Walden University

College of Nursing

This is to certify that the doctoral dissertation by

Candida Suzanne Barlow

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2023

Abstract

Nursing Practice RNs' Interest, Experience, Confidence, and

Attitude of Research Conduct

by

Candida Suzanne Barlow

MSN in Clinical Research Trials, Drexel University, 2011

BSN, Langston University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Interdisciplinary Health

Walden University

November 2023

Abstract

RNs express difficulty understanding research, statistical methods, research concepts, and research conduct, leading to a decline in the number of PhD-prepared nurses. RNs receive formal education for evidence-based practice and research, but there is a gap in the literature regarding the interest, experience, confidence, and attitude of research conduct. The purposes of this dissertation, guided by the knowledge translation theory, were to determine (a) whether there is a difference in the level of interest, experience, confidence, and attitude toward conducting research between RNs who work in clinical settings compared to academic settings based on degree, (b) what effect the educational level has on interest, experience, confidence, and attitude toward conducting research, and (c) whether there is a difference in attitudes toward conducting research and years of practice based on practice setting based on years of practice. A total of 334 responses received from RNs. Upon review, 51 incomplete surveys were removed from data analysis, resulting in a sample size of $N = 283$. The data were analyzed using a MANCOVA and MANOVA. Results revealed positive associations for research conduct from nurses practicing in academic settings compared to the clinical practice setting. Although years of nursing practice did not affect the RNs' responses, the RNs' practice setting, and degree achievement did have an effect on the RNs' responses regarding research conduct. Recommendations for future research are to repeat this study using quantitative and qualitative designs. Understanding RNs' perceptions of research conduct will assist in developing an action plan to increase RNs' engagement in research conduct which affects positive social change.

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Dedication

With genuine gratitude, I dedicate this research to all the patients who have participated in the research, your selflessness to engage in research will ripple over time. Thank you for being vulnerable and trusting in research to make positive social change. To the many nurses who conduct research to provide safe, quality patient care, may your endeavors never grow weary. If nothing else, COVID has shown us how vital the nursing profession is in providing care to humanity. It is through research that we will impact profound change and improve upon the art of nursing. Without research, we do not experience meaningful change; no growth or development exists. My desire is that this research will be the catalyst to inspiring nurses to have a spirit of inquiry and a fire to seek and find new knowledge. May we begin the journey of building a solid and extensive foundation of research practice knowledge, thereby engaging in research conduct. While nurses practice in various therapeutic areas, our common denominator is research. Research is the thread that binds all of nursing together. My hope is nurses will be engaged at all levels in the form of research conduct, thereby advancing our nursing profession and engaging in research practice knowledge.

And to my family and friends who have supported me along this journey. You have been my foundation, lifting and encouraging me to rise to heights I never dreamed possible. May God forever bless you.

Acknowledgments

Dr. Lesslie Hussey, my Committee Chair, thank you for your patience and for sharing your knowledge while working through the pandemic. Your kindness and support are cherished, as this ending would not be possible without them. You challenged me to dig deeper, think outside the box, and express my thoughts and ideas with objective material. Thank you for believing in my desire to study research when others did not; you never attempted to sway me, and for that, I am thankful. I appreciate all the thought-provoking calls around research analysis. Thank you for always answering phone calls and emails, returning reviews quickly, and encouraging me when I thought I could not go forward. I am blessed to know you as my research mentor.

Dr. Janice Long, my Second Chair, thank you for all the challenging queries. Without them, I would not have expanded my thinking. I would receive your feedback and then spend hours learning something new and challenging; thank you for investing in my growth as a research nurse.

Dr. Stanley Grogg and Barabra Grogg, APRN, thank you for introducing me to my love, passion, and life's purpose, research. My dear friend Barabra you have always believed in me and encouraged me to be more, to do more, my life is forever changed by your friendship. From the beginning of nursing school, I was not too fond of our research courses, and then I walked into the world of clinical research, where theory and practice intertwined. Dr. Grogg thank you for that first spark of query that ignited my spirit and passion for research. I will forever be grateful to say you were my first PI.

Dr. Helen Farrar, my dear friend and colleague, you have been my rock. You inspire and sharpen me always. Your support and friendship rival no other. I am grateful we share a love and passion for research, but even more that we share a true friendship. Through all the tears, frustration, and doubt, you cheered me on and made me believe that I could achieve completion. My friend, thank you for all the phone calls, texts, emails, lunch dates, and support you bless me!

Table of Contents

Part 1: Overview

Introduction

The National Institutes of Nursing Research (nINR) identