generate evidence-based implementation strategies (Powell et al., 2019; Tucker et al., 2021). Chambers et al. (2016) defined implementation science as the scientific study of methods that promote the systematic uptake of research findings and other EBP into routine practice. The National Institutes of Health, Agency

for Healthcare Research and Quality, Department of Veterans Affairs, and Patient-Centered Outcomes Research Institute promote strategies that support the adoption, implementation, sustainability, and ongoing improvement of EBPs and the integration of scientific evidence to benefit health care outcomes (Chambers et al., 2016). Nurses are optimally positioned to lead efforts toward improving the quality of care by closing the research-to-practice gap because they are operationally involved in most daily aspects of patient care (Tucker et al., 2021). Implementation science focuses on evaluating organizational or individual contextual factors that influence the strategies for implementation or adoption of EBP (Leon-Astudillo et al., 2022). Through the field of implementation science, these gaps can be addressed by incorporating theoretical approaches for nurses to adopt and sustain implementation of EBP (Tucker et al., 2021). My study addressed the gap and further developed the field of implementation science by incorporating the organizational theory of innovation implementation.

Organizational Theory of Innovation Implementation in the Context of Implementation Science

Organizational theories describe, explain, and predict the complex interactions between organizations and their environments (Birken et al., 2017; Starbuck, 2013). Factors in a setting's external environment influence the implementation of interventions. Organizational theories are highly relevant but untapped resources for understanding implementation (Leeman et al., 2019). Evaluation of inner and outer organizational factors are critical to the successful implementation of EBP. Therefore, organizational theory of innovation implementation in the context of implementation science explains

how complex internal and external factors of an organization should be considered when examining implementation strategies (Birken et al., 2017; Leeman et al., 2019).

Cancer Prevention and Control Research Network (CPCRN), is a multi-center partnership funded by the Centers for Disease Control and Prevention (CDC) and the National Cancer Institute (NCI), seeking ways to expedite EBPI in cancer prevention and reduce cancer burden (Leeman et al., 2019). In 2018, CPCRN created a multi-center workgroup, comprised of experts in the areas of implementation and organization sciences, to collaborate on the Organizational Theory in Implementation Science (OTIS) project. The OTIS project aims to advance the use of organizational theories within implementation science by including scholarly input to determine how implementation and organization sciences intersect (Leeman et al., 2017). My study built upon the OTIS project aims by advancing the use of organizational theory in implementation science in a new study.

There is a need for more health care organizational research to be conducted under the theoretical framework of organization theories within the context of implementation science (Birken et al., 2018; Leeman et al., 2019). Birken et al. (2018) defined implementation science as a complex process whereby targeted organizational members' use of an innovation becomes proficient and consistent. Implementation science includes approaches that consist of EBP adoption, implementation, and sustainability (Birken et al., 2018; Proctor et al., 2013). My study utilized the organizational theory of innovation implementation in the context of implementation

science, to examine the relationships between research capacity/culture and nurse implementation of EBP in the health care setting.

Literature Review

Research Capacity/Culture

Research is the process of investigating, developing, testing, and evaluating new or existing evidence for practice and adds to the professions' knowledge base through literature (Ginex, 2017). Research culture is an environment within an organization that enables and supports research to generate new knowledge and opportunities to translate evidence into practice (Frakking et al., 2021; Matus et al., 2018). Matus et al. (2018) established that research culture is essential for building research capacity, which should be embedded in the health care workforce to drive improvement. Research capacity is the ability to engage in, perform or carry out quality research that is fundamental to enabling research culture within health care, and is reliant on the continual development of individual skills, organizational infrastructure, and process in research (Alison et al., 2017; Cooke et al., 2018; Harding et al., 2017; Matus et al., 2018). The goal of research capacity development is the generation, translation, and implementation of new evidence-based knowledge to improve the health of patients, facilitated by organizational support (Cooke et al., 2018). Holden, Pager, Golenko, & Ware's (2012) extensive research on capacity and culture led to the development of the validated Research Capacity in Context (RCC) tool which measures research capacity and research culture in one combined score. "Research culture" and "capacity" are not separately scored, therefore the term "research capacity/culture" was used in my study for clarity.

Research capacity/culture consists of three domains including organization, team, and individual (Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware & Weare, 2012). Individual research culture/capacity refers to an individual nurse's perception of skills as measured by the RCC survey tool. Team research capacity/culture refers to the nurse's perception of their specialty (e.g., oncology, surgical, pediatric) and its capacity to support and foster research, including research culture. Organizational research capacity/culture refers to nurses' perception of the health care organization where they are employed, and that organization's capacity to support and foster research, including research culture (Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware & Weare, 2012).

Research Capacity/Culture in Health Care Organizations

Research capacity/culture in a health care organization is the environment within the organization that supports the growth of innovative scientific knowledge and provides opportunities for clinicians to translate and implement research, innovation, or new evidence into practice to ensure optimal patient and health system outcomes (Alison et al., 2017; Dimond et al., 2015; Frakking et al., 2021). Research capacity/culture within a health care organization, relies on the continual investment of organizational infrastructure, skill training, supportive leadership, and time (Pager et al., 2012; Harding et al., 2017; Matus et al., 2018). Previous studies on research capacity/culture highlighted the need for health care organizations adopt a "whole system" approach to build research capacity/culture among health care individuals, teams, and organizations (Holden, Pager, Golenko, Ware & Weare, 2012; Pager et al., 2012; Matus et al., 2019). Adopting a whole

system approach coupled with consistent communications related to research promotion is needed to enhance research capacity/culture throughout an entire health care organization (Luckson et al., 2018). Strong research capacity/culture within health care organizations requires empowerment, supportive leadership, infrastructure with dedicated research resources (Alison et al., 2017; Cordrey et al., 2022). Dissemination of new evidence to inform practice, fostering research skills, and access for all clinicians is required to build and maintain research capacity/culture (Alison et al., 2017; Cordrey et al., 2022).

Research capacity/culture may differ based on organizational setting or health care organization type. The traditional setting for research activity and funding has primarily focused on academic-based medical centers (Gehrke et al., 2019; Snihur et al., 2020). However, community hospitals provide care for more patients than traditional academic-based medical centers. Hacker et al. (2013) hypothesized that community hospital engagement in research may improve evidence translation and implementation in EBP, however this needs to be studied. Prior research has not considered organizational setting or health care organization type as a factor of research capacity/culture, thus impacting EBPI (Hacker et al., 2013; Rudman et al., 2020).

Research capacity/culture development is fundamental to closing the research evidence to practice gap, thereby contributing to health, wealth, and knowledge for practice (Cooke et al., 2018). The goal of research capacity development is the generation, translation, and implementation of new evidence-based knowledge to improve the health of patients, facilitated by organizational support. Research

capacity/culture development may include research engagement of varying degrees ranging from complex experimental clinical trials to basic resources that support foundational skills of EBPI (Cooke et al., 2018). For health care organizations to build research capacity/culture, it requires clinician engagement, collaboration, shared value for research, and supportive leadership throughout the whole system (Matus et al., 2018). Research engagement within a health care organization is more relevant to the local patient population therefore more beneficial (Cooke, 2005). This immediate usefulness may lead to a faster uptake from engaged health care organizations, teams, and individuals regarding EBPI (Cooke, 2005). Health care organizations are more likely to support new practices that are relevant to local patient population and have been tested in the local setting. Nurses and clinicians are more likely implement EBP if that see its value fit into their own practices (Cooke, 2005). Building research capacity/culture that is close to practice does not mean that all clinicians and nurses must be engaged in all aspects of the research process; however, the engagement of a health care organization in research capacity development, demonstrates a supportive research capacity/culture inclusive of EBPI, and may create a culture that elevates EBPI among all employed clinicians, especially nurses, thus improving health care outcomes.

Benefits of Strong Research Capacity/Culture in Health Care Organizations

A strong organizational research capacity/culture is associated with benefits to patients and organizations. Majumdar et al.'s (2008) large-scale, multi-hospital study was a landmark review which provided evidence that unstable angina patients treated at hospitals that participated in research trials had better outcomes than patients treated at

nonparticipating hospitals. Faranoff et al. (2019) studied a large multi-hospital sample of myocardial infarction (MI) registry patients admitted to hospitals participating in clinical trials versus non-clinical trial participating hospital. Faranoff et al. found that enrolling even one patient in a clinical trial requires establishing organizational infrastructure that supports research capacity/culture which led to improved patient care. Health care organization leaders need to recognize the business benefits of having research that is integrated into routine clinical practice and culture (Matus et al., 2018). Prior research demonstrated a positive association between research capacity/culture and improved organizational performance including lower patient mortality rates, improved patient experience, reduced staff turnover, increased staff satisfaction, and better organizational efficiency (Cordrey et al., 2022; Faranoff et al., 2019; Harding et al., 2017; Majumdar, 2008). The published research provided a foundation for conducting additional research to examine the relationships between research capacity/culture and nurse implementation of EBP.

Research Capacity/Culture and Clinicians

Research capacity/culture has been studied in clinicians, mostly physicians and allied health professionals (AHP). Participation in research has led to improved attitudes toward research, increased implementation of research evidence into practice, development of critical thinking skills, and an enhanced culture of EBP (Matus et al., 2018; Matus et al., 2019). Majumdar et al. (2008) and Faranoff et al. (2008) found that physicians more consistently provide guideline-adherent care when caring for patients at clinical trial-participating hospitals. Calvario (2021) studied how clinician participation in

clinical trials impacted research capacity development, career improvement, health benefits, and knowledge production. Clinical trial participation was associated with research clinicians having increased research capacity through scientific knowledge production, research networking, diagnosis and decision-making skills, openness to novel therapeutic approaches, patient recruitment and data management capabilities. A limitation of Calvario's study approach was that it focused on research engaged clinicians.

Research capacity/culture studies have focused heavily on allied health professionals (AHP). Alison et al. (2017) studied research capacity/culture of AHP perceptions in a large Australian metropolitan health district and found research capacity/culture is adversely impacted by lack of dedicated research resources within the organization's infrastructure, lack of leadership that promotes research culture, and lack of dissemination to staff on new research evidence to inform practice. Matus et al. (2019), concluded that adopting a "whole system" strategic approach, with a focus on building research capacity/culture at the individual, team, and organizational levels had the most impact on AHPs. Cordrey et al. (2022) examined how the research capacity/culture of AHPs informs research capacity building strategies at the local level. The study found that AHPs recognize the benefits of research at organization and team level, but not at the individual level which highlighted the need for research capacity building strategies that address the role of AHP and define responsibilities and barriers at the individual level (Cordrey et al., 2022).

There are multidisciplinary studies, inclusive of nurses, that have focused on

research capacity/culture. Perry et al. (2008) conducted a mixed methods research study on nurse, midwife, and AHP perceptions of a research facilitator position to enhance research capacity development and found that a research facilitator position positively affected research culture. A major limitation of the study was that the views may have been from respondents that had worked personally with the research facilitator which creates a source of conformation bias, and it is too difficult to determine what impact the research facilitator role had on clinical nurses who did not have direct engagement (Perry et al., 2008). Luckson et al. (2018) studied the influence of research-focused exposure on nurse and AHP research culture at two different hospitals in the United Kingdom and found there was a difference in the research culture of nurses and AHPs between those that worked in research focused and a non-research focused hospital. There was a significantly stronger research culture among those that worked in research focused hospitals compared to those that did not. Frakking et al. (2021) examined research capacity/culture across interprofessional teams and scores were highest for physician, followed by midwife, then nursing, and AHPs. Reported barriers to research were limited of time, competing priorities, and lack of skill. Frakking et al. recommended embedding clinical researchers within the system and improving leadership support, advocacy, and literacy to improve research capacity/culture. Frakking et al.'s research highlighted a major deficit among nurses' perception of their role in research. According to ANA (2021) standards, the role of the Registered Nurse is to contribute to quality improvement by incorporating evidence and research into practice.

Research capacity/culture in nursing, refers to a nurse's perception of their practice environment and the observation of, access to, and knowledge of how to obtain research resources to evaluate, understand, and apply new knowledge such as research findings into practice. Strong research culture/capacity motivates nurses by bolstering nurse morale, improves collaboration with peers, and serves as a reminder that incorporating evidence through research into practice is a responsibility for every nurse (ANA, 2021; Brysiewicz & Oyegbile, 2021).

Limited studies were found that focused on research capacity/culture in nursing. Siedlecki and Albert (2016) investigated which factors impact nurse decision-making in mid-west United States' acute care settings and the determinants to their involvement in research beyond research required for school projects. Siedlecki and Albert found nurses are more likely to be research active based on a clinical trigger, a personal belief in their role in generating new knowledge, and presence of research organizational support; despite barriers such as time, knowledge, and workload. Building organizational research capacity/culture was found to be key to engaging nurses in research implementation practices (Sielecki & Albert, 2016). Berthelsen and Holge-Hazelton (2018) explored how nurse researchers, employed in clinical practice at two university hospitals in Denmark viewed a research culture in clinical practice. Berthelsen and Holge-Hazelton found that lack of academic tradition and poor recognition from physicians can adversely affect nurse engagement in research, whereas a culture that supports reflective practice and legitimization of research can promote development of nursing research into clinical practice.

Evidence-Based Practice Implementation

EBP is a problem-solving approach to the delivery of health care that incorporates evidence from well-designed studies as external evidence and integrates it with patient and/or family preference and clinician expertise, and includes internal evidence gathered from patient data (Melnyk et al., 2017). EBPI is the use of the most valid, updated, and relevant research findings, which incorporates expert opinion, standard guidelines, and literature into clinical decision-making practice (Melnyk & Fineout-Overholt, 2011). Implementation is the most difficult stage of the EBP process, and a lack of implementation is the reason for the existing research evidence to practice gap (Dagne & Beshah, 2021; Hecht et al., 2016).

Evidence-Based Practice Implementation in Health Care Organizations

To achieve the Institute of Medicine's goal that 90% of clinical decisions be evidence-based, health care organizations need to build supportive cultures (Melnyk et al., 2012). Lack of administrative support and workplace culture has been reported as a leading barrier to EBPI (Melnyk et al., 2010; Melnyk et al., 2012; Patelarou et al., 2016; Pravikoff et al., 2005; Schaefer & Welton, 2018). Fineout-Overholt et al. (2004) conducted a randomized, controlled, pilot study to assess factors for successful EBPI in acute care settings. Identifying EBP mentors, allocating time and resources, creating an EBP focused culture, and redefining the role of nurses to include EBP activities as part of their job descriptions were found to help overcome EBPI barriers within the health care organization (Fineout-Overholt et al., 2004). Melnyk et al. (2016) examined the impact of developing several EBP mentors to assist point of care clinicians to enhance health care

organization EBP culture and found that clinician EBP beliefs, attitudes, and EBPI increased with the enhanced organizational support when there were dedicated resources to create an EBP culture.

Benefits of Strong Evidence-Based Practice Implementation in Health Care Organizations

Health care leaders are constantly seeking ways to improve quality and successful patient outcomes. Health care organizations that demonstrate EBPI benefit from a delivery of highly effective, efficient, safer patient care that is of higher quality and more cost-effective along with more knowledgeable clinicians (Dagne & Beshah, 2021; Melnyk et al., 2010; Melnyk et al., 2016; Melnyk et al., 2017). EBPI improves patient outcomes including the reduction of patient pain, pressure ulcers, and length of hospital stay and improved patient satisfaction (Dagne & Beshah, 2021). EBPI ensures patients receive the most effective care based on the current, most accurate evidence from research, as EBPI usage increases the likelihood that ineffective practices are removed from patient care and health policies (Chiwaula et al., 2018; Quinn et al., 2019). EBPI must become standard thinking in the clinical setting, as this is essential to patient care and should be considered an investment by the organization that will yield improve outcomes (Fineout-Overholt et al., 2004).

Evidence-Based Practice Implementation and Clinicians

Implementing EBP is a challenge that has been studied across many clinical disciplines. Quinn et al. (2019) studied multi-disciplinary clinician perspectives on the use of EBP facilitators and experience related to EBPI, in the context of implementing a

neonatal antibiotic stewardship program. Predictors of EBPI included the clinicians' perceived value of the practice change, receptivity, ongoing evaluation, multidisciplinary collaboration, and supportive culture. Feedback regarding perceived effectiveness of external facilitators on their EBPI project was explored with a significant barrier being conflicting schedules between facilitator and clinicians, and lack of relationship building between external facilitator and internal health care teams (Quinn et al., 2019). Hecht et al. (2016) studied the effectiveness of EBP training for clinicians and found that current EBP training methods may be inadequate at changing EBP behavior. Hecht et al.'s research supports the proposition that future studies should not focus solely on clinician knowledge, attitude, and skill but should focus on strategies to change clinician behavior to include implementation of EBP. In a study of EBPI and social workers, McDermott and Bawden (2017) found that social workers were reluctant to incorporate new evidence into practice but instituting a research capacity building program to improve EBPI, resulted in benefits to their staff and patient services.

Addie et al. (2016) studied physician EBPI of genomic data to inform practice. Despite evidence that genomic data in clinical practice may aid in disease prevention, diagnosis, and treatment, the uptake of clinician implementation of genomic data into practice has been challenging. Using a theoretical lens from implementation science, Addie et al. identified barriers including resistance to change, knowledge deficits about genomic medicine and genetic tests, privacy and data security issues, and uncertainty about reimbursement.

Fulcher-Rood et al. (2020) examined the inconsistencies of Speech Language

Pathologists (SLPs) related to EBPI. SLPs' reported utilizing EBPI for treatment decisions when they did not have enough clinical expertise regarding a specific patient situation and a lack of EBPI utilization when they had prior knowledge or experience handling the situation. Reported barriers to utilization included insufficient time, limited funding, and restrictions in the workplace setting to support SLP EBPI utilization (Fulcher-Rood et al., 2020).

Within the behavioral health discipline, Holt et al. (2021) performed a 10 year systematic review of 65 articles published with recommendations for behavioral health services regarding gender diverse adults, which showed that many of the articles were not based on EBP. The lack of EBP highlights that EBPI is not consistently used to inform practice in this specialty and may be underrepresented in behavioral health practice (Holt et al., 2021). Williams et al. (2022) tested the relationship between EBPI climate, across behavioral health agencies, and clinician adherence to the EBP, cognitive behavioral therapy (CBT). Agencies with high levels of EBPI climate had a significantly higher level of clinician adherence to CBT, conversely agencies with lower levels of EBPI climate had lower clinician adherence to CBT (Williams et al., 2022).

The American Organization for Nursing Leadership (AONL) established EBP as a critical component for the nursing discipline and expressed that a healthier future is possible by bridging science and practice (Trepanier, 2021). Although EBPI should be the foundation patient care is based on, many nursing decisions and practices are not based on scientific evidence (Chiwaula et al., 2018; McKinney et al., 2019; Pravikoff et al., 2005). Nursing decisions are often derived from work experience, observation of

other clinicians, and guidance from previous formal education (Chiwaula et al., 2018; Pravikoff et al., 2005). The American Association of Colleges of Nursing (AACN) standards necessitates nurses adopt a systems-thinking approach to improve clinical decision making using EBPI (Stevens, 2013).

Melnyk, considered by many as the modern leader in research for EBP in nursing, emphasizes that education alone is not an effective strategy for EBP to be implemented into practice (Wallis, 2012). She is credited with the creation of numerous validated survey instruments, including the EBPI scale which measures nurse implementation of EBPI (Melnyk, Hsieh, Gallagher-Ford, Thomas, Guo, Tan & Buck, 2021). Melnyk et al. (2012) surveyed American Nursing Association (ANA) members to examine challenges in EBPI and found that 65.5% reported not being able to consistently implement EBP while treating patients. Melnyk et al.'s (2017) study aimed at determining factors associated with EBP competency of United States' nurses. Overall nurses reported lack of EBP competence. Younger nurses and those with more education reported higher levels of EBP competency. There were no significant EBP competency differences between nurses working in Magnet and non-Magnet designated organizations. There were strong positive associations between EBP competency with EBP beliefs and EBP mentorship; moderate positive association between EBP competency and EBP knowledge; and small positive association between EBP competency and EBP-focused culture (Melnyk et al., 2017). Melnyk et al. (2004; 2012) studied nurse knowledge, beliefs, skills, and needs related to EBP. Nurses reported positive attitudes and beliefs that EBP improves patient care. Reported barriers included limited knowledge and lack

of administrative support which results in slow EBPI in patient care (Melnyk et al., 2004; Melnyk et al., 2012). In Melnyk et al.'s (2010) study which examined the relationship between EBPI and beliefs, organizational culture, and job satisfaction among EBP mentors from a community hospital system, EBPI was found to increase job satisfaction. Melnyk, Tan, Hsieh, and Gallagher-Ford (2021) later studied relationships among numerous variables including EBP-focused culture, mentorship, knowledge, beliefs, competency, implementation, nurses' job satisfaction, and nurses' intent to stay. EBP-focused culture and mentorship were key variables that positively impact EBP knowledge, beliefs, competency, implementation, job satisfaction and intent to stay among nurses (Melnyk, Tan, Hsieh, & Gallagher-Ford, 2021).

In addition to Melnyk's extensive research, several other studies have examined barriers and facilitators to nursing EBPI. Pravikoff et al. (2005) examined nurse skills and access to tools used in obtaining evidence. Barriers found included lack of time, lack of skills, and poor access to search tools. Nurses reported often relying on what they learned in nursing school, advice from other clinicians, or experiences to inform practice (Pravikoff et al., 2005). In a large study, including nurses from two public hospitals in Singapore, Majid et al. (2011) explored nurse awareness, knowledge, and attitude toward EBP and factors likely to facilitate or be barriers to implementation. Although nurses reported a positive attitude about EBPI, barriers included lack of time, information illiteracy, and limited literature search skills. Protected time, training, hospital library, and mentorship were reported as a possibly facilitators for EBPI (Majid et al., 2011). Crable et al. (2021) studied nurse knowledge, attitudes, practices, and barriers to EBP

from two types of hospitals, one with no formal EBP model and the other following the Iowa model for EBP. Crable et al. found that knowledge and attitudes are the biggest barriers to implementing EBP, nurses having access to a large body of synthesized literature still leaves a significant gap between research evidence and EBPI in clinical setting, and that organizational and leadership support play a key role in closing that gap. Patelarou et al. (2016) studied predictors of EBP in Greek health care settings and found that nurses have positive attitudes and beliefs about EBP however are unsure how to implement it into practice. Attitude, knowledge, informational needs, and workplace culture, as well nurse demographics were all found to be significant predictors of EBPI (Patelarou et al., 2016).

Studies have also been done on EBPI as i relates to nurse education level and EBP specific education. Llasus et al. (2014) conducted a correlational study to examine graduating baccalaureate students' EBP readiness, knowledge, and implementation behaviors and found that the more nurses know about EBP, the more readiness they feel and the more likely they will be to implement EBP. Rudman et al. (2020) examined the relationship between nurse educational degree and EBP and found that nurses with graduate degrees report more use of EBP. Rudman et al. reported that clinical setting on nurses' use of EBP had not been studied in depth and could be a factor in EBPI. McNett et al. (2021) encouraged the use of doctoral prepared nurses to improve EBPI efforts in health care organizations. Doctoral prepared nurses who adopt an implementation science approach can support EBPI efforts that are effective and sustainable (McNett et al., 2021). Saunders & Vehvilainen-Julkunen, (2016) studied possible predictors of EBP

attitudes and competencies, which found positive association between graduate degrees and EBP attitudes. However, positive attitudes related to EBP did not always translate into EBPI (Saunders & Vehvilainen-Julkunen, 2016). Saunders et al. (2016) studied the effectiveness of nurse delivered education to strengthen nurse EBP readiness at a university hospital which found that nurses with increased education levels were found to have higher confidence in EBP. Also, nurses with stronger beliefs about EBP were found to have higher EBPI. The study consisted of nurses working in different professional nursing roles and care settings were randomly allocated into two groups including an intervention group who received EBP-focused education and the control group received research-utilization-focused-education. Interestingly, improvement in confidence nor EBP knowledge levels did not differ between the intervention or control groups (Saunders et al., 2016). These studies examined EBPI as it relates to nurse education level and EBP education, however they did not examine EBPI as it related to these concepts and research capacity/culture.

EBPI has been linked to increased nurse job satisfaction, empowerment, a new knowledge base which has research evidence as its foundation and enhanced clinical decision making with the incorporation of patient preferences into practice (Chiwaula et al., 2018). EBPI in nursing practice results in care that is safer, cost-effective, high-quality, and patient focused (Chiwaula et al., 2018; Steven, 2013). Despite the known benefits of EBPI, gaps continue to exist between what is published in the literature as best EBP and what is done implemented nursing practice (McKinney et al., 2019). Unfortunately, except for nurse belief in the value of EBP which has increased over time,

nurses continue to report barriers to EBPI including lack of time, knowledge, mentors, and organizational support. There is limited research that evaluates effective strategies that impact nursing behaviors that support EBPI in daily patient care (McKinney et al., 2019).

Evidence-Based Practice Culture Is a Component of Research Capacity/Culture

Organizational culture plays a critical role in clinician behavior. Research capacity/culture and EBP culture are not the same and should not be used interchangeably. Research capacity/culture embraces a climate where health care is based on the best available knowledge from research findings, rather than prior education or custom (Borkowski et al., 2017). In a research capacity/culture all clinicians are consumers of research, either through generation or translation of evidence into practice (Borkowski et al., 2017). Research capacity/culture includes clinician engagement in research of varying degrees ranging from complex experimental clinical trials to basic knowledge that supports foundational skills of EBPI (Cooke et al., 2018).

EBP-focused culture is an organizational climate that supports clinicians with education, resources, protected time, and EBP mentors to engage in successful EBPI (Li et al., 2018; Melnyk, Tan, Hsieh, & Gallagher-Ford, 2021). Many of the previous studies, especially in nursing, urge health care organizations to create an EBP-focused culture to promote EBPI (Fineout-Overholt et al., 2004; Melnyk et al., 2010; Melnyk et al., 2012; Melnyk et al., 2017; Melnyk, Tan, Hsieh, & Gallagher-Ford, 2021; Schaefer & Welton, 2018). EBP culture components are found within organizations that have developed research capacity/culture. However, EBP culture components are found within

organizations that establish research capacity/culture (McDermott & Bawden, 2017). Research capacity building may be an effective strategy for improving EBPI among social workers, resulting in benefits to staff and patient services (McDermott & Bawden, 2017). Therefore, research capacity/culture development may be an effective implementation strategy to improve EBPI among nurses, but additional research needed to be done.

Summary and Conclusions

EBPI strategies have been inadequately studied through the lens of the organizational theory of innovation implementation (Addie et al., 2016; Quinn et al., 2019). Nurses are critical to the mission of bridging the research evidence to practice gap (Trepanier, 2021). Research capacity/culture improves physicians' and other clinicians' EBPI, but nurses are seldom included in those studies (Calvario, 2021; Cordrey et al., 2022; Faranoff et al., 2019; Harding et al., 2017; Majumdar et al., 2008; Matus et al., 2019). However, what was not known is if research capacity/culture development is helpful for improving nurses' EBPI, this is why my study examined the relationship between research capacity/culture and nurses' EBPI.

In conclusion of Chapter 2, I have explained the literature search strategy, theoretical underpinnings, and key concepts including research capacity/culture in the health care organization, research capacity/culture related to clinicians and nurses, EBPI in the health care organization, and EBPI related to clinicians and nurses. These concepts were critical to the purpose of my quantitative study, which was to examine the relationships between nurses' perception of organization, team, and individual research

capacity/culture and nurse' implementation of EBP. In Chapter 3, I present the methodology of my study including the research design, rationale, population, sample, data collection, instrumentations used, and data analysis.

Chapter 3: Research Method

The purpose of my quantitative study was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. In this chapter, I provide information about the research design and rationale, population, study sample, data collection, and instrumentation. I also explain the plan for data analysis, threats to validity, and human subject protection.

Research Design and Rationale

Using a quantitative design, I conducted a prospective correlational study in which nurse participants completed a survey. A correlational design was ideal to answer the research questions, which addressed the relationships between nurses' perception of organization, team, and individual research capacity/culture with EBPI (see Creswell & Creswell, 2018). For RQ1, RQ2, and RQ3, the independent or predictor variables were nurses' perceptions of organization, team, and individual research culture/capacity. The dependent or outcome variable was nurses' EBPI. For RQ4, the predictor variables were nurses' perception of organization, team, and individual research capacity; the outcome variable was nurses' EBPI. The covariates for adjustment were educational background, health care organization setting, and health care organization type.

I used an invitation for research participation to elicit firsthand responses from the nurse participants. Given the prospective nature of the design, I planned for a minimum

of 500 emailed invitations to be sent out in anticipation of a 20% return rate, which would garner approximately 100 survey responses to meet the minimum number of participants to reach significance. The survey was open until the desired number of responses was achieved.

The completed surveys provided the data for correlation and regression analyses. I planned to measure nurses' perception of organization, team, and individual research capacity/culture using the RCC tool (see Appendix A; Holden, Pager, Golenko, Ware & Weare, 2012). The RCC tool had been used in prior studies (Cordrey et al., 2022; Frakking et al., 2021; Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware & Weare, 2012; Matus et al., 2021). I planned to measure nurses' EBPI using Melnyk et al.'s (2008) EBPI scale (see Appendix B), which had been used in prior studies (Melnyk et al., 2008; Melnyk et al., 2012; Melnyk et al., 2016; Melnyk, Hsieh, Gallagher-Ford, Thomas, Guo, Tan & Buck, 2021). Correlational analysis is a recommended research design used to evaluate relationships; however, no literature was found that assessed the relationship between research capacity/culture and nurses' EBPI, measured by these two instruments (see Creswell & Creswell, 2018).

Methodology

Population

I planned to include participants who were licensed nurses who work in the United States and had been employed in their current position for a minimum of 1 year at a health care organization. The target population was nearly 4 million licensed employed nurses working in the United States, 3.07 million of those were RNs (Bureau of Labor

Statistics, 2022). Diversity of my target population was important because it would allow for and provide a greater variety of health care organization types (public/community access or private), health care settings (e.g., hospital/health care system, academic center, ambulatory care, urgent care, rehab facility, medical office, school), Magnet status, and organizational cultures to be included, allowing for more meaningful results. The plan was to include nurse participants of all role levels (e.g., staff, manager, administrator/executive), nursing educational degree (diploma, ASN, BSN, MSN, DNP, PhD), licensure (LPN, RN, APRN), and specialty (e.g., oncology, medical, surgical, critical care).

Sample and Sampling Procedures

I used a convenience sample because this was the most feasible option to collect surveys from nurses throughout the United States. I performed sample size calculations for internal validity so there would be sufficient power to detect a clinically meaningful effect size as statistically significant (see Faul et al., 2009). I conducted a power analysis to determine the sample size. Using G* power (Faul et al., 2009) to perform sample size calculations for the simple linear regression model and the multiple regression model, I determined a sample size of 100 participants would be required to have power of .9 to detect an R square of .1. This calculation assumed a two-sided test and an overall α of 0.05, which specifies that the probability of stating there is an association when one does not exist is only 5% or less (Type I error; Faul et al., 2009). The choice of 90% power indicates that the probability of not detecting a significant association when one does indeed exist is set to 10% or less (Type II error; Faul et al., 2009). The Benjamini-

Hochberg correction was applied to the three *p* values involved in the evaluation of the organization, team, and individual research capacity/culture of the primary hypothesis to control the overall Type I error rate (Benjamini & Hochberg, 1995).

Procedures for Recruitment, Participation, and Data Collection

Procedures for Recruitment and Participation

I recruited nurse participants from a variety of health care organizations (e.g., hospitals, academic medical centers, acute care settings, outpatient clinics) throughout the United States. Having participants recruited through multiple outlets allowed access to possible participants from a variety of health care organizations. There were four ways I recruited participants:

1. I contacted prominent professional nursing associations in the United States for possible participants for recruitment after the proposal and IRB approval had been obtained. Based on directions from the professional nursing associations, I posted my recruitment invitation on their website or sent it to members.
2. I also recruited participants by mailing a recruitment invitation to nurses who recently attended a Magnet Conference. I obtained prior permission and had the recent Magnet Conference attendee contact list, which was used to send invitations for study participation (see Appendix C).
3. I also recruited possible participants from social media (e.g., Facebook, LinkedIn). Recruiting participants in groups on Facebook required admittance to join with specific rules and regulations. The targeted group included

licensed nurses in the United States who had been employed in their current position for a minimum of 1 year in a health care organization.

4. I obtained permission from Walden University to have my study posted on the website for participant pool access.

The recruitment invitation contained information about my study and a link to the survey via Research Electronic Data Capture (REDCap). The link appeared in the recruitment invitation (see Appendix D) and took the individual to the screening questions:

1. Are you a licensed nurse (LPN, RN, or APRN) working in the United States?
2. Have you been employed in your current position for a minimum of 1 year at a health care organization?

If the individual answered "yes" to all screening questions, then the next screen was the informed electronic statement of consent. If an individual answered "no" to any of the screening questions, the individual was thanked for their time and the screen was closed. The screening section had to be completed prior to individuals gaining access to the statement of consent or surveys.

If individuals decided to participate, there was an informed electronic statement of consent outlining the intent of the study while minimizing risk to the participant and ensuring anonymity. If the individual consented, the next screen was the demographic section (see Appendix E). After the demographic section was completed, the participant began the RCC survey (see Appendix A). After completing the RCC survey, the participant completed the EBPI tool (see Appendix B). Later in Chapter 3, I provide

detailed information about the demographic section (see Appendix E), RCC survey (see Appendix A), and EBPI tool (see Appendix B).

The maximum estimated time for participants to complete all items was 20 minutes. Data were collected anonymously through the online platform REDCap. No identifying information was collected that could have connected a participant to their completed survey. If participants wanted to receive results at the conclusion of the study, they were invited to provide contact information on a separate site outside of the survey. After participants completed the surveys, an exit page opened and thanked the participant for completing and participating in the study. Data were stored electronically on my secured Google Drive cloud storage and secured Seagate external hard drive, to which only I have access. All data storage is password protected. All raw data collected will remain in my possession and will be maintained for 5 years as required by Walden IRB. No monetary or similar form of compensation was offered to participants for participating in my study.

Data Collection

I linked the study materials to a website link via REDCap for those who chose to participate. This link was on the recruitment invitation (see Appendix D). Study data from the electronic survey were collected and managed using REDCap electronic data capture tools. Harris et al. (2009) and Harris et al. (2019) described REDCap as a secure, web-based software platform used to support data capture for research studies and features an intuitive interface for validated data capture including audit trails of all data entry or changes. REDCap allows for exportation of research data to statistical software

packages and offers directions for data integration and interoperability with external sources. REDCap, which is supported in part by National Institutes of Health, was created by researchers from Vanderbilt University in 2004, and since its inception has been credited by countless researchers as flexible, reliable, and secure software for research data, making it the ideal data capture tool for my study (see Harris et al., 2009; Harris et al., 2019).

Instrumentation and Operationalization of Constructs

For data collection, I used an electronic, one-time, three-part survey instrument. The first section of the survey instrument collected demographic information of the nurse participant and the organization where they were employed (see Appendix E). The demographic information collected was important to be able to describe characteristics of the respondents who participated in my study. Nurse participant demographic information included age, gender, ethnicity, geographical location, current nursing licensure (LPN, RN, APRN), role level (staff, educator, manager, administrator/executive), nursing specialty (med-surg, cardiology, oncology, emergency, critical care), highest nursing degree (diploma, ASN, BSN, MSN, DNP, PhD), highest degree overall (diploma, associate's, bachelor's, master's, doctorate), specialty certification (yes or no), years working at current health care organization, and years of nursing experience. Health care organization demographic information included setting (hospital, academic center, urgent care center, outpatient clinic, rehab facility, office), type (community/public, private, for-profit, not-for-profit, Magnet, non-Magnet), and

geographical location. Identifying the name of the participant or health care organization was not included in the survey.

The second section of the survey was Holden, Pager, Golenko, Ware & Weare's (2012) RCC tool (see Appendix A), which measured research capacity/culture defined as a practicing environment that embraces a culture where practice is based on the best available knowledge from research findings rather than prior education or custom (Borkowski et al., 2017). In organizations with high research capacity/culture, employees have observation of, access to, and knowledge of how to obtain research resources to evaluate, understand, and apply new knowledge (research evidence findings) into practice (Holden, Pager, Golenko, & Ware, 2012). The RCC tool measured research capacity/culture in organization, team, and individual domains. Organization domain reflected nurses' perception of the health care facility for which they are employed (hospital, academic center, outpatient clinic, rehabilitation facility). Team domain reflected nurses' perception of the nursing specialty for which they consider themselves primarily working (oncology, emergency, rehabilitation, mental health, mother/baby, med-surg, intensive care unit, primary care outpatient). Individual domain reflected the nurses' perception of self and research capacity/culture. The RCC tool also included questions related to barriers and facilitators to research capacity/culture (Frakking et al., 2021; Holden, Pager, Golenko, Ware & Weare, 2012).

Research capacity and culture were not separately scored, which is why in this study they were referred to as "research capacity/culture" and not "research capacity and culture." Most previous studies referred to the RCC tool as the "Research Capacity and

Culture" tool, which included publications by the tool developers at Queensland Health and Griffith University. However, the official name according to one of the developers, Robert Ware, is "Research Capacity in Context" tool (see Appendix F). The tool was developed to provide evidence on current levels of research capacity and culture for the whole system within the context of organization, team, and individual (Holden, Pager, Golenko, Ware & Weare, 2012). Robert Ware was contacted in advance and granted written permission to use the RCC survey tool in this study (see Appendix F).

Holden, Pager, Golenko, Ware & Weare (2012) assessed the RCC tool for construct validity using Cronbach's alpha and exploratory factor analysis. Each RCC domain including organization, team, and individual was explored separately, and no items were dropped because all had a factor loading greater than 0.5. The RCC tool demonstrated excellent internal consistency (validity) for organization, team, and individual domains (α = 0.95, 0.96, and 0.96) respectively. The RCC tool also demonstrated substantial test-retest reliability with intraclass correlations of 0.77, 0.83, and 0.82 for the organization, team, and individual domains, respectively. The three domains consisted of questions on a 10-point numeric scale where 1 was the lowest possible level of skill or success and 10 was the highest possible level of skill or success. Each overall domain score was calculated as the average of the individual items in that domain, with the overall scores also ranging from 1 to 10. Each of the overall scores could also be categorized as low (< 4), moderate (4–6.9), and high (7+; Holden, Pager, Golenko, Ware & Weare, 2012).

The third section of the survey was Melnyk et al.'s (2008) EBPI scale (see Appendix B), which measured nurses' EBPI defined as the use of the most valid, updated, and relevant research findings and incorporates expert opinion, standard guidelines, and literature into clinical decision-making practice (Melnyk & Fineout-Overholt, 2011). The EBPI scale had an established construct validity, Cronbach's $\alpha >$ 0.90, and demonstrated internal consistency reliabilities > .85 (Melnyk et al., 2008; Melnyk et al., 2010). I contacted Melnyk and was granted permission to use the EBPI scale (see Appendix G). The EBPI scale consists of 18 statements related to the nurse participant's implementation of EBP in the clinical setting. Each of the 18 statements was answered on a 5-point Likert scale and was summed to create the total score from 0 to 72. Higher scores indicated greater EBPI. Participants answered how often in the last 8 weeks they had performed certain EBPI tasks such as "used evidence to change my clinical practice."

Data Analysis Plan

In this quantitative, correlational study, the participants' survey responses were used to answer four research questions:

RQ1: What is the relationship between nurses' perception of health care organization research capacity/culture and EBPI?

H_o1: There is no relationship between nurses' perception of health care organization research capacity/culture and EBPI.

H_a1: There is a relationship between nurses' perception of health care organization research capacity/culture and EBPI.

RQ2: What is the relationship between nurses' perception of team research capacity/culture and EBPI?

H_o2: There is no relationship between nurses' perception of team research capacity/culture and EBPI.

H_a2: There is a relationship between nurses' perception of team research capacity/culture and EBPI.

RQ3: What is the relationship between nurses' perception of individual research capacity/culture and EBPI?

H_o3: There is no relationship between nurses' perception of individual research capacity/culture and EBPI.

H_a3: There is a relationship between nurses' perception of individual research capacity/culture and EBPI.

RQ4: What is the relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type?

H_o4: There is no relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

H_a4: There is a relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture

and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

For RQ1, RQ2, and RQ3, my analysis assessed the relationships between the predictor variables of nurses' perception of research capacity/culture with the outcome variable of EBPI, using simple linear regression. To address RQ1, I used a simple linear regression model to assess nurses' perception of organization research capacity/culture as the predictor, and EBPI as the outcome. For RQ2, I used a simple linear regression model to assess nurses' perception of team research capacity/culture as the predictor, and EBPI as the outcome. RQ3, again I used a simple linear regression model to assess nurses' perception of individual research capacity/culture as the predictor, and EBPI as the outcome. The strength of these associations were evaluated by reporting the *R*-square value and *p*-value (Warner, 2013). The Benjamini-Hochberg correction was applied to the *p*-values associated with the testing of the primary analysis to control the overall type I error rate (Benjamin & Hochberg, 1995).

In RQ4, my analysis assessed the relationship between nurses' perception of organization research capacity/culture, team research capacity, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. In my study, educational background was the nurses' highest nursing degree such as diploma, ASN, BSN, MSN, DNP, PhD. In my study, health care organization types included public/community access or private; and health care settings included hospital/health care system, academic center, ambulatory care, urgent care, rehabilitation facility, medical office, or school.

There was rationale to support including the covariates educational background, health care organization setting, and health care organization type in my study. Prior research reported a positive relationship between graduate educational degree and EBP attitudes and competencies (Rudman et al., 2020; Saunders & Vehvilainen-Julkunen, 2016). However, there was conflicting evidence in the literature regarding whether a graduate educational degree is a predictor for implementation of EBP (Abuejheisheh et al., 2020; Saunders & Vehvilainen-Julkunen, 2016). Also, prior studies did not consider organizational setting or health care organization type as a factor of EBPI (Rudman et al., 2020). Regarding health care organizational settings, based on volume alone community hospitals provide care for more patients than traditional academic-based medical centers; however research and funding are primarily focused on academic centers (Gehrke, et al., 2019; Snihur et al., 2020). It has been hypothesized the community hospital engagement in research may improve evidence translation and implementation of EBP, but no studies regarding this could be found (Hacker et al., 2013). Regarding health care organizational types, private health care organizations are privately funded by non-government sources. Private health care organizations often prioritize profitability and opt not to offer services or certain specialties that result in break-even or decreased revenue (Duggan et al., 2023; Jeurissen et al., 2021). Private health care organizations increase profit by reducing personnel costs and are known to have a higher nurse to patient ratio compared to public health care organizations. Public health care organizations are government funded and provide care for all patients regardless of insurance status or ability to pay. Public health care organizations rely on government funding based on a pay-for performance structure

that incentivizes organizations for achieving optimal quality outcomes. It was not clear whether private or public health care organizations invest in building research capacity/culture. Prior research has been done comparing the benefits and challenges of private versus public health care organization types, however none of those studies mentioned research capacity/culture as a factor (Duggan et al., 2023; Jeurissen et al., 2021). Therefore, my study analysis included examining the relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

For RQ4, I conducted a multivariable analysis to evaluate research capacity/culture (separately for organization, team, and individual) as a predictor of EBPI in multiple linear regression models, adjusting for educational background, health care organization setting, and health care organization type. The Benjamini-Hochberg correction was applied to the *p*-values associated with the multivariable regression analysis to control the overall type I error rate (Benjamini & Hochberg, 1995). Multiple linear regression assumptions including linear relationship, independence, homoscedasticity, and normality were tested (Warner, 2013). In Chapter 4, I report results in terms of the *R*-square values, slopes with 95% confidence intervals for the continuous predictors, as well as model-adjusted means with 95% confidence intervals for the categorical covariates.

I conducted a secondary analysis, consistent with previous studies, the RCC scores were categorized in groups such as Low (< 4), Moderate (4-6.9), and High (7+),

because this may help with the interpretability of my results (Alison et al., 2017; Friesen & Comino, 2017; Matus et al., 2019). The categorized version of the RCC groups replaced the continuous scale in each model. By including the RCC categorized groups in the model, in place of the continuous scale, I compared mean EBPI scores among the three RCC categorized groups (low, moderate, high). For RQ1, RQ2, RQ3, and RQ4, compared the EBPI means among the RCC categorized groups using an F-test within the regression model if the assumptions of normality and independence are met (Warner, 2013). If the F-test was statistically significant, I evaluated the individual pair-wise comparisons among the three RCC categorized groups (low, moderate, high) within the regression model, which would identify which of the RCC categorized groups were significantly different from one another (Warner, 2013). Organization, team, and individual domains of the RCC were be analyzed in the same manner. I performed statistical analyses using SAS statistical software version 9.4. I screened the data to ensure all respondents met eligibility criteria. I also performed data cleaning to ensure that all values were valid.

Threats to Validity

Construct validity is a threat common in survey studies, however the use of valid and reliable instruments has lessened that threat. My study's main challenge was getting a variety of nurses to participate, which affects external validity. To minimize this threat, a large population of United States' nurses from a variety of organizations and backgrounds were invited to participate. Participants were recruited in a variety of ways including invitations to members of professional nursing associations, publicly available

nurse contact lists, social media (i.e. Facebook, LinkedIn), and Walden University Participant Pool. A limitation to this study was that data were self-reported, so the accuracy of answers cannot be objectively assessed. However, this threat to internal validity has been minimized with the use of validated survey instruments including the EBPI and RCC tools. Hawthorne effect was a possible threat to validity because participants may alter responses based on what they thought I would consider a correct response (Greener, 2018). Three common threats to statistical conclusion validity (SCV), include the use of repeated testing and optional stopping without control of Type-1 error rates, the recommendation to check assumptions of statistical tests, and the use of regression whenever a bivariate relation or equivalent between two variables is studied (Garcia-Perez, 2012). To minimize SCV threats and ensure SCV, I adjusted for multiple testing with Benjamini-Hochberg correction, I checked the regression assumptions, and I used appropriate methods to answer my four research questions (Benjamini-Hochber, 1995; Garcia-Perez, 2012).

Ethical Procedures

I obtained Walden University IRB approval prior to any data collection. I collected informed consent from all nurse participants that voluntarily participated. Participants provided informed consent by signing the electronic statement of consent form prior to completing the demographic data sheet surveys. An individual could refuse participation by not agreeing to the electronic statement of consent. Participants could not withdraw early as this is a one-time survey with no follow-up. There were no predicted adverse events expected for participants of the study. To ensure anonymity, the survey

questionnaires did not contain questions asking participants for identifying data such as name or email address and data were collected and maintained securely via REDCap. Apart from the survey, participants that wanted to be notified of results at the conclusion of the study could provide their name and email address, however this identifying information was optional and could not be linked back to the survey data. All data were kept confidential. Data will be kept for a minimum of 5 years in a password-protected file on my computer.

Summary

In this chapter, I explained the research design and rationale for this study. I presented specifics related to methodology including population, sample, data collection and instrumentation. I also discussed data analysis, threats to validity, and the ethical procedures. The research design and methodology supported the purpose of this quantitative correlational study, which was to examine the relationships between nurses' perception of organization, team, and individual research capacity/culture and nurse implementation of EBP. In Chapter 4, I present the findings from this study.

Chapter 4: Results

Inconsistencies among nurses and health care organizations related to EBPI and research capacity/culture is a problem impacting the quality of health care (Berthelsen & Holge-Hazelton, 2018; Melnyk et al., 2017). Prior to my study, it was not known whether there was a relationship between research capacity/culture and nurses' EBPI. Using the quantitative approach, I conducted a prospective correlational study in which nurse participants completed a survey. Statistical analysis was performed to answer four research questions and fulfill the purpose of my study, which was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type. In this chapter, I provide details related to data collection, descriptive data about participants and their health care organizations, and the statistical results.

Data Collection

Walden University IRB approval was received August 4, 2023, followed by data collection, which began on August 7 and concluded on September 7, 2023. A total of 375 nurses responded to the survey, but 200 of those nurses did not complete all sections of the survey. A total of 175 nurses completed all three sections (demographics, RCC, and EBPI) of the survey, and these were used in the statistical analysis. Survey response rates exceeded the original goal, which was to obtain a sample of 100 participants to have a

power of .9 and an *R* square of .1. The fact that the enrollment goal was exceeded within a month suggests how important nurses believe EBP is to nursing practice. The convenience sample of 175 nurse participants was representative of the target population of interest, which was nurses in the United States working at a variety of health care organizations.

There were no discrepancies related to data collection or recruitment from the plan presented in Chapter 3. As planned, nurses were recruited publicly using a variety of recruitment strategies. I used publicly available email contact lists to recruit nurses for participation in the study. From these publicly available contact lists, recruitment invitations went out to approximately 7,800 nurses from the Magnet Conference attendee list, 1,500 nurses from the Florida State Board of Nursing list, and 1,500 nurses from the Ohio State Board of Nursing list. Recruitment invitations were emailed first to the Magnet Conference attendee list, second to the Florida Board of Nursing list, and lastly almost 2 weeks later to the Ohio State Board of Nursing list. This may explain why there were 87 responses from Florida and only four responses from Ohio. I also contacted professional nursing associations to assist in promoting the study to their nurse members. The Florida Nursing Association agreed to promote the study among members and social media outlets that interface with members of the American Nursing Association (ANA). The Florida Nursing Association engagement may also explain the higher number of Florida nurse responses. The Academy of Medical-Surgical Nurses declined my request to promote the study due to timing and their current focus on restructuring of their professional association. Next, I used social media including Facebook and LinkedIn to

recruit participants. Lastly, the study was promoted on Walden University's participant pool website. Use of these public recruitment strategies helped me ensure the sample of participants came from throughout the United States and represented nurses employed by a variety of health care organizations. As planned, study data from the electronic survey were collected and managed using REDCap electronic data capture tools. Statistical analysis was conducted using SAS statistical software Version 9.4.

Results

Descriptive Statistics

The study included a convenience sample of 175 nurse participants with a mean age of 45.99 (*SD* 11.90), with 19.38 mean years of nursing (*SD* 12.13), 10.63 mean years employed by current organization (*SD* 8.89). Findings are presented in Table 1. Most respondents were female (92%), White (76%), with a nursing licensure breakdown of LPNs (2.86%), RNs (84.57%), and APRNs (12.57%), as presented in Table 2. Participants' highest nursing degrees included diploma (4%), ASN (12%), BSN (48.57%), MSN (29.14%), DNP (2.86%), and PhD (3.43%). Non-nursing degrees included associate's (21.71%), bachelor's (24.57%), master's (8%), doctoral (2.96%), as well as those who did not have a non-nursing degree (42.86%). Only 13.14% of nurses reported being enrolled in a higher degree program currently. Half of the sample reported having national certification (50.29%).

Nurse participants were invited from the United States, with 24 states represented. Most participants came from Florida (49.71%), New Jersey (20.57%), Maryland (4%), New York (3.43%), and Pennsylvania (3.43%). Higher nurse response from these states

may be due to the use of the Magnet Conference attendee contact list as a recruitment strategy. Four out of five of the states represented in the study are listed on the top ten list for states with the largest number of Magnet hospitals. Participants' roles included staff nurses (52.57%), managers (17.71%), others (16.57%), administrators (8%), or educators (5.14%). At total of fourteen nursing specialties were represented in the sample. Participants reported their role settings as outpatient (30.29%), inpatient (45.14%), or a combination (24.57%). Participants reported working at hospital/health care systems (72.57%), medical offices (8%), academic centers (7.43%), rehabilitation facilities (3.43%), schools (2.29%), ambulatory care (2.29%), or other (4%). Participants worked in rural (10.29%), urban (41.14%), or suburban (48.57%) organizations. Organizations were reported as Magnet (54.29%), non-Magnet (29.71%), or not applicable (16%).

Table 1

Descriptive Statistics for Age, Years Worked as a Nurse, and Years Employed by Current Employer

Variable	*N*	Mean	*SD*	Median
Age	175	45.99	11.90	45
Years worked as a nurse	175	19.38	12.13	16
Years employed by current health care organization	175	10.63	8.89	8

Table 2

*Descriptive Statistical Output from Demographic Survey (*N *= 175)*

Demographic	Category	Frequency	Percentage
Gender	Male	14	8
	Female	161	92
	Other	0	0
Race	White	133	76
	African American	16	9.14
	Asian/Pacific Islander	11	6.29
	Hispanic/Latino	9	5.14
	Other	6	3.43
Ethnicity	Hispanic/Latino	12	6.86
	Non-Hispanic/non-Latino	163	93.14
Licensure	LPN	5	2.86
	RN	148	84.57
	APRN	22	12.57
Highest nursing degree	Diploma	7	4
	ASN	21	12
	BSN	85	48.57
	MSN	51	29.14
	DNP	5	2.86
	PhD	6	3.43
Highest nonnursing degree	N/A	75	42.86
	Associate's	38	21.71
	Bachelor's	43	24.57
	Master's	14	8
	Doctorate	5	2.86
Currently enrolled in higher degree program	No	152	86.86
	Yes	23	13.14
Holds a national nurse certification	No	87	49.71
	Yes	88	50.29
State employed	California	1	0.57
	Connecticut	1	0.57
	Delaware	1	0.57
	Florida	87	49.71
	Iowa	2	1.14
	Louisiana	1	0.57
	Maine	1	0.57
	Maryland	7	4
	Massachusetts	1	0.57
	Michigan	3	1.71
	Minnesota	1	0.57
	Mississippi	1	0.57
	Missouri	2	1.14
	New Hampshire	2	1.14
	New Jersey	36	20.57
	New York	6	3.43
	North Carolina	2	1.14
	Ohio	4	2.29
	Oregon	1	0.57
	Pennsylvania	6	3.43
	Tennessee	1	0.57
	Texas	3	1.71
	Virginia	3	1.71
	Wisconsin	2	1.14
Employed role	Staff Nurse	92	52.57
	Educator	9	5.14
	Manager	31	17.71
	Administrative/executive	14	8
	Other	29	16.57
Nursing specialty	Medical	17	9.71

	Surgical	20	11.43
	Cardiology	8	4.57
	Oncology	26	14.86
	Neurology	2	1.14
	Orthopedics	3	1.71
	Rehabilitation	3	1.71
	Behavioral health	7	4
	Critical care	12	6.86
	Emergency medicine	8	4.57
	Pediatrics	10	5.71
	Mother/baby	6	3.43
	Procedural	9	5.14
	Other	44	25.14
Role setting	Outpatient	53	30.29
	Inpatient	79	45.14
	Combination	43	24.57
Health care organization setting	Hospital/health care system	127	72.57
	Academic center	13	7.43
	Ambulatory care	4	2.29
	Rehab facility	6	3.43
	Medical office	14	8
	School	4	2.29
	Other	7	4
Health care organization geographic location	Rural	18	10.29
	Urban	72	41.14
	Suburban	85	48.57
Health care organization type	Public/community access	132	75.43
	Private	43	24.57
Health care organization Magnet status	Magnet	95	54.29
	Not Magnet	52	29.71
	N/A	28	16

RCC and EBPI total scores are displayed in Table 3. Organization RCC (ORG) total score had a mean of 6.79 (*SD* 2.90). Team RCC (TEAM) total score had a mean of 5.67 (*SD* 3.08). Individual RCC (IND) had a mean of 4.99 (*SD* 2.65). EBPI total score had a mean of 17.97 (*SD* 16.55).

Table 3

Descriptive Statistics for Variables of Interest RCC and EBPI Total Scores

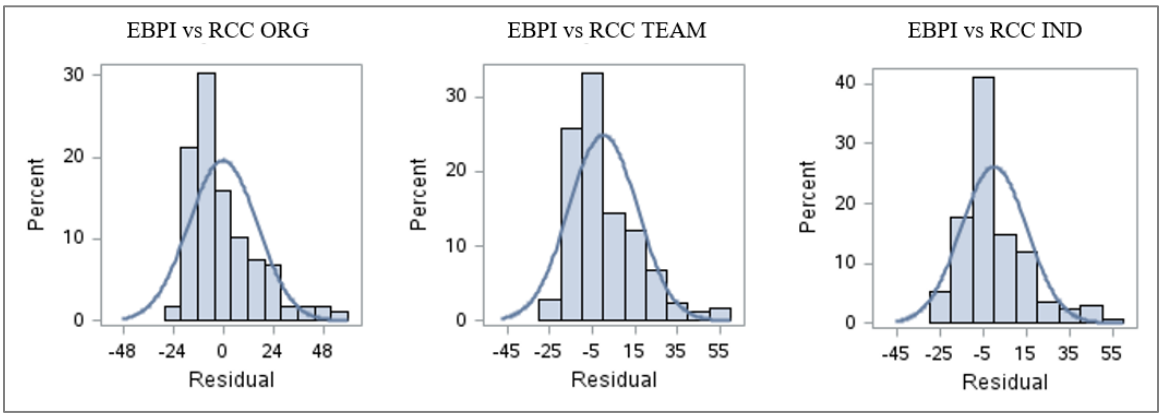
Variable	*N*	Mean	*SD*	Median
RCC ORG	175	6.79	2.90	7.45
RCC TEAM	175	5.67	3.08	6.00
RCC IND	175	4.99	2.65	4.60

Statistical Assumptions

Statistical assumptions were evaluated as appropriate for this study. For RQ1, RQ2, and RQ3, assumptions of normality and independence for the simple linear regression model were met. Normality was determined via visual assessment of distribution of residuals (see Figure 2). Independence was met by the fact that 175 individual respondents were included in the sample.

Figure 2

Histograms Supporting Normality for RQ1, RQ2, and RQ3



For RQ4, assumptions for the multiple linear regression, including independence (see Figure 3) and linear relationship, homoscedasticity, and normality, were all tested (see Figure 4; Warner, 2013). Independence was evaluated by the plot of studentized residuals versus the order of data collection, and results confirmed that there was a consistent pattern over time. Linear relationship was evaluated by the EBPI total score versus studentized residuals plot (Plot 2). This assumption was validated by the linear relationship (see Figure 4). Studentized residual is the adjusted residual from the regression model (Warner, 2013). Homoscedasticity was evaluated by the plot of

studentized residuals versus predicted values (Plot 6), where results showed slightly more variability with larger predicted values, but for the most part this assumption was also supported. Normality was evaluated by reviewing the histogram of the studentized residuals (Plot 5), which was approximately normal.

Figure 3

Supporting Assumption of Independence for RQ4

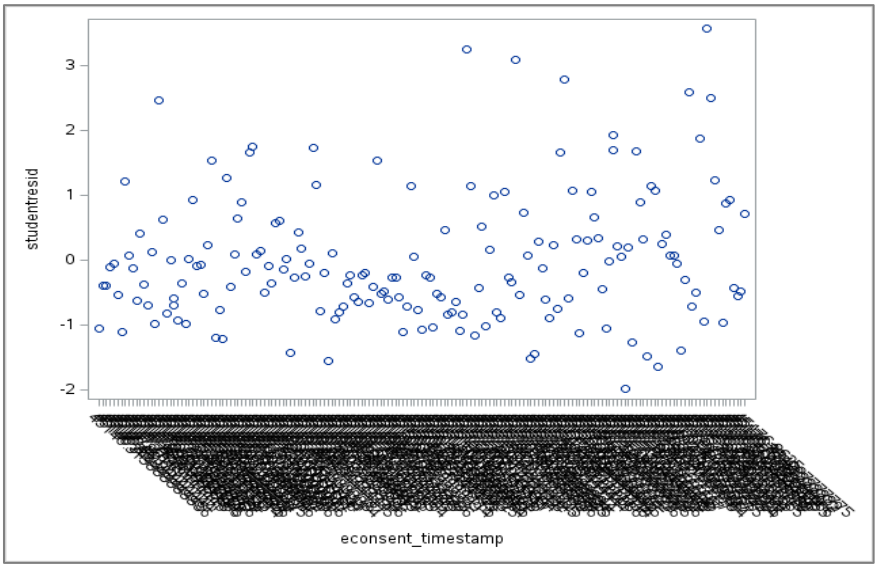
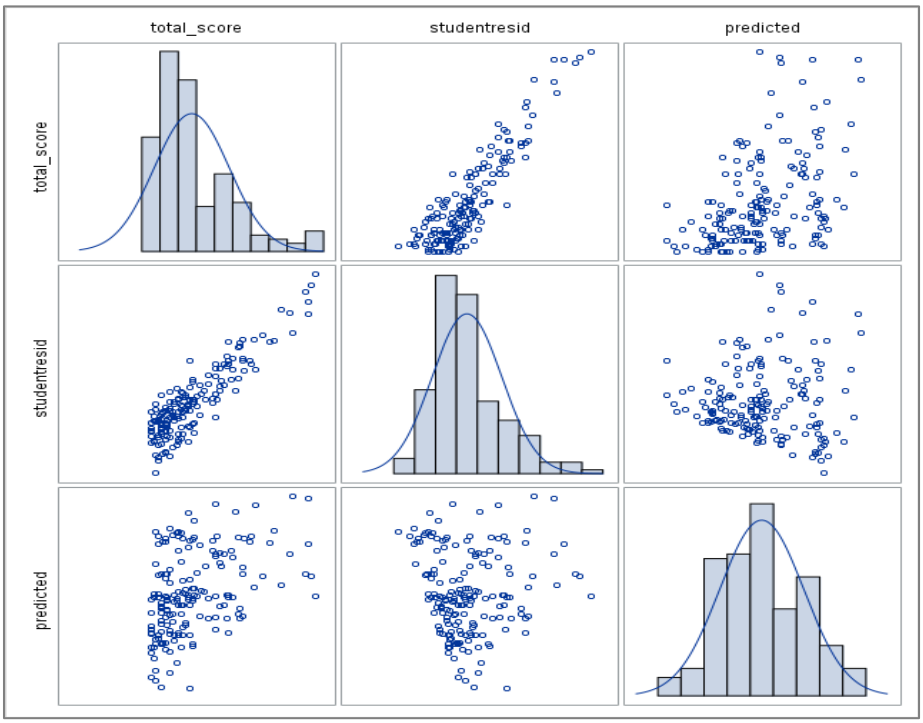


Figure 4

Histograms and Scatterplots Supporting Assumptions for Homoscedasticity, Normality, and Linear Relationship for RQ4



Research Question 1

RQ1: What is the relationship between nurses' perception of health care organization research capacity/culture and EBPI?

H_o1: There is no relationship between nurses' perception of health care organization research capacity/culture and EBPI.

H_a1: There is a relationship between nurses' perception of health care organization research capacity/culture and EBPI.

As planned, I used simple linear regression to assess nurses' perception of organization research capacity/culture as the predictor, and EBPI as the outcome. The

results, shown in Table 4 and Figure 5, indicated a significant positive association between organization RCC and total EBPI score ($p = 0.016$). The strength of this association is shown with *R* square = 0.033 and Pearson correlation coefficient = 0.18. The effect size was represented by the slope of 1.0 (95% CI 0.19, 1.88), which meant that for every 1 unit increase in the organization RCC scale, the total EBPI score increases by 1.0 units. These findings provided support to reject the null hypothesis. Although statistically significant, organization RCC only explained 3% of the variance in EBPI; therefore, organization RCC is not the only factor that influences EBPI. Additional research is needed to determine what other factors are positively associated with EBPI.

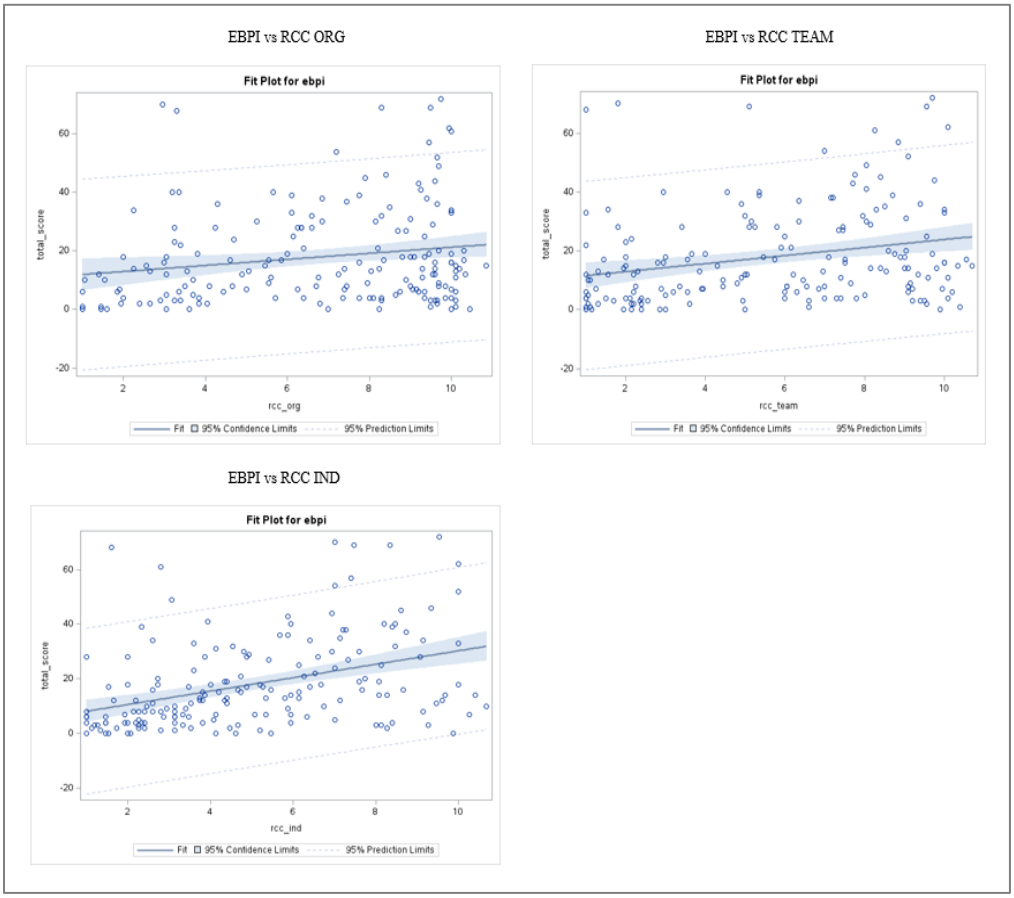
Table 4

Simple Linear Regression Model Output for RCC and EBPI (RQ 1, RQ2, and RQ3) and Multiple Regression Model Output for RCC and EBPI, Adjusted for Highest Degree, Health Care Organization Setting, and Health Care Organization Type (RQ4)

Variable relationship	Pearson correlation coefficient	R^2	Slope (95%CI)	*p* value	Adjusted slope (95%CI)	Adjusted *p* value
RCC ORG vs. EBPI	0.18	0.033	1.0 (0.19-1.88)	0.016	1.1 (0.17-1.96)	0.020
RCC TEAM vs. EBPI	0.25	0.064	1.4 (0.58-2.14)	< 0.001	1.3 (0.51-2.11)	0.002
RCC IND vs. EBPI	0.39	0.155	2.5 (1.60-3.32)	< 0.001	2.2 (1.30-3.17)	< 0.001

Figure 5

Fit Plots for RCC and EBPI for RQ1, RQ2, and RQ3



Research Question 2

RQ2: What is the relationship between nurses' perception of team research capacity/culture and EBPI?

H_o2: There is no relationship between nurses' perception of team research capacity/culture and EBPI.

H_a2: There is a relationship between nurses' perception of team research capacity/culture and EBPI.

As planned, I used simple linear regression to assess nurses' perception of team research capacity/culture as the predictor, and EBPI as the outcome. In Table 4 and Figure 5, the results indicated there was a significant positive association between team RCC score and total EBPI score ($p < 0.001$). The strength of the association was *R*-square = 0.064, and Pearson correlation coefficient = 0.25. The effect size is represented by the slope of 1.4 (95%CI 0.57, 2.14), which means that for every 1 unit increase in the team RCC scale, the total EBPI score increases by 1.4 units. These findings provided support to reject the null hypothesis. Although statistically significant, team RCC only explained 6% of the variance in EBPI, therefore team RCC is not the only factor that influences EBPI. Additional research is needed to determine what other factors are positively associated with EBPI.

Research Question 3

RQ3: What is the relationship between nurses' perception of individual research capacity/culture and EBPI?

H_o3: There is no relationship between nurses' perception of individual research capacity/culture and EBPI.

H_a3: There is a relationship between nurses' perception of individual research capacity/culture and EBPI.

Again, I used simple linear regression to assess nurses' perception of individual research capacity/culture as the predictor, and EBPI as the outcome. In Table 4 and Figure 5, the results indicated there was a significant positive association between individual RCC score and total EBPI score ($p < 0.001$). The strength of association was

R-square = 0.155, and Pearson correlation coefficient = 0.39. The effect size is represented by the slope of 2.5 (95%CI 1.59, 3.32), which means that for every 1 unit increase in the individual RCC scale, the total EBPI score increases by 2.5 units. These findings provided support to reject the null hypothesis. Although statistically significant, individual RCC explained 15% of the variance in EBPI, therefore individual RCC is not the only factor that influences EBPI. Additional research is needed to determine what other factors are positively associated with EBPI.

Together, organization, team, and individual RCC explained about 24% of the variance in nurse EBPI, indicating that 76% of the variance in nurse EBPI would be attributed to other factors possibly including nursing education, leadership, time management, autonomy of practice or others. Additional research would need to be done to identify these factors. Combining these additional factors along with organization, team, and individual research capacity development may have the greatest positive impact on nurse EBPI.

Research Question 4

RQ4: What is the relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type? In my study, educational background included: the nurses' highest nursing degree such as diploma, ASN, BSN, MSN, DNP, PhD; health care organization types included public/community access or

private; and health care settings included hospital/health care system, academic center, ambulatory care, urgent care, rehabilitation facility, medical office, or school.

H_o4: There is no relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

H_a4: There is a relationship between nurses' perception of organization research capacity/culture, team research capacity/culture, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

I conducted a multivariable analysis to evaluate research capacity/culture, separately for organization, team, and individual RCC, as a predictor of EBPI in multiple linear regression models, adjusting for educational background, health care organization setting, and health care organization type. The conclusions were unchanged when adjusting for education, setting, and type. As shown in Table 4, the results still showed significant positive association between organization RCC and EPBI with a $p = 0.02$ and slope of 1.1 (95%CI 0.17, 1.96). Also, as shown in the model output that education was a significant predictor of EBPI ($p < 0.001$). These findings provided support to reject the null hypothesis.

The conclusions remained unchanged when adjusting for education, health care organization setting, and health care organization type. In Table 4, there was still a significant positive association between team RCC and EPBI with $p = 0.002$ and slope =

1.3 (95%CI 0.50, 2.10). The model output also showed that education was a significant predictor of EBPI ($p < 0.001$).

The conclusions were unchanged when adjusting for education, setting, and type. In Table 4, there was still a significant positive association between individual RCC and EPBI with $p < 0.001$ and slope = 2.2 (95%CI 1.29, 3.17). From the model output one can see that education was a significant predictor of EBPI ($p = 0.002$).

Benjamini-Hochberg Correction Applied to Research Questions 1–4

As planned, the Benjamini-Hochberg correction was applied to the *p*-values associated with the testing of RQ1, RQ2, RQ3, and RQ4 to control the overall type I error rate (Benjamin & Hochberg, 1995). As displayed in Table 5, the original *p*-values were compared to the Benjamini-Hochberg *p*-values and all *p*-values were determined to be significant according to the Benjamini-Hochberg adjustment.

Table 5

Benjamini-Hochberg p Values for RQ1, RQ2, RQ3, and RQ4

Variable	RQ	*p* value	Rank	(i/m)Q
RCC IND	1–3	< 0.001	1	(1/3)*0.05 = 0.0167
	4	< 0.001	1	(1/3)*0.05 = 0.0167
RCC TEAM	1–3	< 0.001	2	(2/3)*0.05 = 0.0333
	4	0.002	2	(2/3)*0.05 = 0.0333
RCC ORG	1–3	0.016	3	(3/3)*0.05 = 0.05
	4	0.020	3	(3/3)*0.05 = 0.05

Additional Analysis

In some previous studies, the RCC scores were categorized in groups such as Low (< 4), Moderate (4-6.9), and High (7+), to help with the interpretability of results (Alison

et al., 2017; Friesen & Comino, 2017; Matus et al., 2019). As planned, I conducted a secondary analysis by replacing the continuous scale in each of my models with the categorized version of the RCC groups. By including the RCC categorized groups in the model, in place of the continuous scale, I was able to compare mean EBPI scores among the three RCC categorized groups (low, moderate, high). Table 6 shows the frequency for these categorized group scores.

Table 6

Frequency Table of RCC Categorized Scores: Low (< 4), Moderate (4–6.9), and High (7+) N = 175

RCC	RCC category	Frequency	Percentage
ORG	Low	44	25.14
	Moderate	36	20.57
	High	95	54.29
TEAM	Low	63	36
	Moderate	39	22/29
	High	73	40.71
IND	Low	74	42.29
	Moderate	53	30.29
	High	48	27.43

I compared the EBPI means among the RCC categorized groups using an F-test within the regression model (Warner, 2013). The F-test was statistically significant for RCC TEAM and IND, therefore I evaluated the individual pair-wise comparisons among the three RCC categorized groups (low, moderate, high) within the regression models for RCC TEAM and IND, which identified which of the RCC categorized groups were significantly different from one another (Warner, 2013).

As shown in Table 7, the results indicated there was not a significant difference in average EBPI score when ORG RCC was evaluated as categorized groups low vs. moderate vs. high, either unadjusted ($p = 0.07$) or with adjustment for education, type and setting ($p = 0.13$). These findings do not provide sufficient evidence to reject the null hypothesis. When examining the mean EBPI for RCC ORG among the categorized groups (low, moderate, and high), it seems like the reason the three groups are not different from each other is because the average EBPI for moderate and high RCC ORG groups are too similar to each other.

Table 7

Model Output for Comparison of Average EBPI Among the RCC Categories: Low (< 4), Moderate (4–6.9), and High (7+)

RCC	RCC category	Average EBPI (95%CI)	*p* value	*F* value	Adjusted average EPBI (95%CI)	Adjusted *p* value	Adjusted *F* value
ORG	Low	13.07 (8.19-17.95)	0.073	2.65	12.31 (5.56-19.07)	0.133	2.04
	Moderate	19.03 (13.63-24.42)			16.72 (9.68-23.75)		
	High	19.83 (16.51-23.15)			18.61 (12.72-24.49)		
TEAM	Low	11.75 (7.80-15.70)	0.000	8.55	11.49 (5.66-17.32)	0.0014	6.85
	Moderate	18.56 (13.55-23.58)	3		17.14 (10.13-24.14)		
	High	23.01 (19.35-26.68)			21.79 (15.85-27.74)		
IND	Low	11.76 (8.26-15.26)	<	16.34	10.45 (4.60-16.31)	< .0001	10.24
	Moderate	17.62 (13.49-21.76)	.0001		15.52 (9.22-21.72)		
	High	27.92 (23.57-32.26)			24.67 (18.27-31.07)		

Overall, there was a significant difference in average EBPI score among those with low vs. moderate vs. high RCC TEAM scores ($p < 0.001$). This overall significant difference was driven by the comparisons between those with low vs. high ($p < 0.001$) and moderate vs. high ($p = 0.037$) RCC TEAM mean scores (11.75 vs. 18.56 vs. 23.01). When adjustment for education, type and setting, the conclusions were similar ($p = 0.001$ overall), now with only the low vs. high groups significantly different (adjusted means

11.49 vs. 21.79, $p < 0.001$). The significant pair-wise comparisons for average EBPI scores among the RCC categories are displayed in Table 8.

Table 8

Model Output of Significant Pair-Wise Comparisons for Average EBPI SCORES Among the RCC Categories: Low (< 4), Moderate (4–6.9), and High (7+)

RCC subgroup	Model	Comparison	*p* value
Team	Unadjusted	Low vs. Medium	0.037
		Low vs. High	< 0.001
	Adjusted	Low vs. High	< 0.001
Individual	Unadjusted	Low vs. Medium	0.034
		Low vs. High	< 0.001
		Medium vs. High	< 0.001
	Adjusted	Low vs. High	< 0.001
		Medium vs. High	0.006

There is a significant difference in average EBPI score among those with low vs. moderate vs. high RCC IND scores ($p < 0.001$). All three pairwise comparisons are significant as displayed in Table 8: low vs. moderate (11.8 vs. 17.6, $p = 0.034$), low vs. high (11.8 vs. 27.9, $p < 0.001$), and moderate vs. high (17.6 vs. 27.9, $p < 0.001$). Listed above are 95% confidence intervals. When adjustment for education, type and setting, there is still a significant difference among the three groups ($p < 0.001$), but now average EBPI for the high group is different from low ($p < 0.001$) and moderate ($p = 0.006$), but low is not significantly different from moderate ($p = 0.07$).

Additional Findings

A need for additional statistical tests of the hypotheses did not emerge from the analysis of the main hypotheses.

Summary

Based on the statistical analysis of my study, there was significance found among the relationships of nurses' perception of organization, team, and individual research capacity/culture and EBPI. These positive relationships remained unchanged when adjusting for education, health care organization setting, and health care organization type. My study found that building organization, team, and individual research capacity/culture are effective strategies for improving nurses' EBPI. In Chapter 5, I will interpret the findings, describe limitations, provide recommendations for future research, and explain implication for social change related to my study.

Chapter 5: Discussion, Conclusions, and Recommendations

EBPI should be a foundational component of patient care; however, many nursing decisions and practices are not based on the best available scientific research evidence. Instead, nurses frequently make decisions based on prior work experience, observation of other clinicians, and previous often outdated formal education (Chiwaula et al., 2018; McKinney et al., 2019). Nurses are critical to improving patient care and health care outcomes through the implementation of EBP. The purpose of my quantitative study was to examine relationships between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for educational background, health care organization setting, and health care organization type.

The nature of the study was quantitative with a prospective correlational design in which nurse participants completed a survey to assess the relationships between nurses' perception of organization, team, and individual research capacity/culture and EBPI. I measured nurses' perception of organization, team, and individual research capacity/culture using the RCC tool (see Appendix A; Holden, Pager, Golenko, Ware & Weare, 2012). I measured nurse EBPI using Melnyk et al.'s (2008) EBPI scale (see Appendix B). I evaluated the relationships between predictor variables of nurses' perception of organization, team, and individual research capacity/culture with the outcome variable of EBPI using simple general linear regression. I also evaluated relationships between predictor variables of nurses' perception of organization, team, and

individual research capacity/culture with outcome variable of EBPI using multiple linear regression models, adjusting for educational background, health care organization setting, and health care organization type. Nurse participants were recruited from a variety of health care organizations throughout the United States. A diverse population of nurses from varying health care organizations and specialties were included in the study, allowing for more meaningful results. To be eligible, participants had to be active licensed nurses working in a health care organization and must have been employed in their current position for a minimum of 1 year.

My study contributed to filling a gap in the literature to enhance nurses' knowledge of the relationship between EBPI and research capacity/culture. My study found that building organization, team, and individual research capacity/culture can be effective strategies for improving nurses' EBPI. I also examined EBPI strategies through the lens of the organizational theory of innovation implementation in the context of implementation science, which had been inadequately studied (Addie et al., 2016; Quinn et al., 2019). In Chapter 5, I interpret findings, describe limitations, provide recommendations for future research, and explain implication for social change related to my study.

Interpretation of the Findings

Statistically significant relationships were found between nurses' perceptions of (a) health care organization research capacity/culture and EBPI; (b) team research capacity/culture and EBPI; (c) individual research capacity/culture and EBPI; and (d) organization, team, or individual research capacity/culture and EBPI, when adjusted for

educational background, health care organization setting, and health care organization type. Although all results were statistically significant, organization research capacity/culture explained only 3%, team research capacity/culture explained only 6%, and individual research capacity/culture explained only 15% of the variance in EBPI. Together, organization, team, and individual research capacity/culture explained about 24% of the variance in nurses' EBPI, indicating that 76% of the variance in nurses' EBPI could be attributed to other factors possibly including nursing education, leadership, time management, autonomy of practice, or others. Additional research needs to be done to identify these factors. Combining these additional factors with organization, team, and individual research capacity/culture development may have the greatest positive impact on nurses' EBPI.

Findings Confirm Knowledge

My study found that increased nurses' EBPI scores were positively associated with high organization, team, and individual research capacity/culture scores. Nurses' EBPI has the highest influence when organization, team, and individual research capacity/culture are present. Therefore, my study confirms that a whole system approach of building research capacity/culture at the organization, team, and individual levels would have maximum impact on improving nurses' EBPI. My study confirms that health care organizations should adopt a whole system approach to build research capacity/culture (see Holden, Pager, Golenko, Ware & Weare, 2012; Pager et al., 2012; Matus et al., 2019). To build research capacity/culture, health care organizations need to have infrastructure with dedicated research resources, clinician engagement,

collaboration, shared value for research, and supportive leadership throughout the whole system (Alison et al., 2017; Cordrey et al., 2022; Matus et al., 2018). To enhance research culture/capacity at the organization level, health care organizations should consider including these infrastructure components such as a dedicated research department, medical library, research mentorship and education, hosting research conferences, research newsletters, and offering clinical trials to patients. It is also important for organizations to promote external and internal marketing of research activities and dissemination of research findings throughout the system. This external and internal promotion heightens nurse awareness of the research capacity/culture within a health care organization.

At the team level, nursing specialties should promote use of the organizational resources and professional association engagement. Specialty teams should ensure organizational policies are based on current evidence and that active research is offered to patients in that specialty area. Nursing teams should also work together among unit practice councils along with organizational research mentors to identify gaps in practice to generate new knowledge that could improve quality of care. Individual nurses should increase personal research capacity/culture by utilizing organizational resources, connecting with teams, and staying current with literature that pertains to their practice. Individual nurses should also be recognized for research engagement and implementation of EBP. Awards at internal research conferences, name recognition in research newsletters, coauthors on research publications, and certificates for presenting poster

abstracts are examples on how individual nurse research capacity/culture could be encouraged.

My study found that development of research capacity/culture is an effective strategy for positively influencing nurses' EBPI, thereby improving patient care delivery. Hecht et al. (2016) found that current EBP training was inadequate at changing EBP behavior. This supported the need for future studies to focus not on clinician knowledge, attitude, and skill but rather on other strategies to change clinician behavior, including implementation of EBP. Luckson et al. (2018) studied the influence of research-focused exposure on perceived research culture. Luckson et al. found that those who worked in research-focused hospitals had a stronger research culture compared to those who worked in non-research-focused hospitals. Frakking et al. (2021) studied research capacity/culture among interprofessional clinical teams and found scores were lowest for nurses, preceded by physician and midwives. McDermott and Bawden (2017) confirmed that building research capacity positively influenced social worker EBPI, which resulted in benefits for staff and patients. Consistent with McDermott and Bawden's findings, my study showed significant, positive relationships between research capacity/culture and EBPI, this time with nurses as the participants.

Findings Disconfirm Knowledge

My study found a significant positive relationship between research capacity/culture and nurses' EBPI, but results disconfirm that this was contingent upon participants' exposure to a research facilitator or personal engagement in research activities. I recommend further research be done to test which activities or resources have

the most impact on research capacity/culture. Perry et al. (2008) studied perceptions of a research facilitator to enhance research capacity development and found that the research facilitator position positively affected research culture. However, a major limitation of Perry et al.'s study was that many of the respondents had worked personally with the research facilitator, which created confirmation bias. Unlike Perry et al.'s study, my study included participants regardless of previous exposure to a research facilitator or any other research influence.

Findings Extend Knowledge

My study extended knowledge specific to the nursing discipline by focusing on nurse participants and included nurses in the study regardless of previous research experience. Previous studies on research capacity/culture and clinicians indicated that participation in research led to improved attitudes toward research, increased implementation of research evidence into practice, improved guideline-adherent care when caring for patients, development of critical thinking skills, increased decision making and diagnosis skills, enhanced scientific knowledge production, openness to novel treatment options, and an enhanced culture of EBP (Calvario, 2021; Faranoff, 2008; Matus et al., 2018; Matus et al., 2019; Majumdar, 2008). Two major limitations found in previous studies were that they focused on non-nurse clinicians (mostly physicians or allied health professionals) or focused on research-engaged clinicians.

My study further extended knowledge by finding that organization, team, and individual research capacity/culture are positively associated with nurses' EBPI, when education level is taken into account. Several studies had been conducted on nurse

education and EBPI but did not account for research culture/capacity. Llasus et al. (2014) conducted a correlational study to examine graduating baccalaureate students' EBP readiness, knowledge, and implementation behaviors and found that the more nurses know about EBP, the more readiness they feel and the more likely they are to implement EBP. Rudman et al. (2020) examined the relationship between nurse educational degree and EBP and found that nurses with graduate degrees reported more use of EBP. McNett et al. (2021) encouraged the use of doctoral prepared nurses to improve EBPI efforts in health care organizations. Saunders and Vehvilainen-Julkunen (2016) studied possible predictors of EBP attitudes and competencies and found a positive association between graduate degrees and EBP attitudes. However, positive attitudes related to EBP did not always translate into EBPI (Saunders & Vehvilainen-Julkunen, 2016). Saunders et al. (2016) studied the effectiveness of nurse-delivered education to strengthen nurses' EBP readiness at a university hospital and found that nurses with increased education levels were found to have higher confidence in EBP. These previous studies examined EBPI as it relates to nurses' education level; however, they did not examine EBPI as it related to these concepts and research capacity/culture.

My study found a significant relationship between research capacity/culture and nurses' EBPI when accounting for organizational setting and health care organization type. With this new knowledge, nontraditional settings such as community hospitals should be considered as optimal locations for clinical research engagement and associated research funding. Nurses and clinicians are most likely to implement EBP if they see its value fits into their own local practice (Cooke, 2005). By creating research

capacity/culture across all organizational settings and health care organization types, this elevates nurses' EBPI, thereby improving patient outcomes. Prior research did not account for organizational setting or health care organization type as covariates within the relationship of research capacity/culture and EBPI (Hacker et al., 2013; Rudman et al., 2020). Hacker et al. (2013) hypothesized that community hospital engagement in research may improve implementation of EBP; however, most research activity and funding had focused on academic medical centers (Gehrke et al., 2019; Snihur et al., 2020). My study extended knowledge in the nursing discipline by examining the relationship between research capacity/culture and nurses' EBPI in a variety of organization settings and health care organization types.

My study found that development of research capacity/culture is a successful strategy to improve nurses' EBPI, instead of focusing solely on EBP culture. Barriers of EBPI in nursing had been studied with lack of administrative support and workplace culture cited as leading barriers to EBPI (Melnyk et al., 2010; Melnyk et al., 2012; Patelarou et al., 2016; Pravikoff et al., 2005; Schaefer & Welton, 2018). Many of these studies, especially in nursing, urged health care organizations to create an EBP-focused culture to promote and overcome barriers to EBPI (Fineout-Overholt et al., 2004; Melnyk et al., 2010; Melnyk et al., 2012; Melnyk et al., 2017; Melnyk, Hsieh, Gallagher-Ford, Thomas, Guo, Tan & Buck, 2021; Schaefer & Welton, 2018). As stated in Chapter 2, research capacity/culture and EBP culture are not the same and should not be used interchangeably. EBP culture components are found within organizations that have established research capacity/culture (McDermott & Bawden, 2017).

Through my study, the nursing discipline and health care organization leaders may be more informed of the strategic business benefits of building research capacity/culture that leads to improved implementation of evidence-based care into nurses' clinical practice, thereby improving patient outcomes. Prior research demonstrated a positive association between research capacity/culture and improved organizational performance including lower patient mortality rates, improved patient experience, reduced staff turnover, increased staff satisfaction, and better organizational efficiency (Cordrey et al., 2022; Faranoff et al., 2019; Harding et al., 2017; Majumdar, 2008). Nurses have the greatest contact with patients, therefore employing successful EBPI strategies may lead to cost savings for health care organizations and patients.

Findings in the Context of the Theoretical Framework

I used the organizational theory of innovation implementation in the context of implementation science to examine the relationships between research capacity/culture and nurses' implementation of EBP in the health care setting. This theoretical framework explains the influence of the complex interaction between the research capacity/culture of health care organizations and nurses' implementation of EBP. My study confirms what Klein and Sorra (1996) noted that organizations that promote EBP alone do not reap the benefits of improved outcomes, not because the research or innovation is ineffective but because the implementation is unsuccessful. Organizational theory of innovation implementation proposes three determinants of implementation effectiveness: innovation–values fit, organizational readiness for change, and implementation climate (Garner et al., 2022). Innovation–values fit is the extent to which staff perceive the

innovation use will align with their values. EBPI aligns with nurses' values. The nursing profession is responsible for contributing to quality improvement by incorporating evidence into practice (ANA, 2021). Organizational readiness for change is the extent to which staff are psychologically and behaviorally prepared to implement change. Implementation climate is the extent to which organizational staff perceive the innovation to be expected, supported, and rewarded within their organization (Garner et al., 2022; Turner et al., 2018). Positive implementation climate is critical to the successful implementation of EBP (Demircioglu, 2016; Garner et al., 2022; Peters et al., 2022; Powell et al., 2017). Organizations with strong implementation climates support EBPI by ensuring nurses are skilled and recognized for the use of EBP (Powell et al., 2017).

External and internal factors that can impact implementation climate may include promotion of research activities, funding, resources, infrastructure, leadership support, and dissemination of research findings. These external and internal factors impact nurses' perception of research capacity/culture which as this study supports, directly influences the effectiveness of nurse EBPI within health care. By examining EBPI strategies through the lens of the organizational theory of innovation in the context of implementation science, my study extended the knowledge and applicability of this theoretical framework, which had been inadequately studied (Addie et al., 2016; Quinn et al., 2019).

Limitations of the Study

The main challenge of my study was getting a variety of nurses to participate; however, this threat was minimized by publicly recruiting potential nurse participants throughout the United States. My study was generalizable to licensed nurses working in

health care organizations within the United States, with 24 states represented. Florida had the most representation with 85 responses, out of the total 175 included in the study analysis. There were 95 respondents who were employed by Magnet designated facilities. This was most likely due to the recruitment strategies that were utilized. There were some limitations to the generalizability of the study. Some of the sample demographics were imbalanced such as nursing licensure (LPN 2.86%, RN 84.57%, APRN 12.57%), health care organization setting care (hospital/health care system 72.57%, academic center 7.43%, ambulatory care 2.29%, rehabilitation facility 3.43%, medical office 8%, school 2.29%, other 4%) and health care organization type (public/community access 75.43%, private 24.57%). Another limitation of the study was that data were self-reported, so the accuracy of answers cannot be objectively assessed. The Hawthorne effect was a possible threat to validity because participants may have altered responses based on what they thought I would consider a correct response (Greener, 2018). There may have been selection bias, because there may be certain people that were more or less likely to respond to the invitation to participate and complete the survey. Lastly, the length of survey may have been a limiting factor, which explains why 200 out of total 375 respondents did not fully complete the survey and could not be included in the study analysis.

Recommendations

Further research recommendations are to examine whether the relationship between research capacity/culture and nurse EBPI varies by demographic factors. It would further enhance the knowledge gained through my study by expanding the sample

size and ensuring balance among the sample representation of nursing licensure (LPN, RN, APRN), health care organization setting care (hospital/health care system, academic center, ambulatory care, rehabilitation facility, medical office, school, other) and health care organization type (public/community access, private).

Another recommendation for future research is to examine the relationships between research funding and organizational settings such as community hospitals compared to academic-based health care organizations. It is already known that the traditional setting for research activity and funding has primarily been at academic-based medical centers (Gehrke et al., 2019; Snihur et al., 2020). However, more patients are seen in community hospital settings. Research that is conducted in community hospital settings will improve evidence translation and implementation of EBP (Hacker et al., 2013). Now that it is known that strong research capacity/culture improves nurse EBPI, strategies need to be explored that could help break the funding barriers that community hospitals face to build research capacity/culture.

Another recommendation for future research includes studying the concept of return on investment from organizations that build research capacity/culture. This could further propel the business case for organizations to invest in building research capacity/culture. It would also help make the case for government and grant funding dollars to be allocated to organizations for the strategic purpose of research capacity/culture building. Certain metrics could be tracked related to patient safety, quality outcomes, productivity, efficiency, and other benefits. Financial outcomes of

research capacity/culture could be tracked related to cost-effectiveness, cost savings, cost reduction, and cost avoidance for the organization and health care in general.

It would also be interesting for the nursing discipline to examine which research capacity/culture resources or activities available at health care organizations have the highest impact on EBPI. Now that it is known that there is a positive relationship between research capacity/culture and nurse EBPI, health care organizations and nursing leaders need a better understand exactly what resources or activities to incorporate as they work on building research infrastructure and culture. As explained in Chapter 2, research capacity/culture is defined as the practicing environment that embraces a culture where practice is based on the best available knowledge from research findings, rather than prior education or custom (Borkowski et al., 2017). In organizations with high research capacity/culture, employees have observation of, access to, and knowledge of how to obtain research resources to evaluate, understand, and apply new knowledge (research evidence findings) into practice (Holden, Pager, Golenko, & Ware, 2012). A future study could assess the impact of specific research resources or activities within the health care organization research capacity/culture that have the most influence on nurse EBPI. Resources and activities that are sometimes seen within research capacity/culture may include medical library, research center/department, mentors, education courses, conferences, newsletters, research trials offered to patients, nurses and other clinicians conducting research, nurses and other clinicians author publications, recognition award for nurses and other clinicians engage in research activities, and more.

Implications

EBP in practice is a technique used to improve patient care by merging the best available research evidence with patient assessments, nurse expertise, and patient preferences, leading to quality care, better patient outcomes, lower health care costs, and improved patient safety (Melnyk et al., 2017; Othman, et al., 2023). My study found that increased nurses' perception of research capacity/culture improved EBPI. My study holds implications for patients, the nursing discipline, and health care organizations.

Implications for Patients

Patients should expect and advocate for health care services that are based on the most current research-based evidence. My study found that health care organizations, teams, and individual nurses with higher research capacity/culture scores had higher levels of EBPI. Patients should be made aware that EBPI improves patient-centered treatment, which reduces adverse events and patient care costs (Unal & Teskereci, 2022). Patients should select care from health care organizations and clinicians where research capacity/culture is apparent. This research culture/capacity should be observable on the internet, social media, through visible infrastructure, clinical trial offerings, or other forms of external published marketing material. Patients should also feel confident asking nurses about how they incorporate evidence into clinical practices. Patients should find security knowing they are receiving the safest care which is based on the most current evidence-based practices.

Implications for the Nursing Discipline

Patient safety is the priority focus for nursing practice. EBPI leads to highest quality patient care and improved decision making by clinicians, therefore the nursing discipline needs to identify and deploy effective strategies to improve EBPI (Chiwaula et al., 2018). My study found research capacity/culture building to be an effective strategy to improve nurse EBPI. Therefore, nurses need to advocate for support and education to improve research capacity/culture as individuals, amongst nursing specialty teams, and throughout health care organizations. Nurse competency needs to include research capacity/culture education, which is inclusive of EBPI concepts. This type of education will help guide nurse delivery of health care services, ensuring safest care for patients based on recent scientific research knowledge. This can only be accomplished if nurses work in culture supportive of education, research, and quality. Nurses should be empowered to conduct, engage, evaluate, and make changes in clinical practice through the process of research and EBPI. Nurses should be encouraged and recognized for their contributions to building research capacity/culture and positively improving EBPI. The Institute of Medicine and Committee on Quality of Health Care in America (2001) and the Agency for Healthcare Research and Quality (2015) emphasized the significance of implementing EBP into nursing practice as a method for improving patient outcomes (Unal & Teskereci, 2022). Research capacity/culture building activities should be incorporated as annual goals for individual and nursing specialty teams. EBPI and research engagement should be listed on every nurse job description as a responsibility each nurse. Nurses should be encouraged to engage in research initiatives and serve as

authors on research publications, making the dissemination of new knowledge and the implications of scientific research more pronounced within nursing journals.

Implications for Health Care Organizations

The results of my study set the groundwork from which health care organizations should begin building or enhancing research capacity/culture to increase EBPI. Interventions to build research capacity/culture should be included in all hospital policies and strategies to enhance EBPI, thereby enhancing patient outcomes. The findings of my study highlight the importance of organizational support to nurses by providing guidelines and policies that describe EBPI. A whole system approach is necessary for effective communication and impact on implementation climate. Increasing awareness of research capacity including resources and activities is essential. Internal and external dissemination of research findings to clinicians within the organization is also important. Organizations should encourage and celebrate nurses and other clinicians that promote enhance research utilization and positively change practice. Public recognition of organizational research capacity/culture may help recruit new nurse applicants. Public boasting of research capacity/culture initiatives, EBPI, and high-quality nursing care will attract additional patient volume. Community health care organizations and academic medical centers should collaborate as a method for improving research capacity/culture. Academic medical centers with research expertise could mentor community health care organizations with less research experience. Community health care organizations could facilitate academic medical centers' innovative research ideas by translating those ideas into clinical practice, offering patients access to novel treatment options in the local

community setting. This collaboration could improve patient care and access, improve scientific knowledge among clinicians and academia, and ultimately have a positive impact on research capacity/culture building, thus improving EBPI.

Conclusion

Registered Nurses are expected to provide the highest quality care to patients and have a responsibility to incorporate evidence into practice (ANA, 2021). My study findings offer strategic guidance for improving nurse EBPI and provide motivation for improving research capacity/culture. The significance of my study is that it helped fill a gap in understanding the effects of health care organization research capacity/culture on nurse implementation of EBP. My study was different than previous studies, as it sought to examine the relationship between research capacity/culture and nurse EBPI, regardless of whether the nurse has individually participated in active research. My study showed significant, positive correlation between research capacity/culture and nurse implementation of EBP. The implications of this study have implications for patients, the nursing discipline, and health care organizations. Health care organizations and leaders should be investing and building more research capacity/culture within the health care services. The findings of my study may impact positive social change related to an increase in nurse implementation of EBP, thus improved quality outcomes in health care.

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Appendix A: Research Capacity in Context Tool

The Research Capacity in Context (RCC) Tool used to survey nurse participants perceptions of organization, team, and individual levels of research capacity/culture.

Research Capacity in Context Tool

Developed by Queensland Health and Griffith University

This tool operates on the premise that research capacity building occurs within the context of the organization. For that reason, we ask questions of your perceptions of the research capacity and its supports on three levels: organization, team and individual level.

For the purpose of this survey:

- Organization – refers to the health care workplace where you are currently employed as a nurse.
- Team - refers to the nursing specialty you most closely identify (examples: medical, surgical, cardiology, neurology, emergency, etc.)
- Individual – refers to yourself as an individual nurse.

1. ORGANIZATION LEVEL

1.1 Please rate your organization's success or skill level for each of the following aspects by circling a score on a 1-10 scale (1=no success/skill and 10=highest possible success/skill). **Reminder: Organization refers to the health care workplace where you are currently employed as a nurse.**

i) has adequate resources to support staff research training	1...2...3...4...5...6...7...8...9...10	unsure
ii) has funds, equipment, or admin to support research activities	1...2...3...4...5...6...7...8...9...10	unsure
iii) has a plan or policy for research development	1...2...3...4...5...6...7...8...9...10	unsure
iv) provides access to literature searching and article retrieval	1...2...3...4...5...6...7...8...9...10	unsure
v) has senior managers that support research	1...2...3...4...5...6...7...8...9...10	unsure
vi) ensures staff career pathways are available in research	1...2...3...4...5...6...7...8...9...10	unsure
vii) ensures organization planning is guided by evidence	1...2...3...4...5...6...7...8...9...10	unsure
viii) has consumers/patients involved in research	1...2...3...4...5...6...7...8...9...10	unsure

ix) accesses external funding for research	1...2...3...4...5...6...7...8...9...10	unsure
x) promotes clinical practice based on evidence	1...2...3...4...5...6...7...8...9...10	unsure
xi) encourages research activities relevant to practice	1...2...3...4...5...6...7...8...9...10	unsure
xii) has software programs for analyzing research data	1...2...3...4...5...6...7...8...9...10	unsure
xiii) has mechanisms to monitor research quality	1...2...3...4...5...6...7...8...9...10	unsure
xiv) has identified experts accessible for research advice	1...2...3...4...5...6...7...8...9...10	unsure
xv) supports a multi-disciplinary approach to research	1...2...3...4...5...6...7...8...9...10	unsure
xvi) has regular forums/bulletins to present research findings	1...2...3...4...5...6...7...8...9...10	unsure
xvii) engages external partners (eg universities) in research	1...2...3...4...5...6...7...8...9...10	unsure
xviii) supports applications for research scholarships/ degrees	1...2...3...4...5...6...7...8...9...10	unsure
xix) supports the peer-reviewed publication of research	1...2...3...4...5...6...7...8...9...10	unsure
xx) requires ethics/Institutional Review Board (IRB) approval for research activities	1...2...3...4...5...6...7...8...9...10	unsure

1.2 Based on your awareness in the last 12 months, please indicate any of the following research resources/activities you have observed at your Organization. Tick (✓) as many as apply

- ☐ Medical Library (Virtual or On-site) at the Organization
- ☐ Research Center/Department exists within the Organization
- ☐ Research mentor(s) available at the Organization
- ☐ Research education course(s) is offered at the Organization
- ☐ Evidence-Based Practice (EBP) mentor(s) available at the Organization
- ☐ Evidence-Based Practice education course(s) is offered at the Organization
- ☐ Research Conference is hosted by the Organization
- ☐ Organization has a Research Newsletter
- ☐ Clinical research trials are offered to patients at the Organization

- ☐ Nurses from the Organization conduct research
- ☐ Non-nurse clinicians (ex: physicians, allied health, etc.) from the Organization conduct research
- ☐ Nurses from the Organization are co-authors on research publications
- ☐ Non-Nurse clinicians (ex: physicians, allied health, etc.) from the Organization are co-authors on research publications
- ☐ Organization awards/recognizes nurses that engage in research activities.
- ☐ Organization awards/recognizes non-nurse clinicians (ex: physicians, allied health, etc.) that engage in research activities
- ☐ Other _____

2. TEAM LEVEL

2.1 Please rate your team's current success or skill level for each of the following aspects by circling a score on a 1-10 scale (1=no success/skill and 10=highest possible success/skill)
Reminder, team refers to the nursing specialty you most closely identify (examples: medical, surgical, cardiology, neurology, emergency, etc.)

i) has adequate resources to support staff research training	1...2...3...4...5...6...7...8...9...10	unsure
ii) has funds, equipment or admin to support research activities	1...2...3...4...5...6...7...8...9...10	unsure
iii) does team level planning for research development	1...2...3...4...5...6...7...8...9...10	unsure
iv) ensures staff involvement in developing that plan	1...2...3...4...5...6...7...8...9...10	unsure
v) has team leaders that support research	1...2...3...4...5...6...7...8...9...10	unsure
vi) provides opportunities to get involved in research	1...2...3...4...5...6...7...8...9...10	unsure
vii) does planning that is guided by evidence	1...2...3...4...5...6...7...8...9...10	unsure
viii) has consumer/patient involvement in research activities/planning	1...2...3...4...5...6...7...8...9...10	unsure
ix) has applied for external funding for research	1...2...3...4...5...6...7...8...9...10	unsure
x) provides access to literature searching and article retrieval	1...2...3...4...5...6...7...8...9...10	unsure
xi) conducts research activities relevant to practice	1...2...3...4...5...6...7...8...9...10	unsure

xii) supports applications for research scholarships/ degrees	1...2...3...4...5...6...7...8...9...10	unsure
xiii) has mechanisms to monitor research quality	1...2...3...4...5...6...7...8...9...10	unsure
xiv) has identified experts accessible for research advice	1...2...3...4...5...6...7...8...9...10	unsure
xv) disseminates research results at research forums/seminars	1...2...3...4...5...6...7...8...9...10	unsure
xvi) supports a multi-disciplinary approach to research	1...2...3...4...5...6...7...8...9...10	unsure
xvii) has incentives & support for mentoring activities	1...2...3...4...5...6...7...8...9...10	unsure
xviii) has external partners (eg universities) engaged in research	1...2...3...4...5...6...7...8...9...10	unsure
xix) supports peer-reviewed publication of research	1...2...3...4...5...6...7...8...9...10	unsure
xx) has software available to support research activities	1...2...3...4...5...6...7...8...9...10	unsure

3. INDIVIDUAL LEVEL

3.1 Please rate your <u>own</u> current success or skill level for each of the following aspects by circling a score on a 1-10 scale (1=no success/skill and 10=highest possible success/skill) Reminder, individual, refers to yourself as an individual nurse.

i) Finding relevant literature	1...2...3...4...5...6...7...8...9...10	unsure
iii) Critically reviewing the literature	1...2...3...4...5...6...7...8...9...10	unsure
iii) Using a computer referencing system (eg Endnote)	1...2...3...4...5...6...7...8...9...10	unsure
iv) Writing a research protocol	1...2...3...4...5...6...7...8...9...10	unsure
v) Securing research funding	1...2...3...4...5...6...7...8...9...10	unsure
vi) Submitting an ethics/Institutional Review Board (IRB) application	1...2...3...4...5...6...7...8...9...10	unsure
vii) Designing questionnaires	1...2...3...4...5...6...7...8...9...10	unsure
viii) Collecting data e.g. surveys, interviews	1...2...3...4...5...6...7...8...9...10	unsure
ix) Using computer data management systems	1...2...3...4...5...6...7...8...9...10	unsure

x) Analyzing qualitative research data	1...2...3...4...5...6...7...8...9...10	unsure
xi) Analyzing quantitative research data	1...2...3...4...5...6...7...8...9...10	unsure
xii) Writing a research report	1...2...3...4...5...6...7...8...9...10	unsure
xiii) Writing for publication in peer-reviewed journals	1...2...3...4...5...6...7...8...9...10	unsure
xiv) Integrating research findings into practice	1...2...3...4...5...6...7...8...9...10	unsure
xv) Providing advice to less experienced researchers	1...2...3...4...5...6...7...8...9...10	unsure

3.2 Please indicate any research activity you are currently involved with. Tick (✓) as many as apply

- ☐ Writing a research report, presentation, or paper for publication
- ☐ Writing a research protocol
- ☐ Submitting an ethics/Institutional Review Board (IRB) application
- ☐ Collecting data eg surveys, interviews
- ☐ Analyzing qualitative research data
- ☐ Analyzing quantitative research data
- ☐ Writing a literature review
- ☐ Applying for research funding
- ☐ Not currently involved with research
- ☐ Other _____

Please state whether research related activities are written as part of your current job role description

- ☐ **Yes**
- ☐ **No**

If yes, what provisions are made for you to conduct research as part of your role? Tick (✓) as many as apply

☐ Software	☐ Administrative support
☐ Research supervision	☐ Training
☐ Time	☐ Library access
☐ Research funds	☐ Other _____

3.4 Please indicate if you have completed any of the following research activities in the past 12 months. Tick (✓) as many as apply

☐ Secured research funding
☐ Co-authored a paper for publication
☐ Presented research findings at a conference
☐ No research activity completed in the past 12 months
☐ Other _____

3.5 What are the barriers to research for you personally? Tick (✓) as many as apply

☐ Lack of time for research	☐ Lack of library/internet access
☐ Lack of suitable resources to support time away from patient care	☐ Not interested in research
☐ Other work roles take priority	☐ Other personal commitments
☐ Lack of funds for research	☐ Desire for work / life balance
☐ Lack of support from management (direct supervisor)	☐ Lack of a coordinated approach to research
☐ Lack access to equipment for research	☐ Lack of skills for research
☐ Lack of administrative support (organizational leadership)	☐ Intimidated by research language/process
☐ Lack of software for research	☐ Intimidated by fear of getting it wrong
☐ Isolation	☐ Other _____

3.6 What are the motivators to do research for you personally? Tick (✓) as many as apply

☐ To develop skills	☐ Grant funds
☐ Career advancement	☐ Links to universities/
☐ Increased job satisfaction	☐ Required as part of my continued schooling for advanced degree
☐ Study or research scholarships available	☐ Opportunities to participate at a personal level
☐ Dedicated time for research	☐ Problem identified that needs changing
☐ Research required as part of your job role description	☐ Desire to prove a theory / hunch
☐ Colleagues doing research	☐ To keep the brain stimulated
☐ Mentors available to guide	☐ Increased credibility/recognition
☐ Research encouraged by managers	☐ Other _____

For further information please contact:
Sue Pager
Metro South Hospital and Health Service, Brisbane, QLD
Susan_pager@health.qld.gov.au

Appendix B: Evidence-Based Practice Scale

The Evidence-Based Practice Implementation (EBPI) Scale used to survey nurses' perception of their own EBPI in practice.

EBP Implementation Scale

Below are 18 questions about evidence-based practice (EBP). Some health care providers do some of these things more often than other health care providers. There is no certain frequency in which you should be performing these tasks. Please answer each question by circling the number that best describes **how often each item has applied to you in the past 8 weeks**.

In the **past 8 weeks**, I have:

	0 times	1-3 times	4-5 times	6-8 times	>8 times
1. Used evidence to change my practice.	0	1	2	3	4
2. Critically appraised evidence from a research study.	0	1	2	3	4
3. Generated a PICO question about my practice.	0	1	2	3	4
4. Informally discussed evidence from a research study with a colleague.	0	1	2	3	4
5. Collected data on a clinical issue.	0	1	2	3	4
6. Shared evidence from a study or studies in the form of a report or presentation to more than 2 colleagues.	0	1	2	3	4
7. Evaluated the outcomes of practice change...	0	1	2	3	4
8. Shared an evidence-based guideline with a colleague.	0	1	2	3	4
9. Shared evidence from a research study with a patient/family member.	0	1	2	3	4
10. Shared evidence from a research study with a multi-disciplinary team member.	0	1	2	3	4

11. Read and critically appraised a clinical research study.	0	1	2	3	4
12. Accessed the Cochrane database of systematic reviews.	0	1	2	3	4
13. Accessed an evidence-based guideline.	0	1	2	3	4
14. Used an evidence-based guideline or systematic review to change clinical practice where I work.	0	1	2	3	4
15. Evaluated a care initiative by collecting patient outcome data.	0	1	2	3	4
16 Shared the outcome data collected with colleagues.	0	1	2	3	4
17. Changed practice based on patient outcome data.	0	1	2	3	4
18. Promoted the use of EBP to my colleagues.	0	1	2	3	4

 Validity of this scale has been established and Cronbach's alphas have been $\geq$.85 across various samples.

Appendix C: ANCC National Magnet Conference Contact List

Email confirmation to use the ANCC National Magnet Conference contact list for recruiting nurse participants in this research study.

RE: [external] ANCC National Magnet Conference-2022- Pricing & Other Details
Daisy Oliver <daisy.oliver@statsbyte-info.com>
To: Tamela Fonseca; Tamela Fonseca <Tamela-Fonseca@smh.com>
Cc: Anna Edwards <anna.edwards@statsleadszone.com>
Fri 10/14/2022 9:20 AM

ANCC National Magnet Conference - Delivery File.xlsx

Hello Tamela,

Please find the attached file of ANCC National Magnet Conference.

Please let me know if you require any B2B databases; we have all types of B2B data.

Thanks & Regards,

Daisy Oliver
Business Development Manager

Stats Byte Info
#130, Washington St,
Newark, NJ 07102, United States
www.statsbyteinfo.com

Appendix D: Recruitment Invitation

This recruitment invitation is an invitation to potential nurse participants. The content of this recruitment invitation was sent to professional nursing association websites, emails, and social media (e.g., Facebook, LinkedIn). This invitation explained the purpose of the study and that participation is voluntary. It provided a link to REDcap, where screening questions will be asked to assess eligibility. If eligibility was met, an electronic statement of consent was requested. If consent was given, participants completed demographic section, RCC survey, and EBPI survey.

Walden Logo Place Here

Recruitment invitation for Health care Organizations' Research Capacity and Culture's Effect on Evidence-Based Practice Implementation

Fellow Nurses,

You are invited to participate in a research study examining the relationships between research capacity/culture and nurses' implementation of evidence-based practices. This study could help health care organizations and nurse leaders understand if building research capacity and culture is an effective strategy in improving nurse EBPI.

About the study:

- One-time questionnaire which is expected to take approximately 20 minutes.
- No compensation will be provided.
- To protect your privacy, names of participants and names of health care organizations will not be collected.
- Participation is completely voluntary, and you can choose to participate in the study or not.

Volunteers must meet these requirements:

- Licensed nurse (LPN, RN, or APRN) in the United States
- Hold current employment at a health care organization for a minimum of one year.

If interested in participation, please click on the link provided. Also, if you know of other nurses that meet these requirements and might be willing to participate, please forward them this invitation and link to the questionnaire.

(Insert Link here to the REDCap. Screening questions will be asked to assess eligibility. If eligibility is met, electronic consent will be requested. If consent given, participants will complete demographic section, RCC survey, and EBPI survey.)

Tamela Fonseca, a Ph.D. student from the College of Nursing at Walden, is using this research as part of her doctoral study. For any questions about the study, please contact Tamela.Fonseca@waldenu.edu or 941-518-4679. Thank you for your time and consideration.

Sincerely,

Tamela Fonseca, MSN, CCRC, NE-BC
Doctoral Candidate
College of Nursing at Walden University
Tamela.Fonseca@waldenu.edu
941-518-4679

Appendix E: Demographic Survey

This was the demographic portion of the survey.

Demographic Survey

The demographic information collected in this section provides important data related to the nurse participant and the health care organization (workplace) where they are employed.

1. Gender
   Male, Female, Other
2. Age
   Enter/select age number in years
3. Race
   Caucasian, African American, Asian/Pacific Islander, Hispanic/Latino, Other
4. Ethnicity
   Hispanic/Latino, Non-Hispanic/Latino
5. What is your current licensure?
   LPN, RN, APRN
6. How many years have you been a nurse?
   Enter/select number in years
7. What is your highest nursing degree?
   Diploma, ASN, BSN, MSN, DNP, PhD
8. What is your highest non-nursing degree?
   N/A, Associates, Baccalaureate, Masters, Doctoral
9. Are you currently enrolled in any higher degree of study or professional development program related to research?
   Yes (explain), No
10. Do you hold a national nurse certification?
    No, Yes (If yes, full name of certification)
11. What state are your currently employed as a Nurse?
    (Drop Down with states)
12. How many years have you been employed at your current health care organization?
    Enter/Select number in years
13. In your current employed role, what is your nursing role level?
    Staff Nurse, Educator, Manager, Administrator/Executive, Other
14. In your current employed role, what nursing specialty do you work in the most?
    (Drop Down with specialties) Medical, Surgical, Cardiology, Oncology, Neurology, Orthopedics, Rehabilitation, Behavioral Health, Critical Care, Emergency Medicine, Pediatrics, Mother/Baby, Procedural, Other

15. In your current employed role, which most accurately describes the practice setting for your role?
    Outpatient, Inpatient, Combination
16. Which of the following most accurately describes your overall health care organization setting?
    Hospital/Health care System, Academic Center, Ambulatory Care, Urgent Care, Rehab Facility, Medical Office, School, Other
17. Which of the following most accurately describes your health care organization geographical location?
    Rural, Urban, Suburban
18. Which of the following most accurately describes your health care organization type?
    Public/Community Access OR Private
19. What is your workplace facility's Magnet Status?
    Magnet, Not-Magnet, N/A

Appendix F: Approval to Use Research Capacity in Context Tool

This is an email correspondence with Research Capacity in Context (RCC) tool developer Robert Ware. Approval has been provided to use and adapt the RCC tool for this research study.

Re: RCC Tool and Discussion with Developer
Robert Ware <r.ware@griffith.edu.au>
Tue 9/27/2022 8:39 PM
To: Tamela Fonseca <tamela.fonseca@waldenu.edu>
Cc: Libby Holden <Libby.Holden@health.qld.gov.au>

Hello Tamela

Thanks for the email
Good pick up re 'culture' vs 'context' in the tool name - I would say that the MSWord document is the official version so I would go with 'Reserach Capacity in Context Tool'
We have never scored 'culture' and 'capacity' separately
Please do adapt the tool for use within the USA
Thanks again for your email - and good luck with your research

Best wishes
Robert
Professor Robert Ware
Menzies Health Institute Queensland
Griffith University | r.ware@griffith.edu.au | experts.griffith.edu.au/18978-robert-ware

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From: Tamela Fonseca <tamela.fonseca@waldenu.edu>
Sent: Tuesday, 27 September 2022 11:26 PM
To: Robert Ware <r.ware@griffith.edu.au>
Cc: Libby Holden <Libby.Holden@health.qld.gov.au>
Subject: Fw: RCC Tool and Discussion with Developer
Hi Robert
Thank you for sending these articles and the tool. I have a few questions that I was hoping you could help me with.

1. The articles reference “research capacity and culture tool” however the tool title is “research capacity in context tool.” Could you please tell me if “research capacity in context tool” is the current, accurate name of the instrument?
2. From the tool, I understand that an overall RCC score can be calculated from respondents for each of the three domains: organization, team, and individual. Is there a way to have two distinct scores for the concepts research capacity and research culture? Or, is research capacity/culture considered one concept?
3. I would like permission to modify the tool slightly to add language/elements of local context since the survey will be conducted in the U.S. This would not change the sequence or content validity of the tool.

I appreciate your response.
Tamela Fonseca

From: Robert Ware <r.ware@griffith.edu.au>
Sent: Monday, September 19, 2022 8:26 PM
To: Tamela Fonseca <tamela.fonseca@waldenu.edu>
Cc: Tamela Fonseca <tamela-fonseca@smh.com>; Libby Holden <Libby.Holden@health.qld.gov.au>
Subject: Re: RCC Tool and Discussion with Developer

Hello Tamela
Thank you for the email - and great news that you are interested in using the RCC Tool
I have attached the Tool and some other documents you might be interested in
The woman with the brains behind this work was Libby Holden, and I have cc-ed her to this email in case she is able to talk with you about research culture

Best wishes
Robert
Professor Robert Ware
Menzies Health Institute Queensland
Griffith University | r.ware@griffith.edu.au | experts.griffith.edu.au/18978-robert-ware

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From: Tamela Fonseca <tamela.fonseca@waldenu.edu>
Sent: Tuesday, 20 September 2022 3:02 AM
To: Robert Ware <r.ware@griffith.edu.au>
Cc: Tamela Fonseca <tamela-fonseca@smh.com>
Subject: RCC Tool and Discussion with Developer

Hello Dr Robert Ware,
I’m reaching out regarding the Research Capacity and Culture Tool that was acknowledged as Griffith University’s in the Holden et al. (2012) published article. Dr Tony Sheil mentioned you would be an appropriate contact regarding the RCC tool.

I am passionate about the topic of Research Capacity and Culture and would like to use the RCC tool as part of my research studies. I was also hoping to discuss this topic and the tool with you. Let me know if this would be possible?

I look forward to hearing from you. Thank you!
Tamela Fonseca

Appendix G: Approval to Use Evidence-Based Practice Implementation Scale

This is email confirmation that approval was provided for use of the Evidence-Based Practice Implementation (EBPI) Scale for this study.

From: Thomas, Bindu <thomas.3279@osu.edu>
Sent: Tuesday, January 31, 2023 3:17 PM
To: Tamela Fonseca <Tamela-Fonseca@smh.com>
Subject: Re: EBP Instruments Request Submission Received - Tamela Fonseca
Thank you for the completed signed application. Attached is a copy of the scale(s) and a description of the scale(s) requested. Please treat this email as permission to use the scale as requested in the application. Look forward to hearing from you post the end date for your project about your sample description, findings and the Cronbach alpha information for our scales.

Sincerely,
Bindu

Bindu Thomas, M.Ed., MS
Clinical Program Manager
Fuld National Institute for EBP

From: Bindu Thomas, thomas.3279@osu.edu <noreply@qemailserver.com>
Date: Monday, January 30, 2023 at 2:57 PM
To: Thomas, Bindu <thomas.3279@osu.edu>
Subject: EBP Instruments Request Submission Received - Tamela Fonseca

Thank you for your application to use our EBP instruments in your project/initiative. Bindu Thomas from the Fuld Institute for EBP will be in touch in the next few days via email with the description of the instrument(s) and link(s) to download a PDF of the instrument(s) you have requested. *
**Note: If you requested our EBP Knowledge Assessment Questionnaire, that is a test and is only available as a Fuld hosted Qualtrics survey. We will send you a link to use for data collection. Upon completion of the data collection, we will send you a copy of your coded data.*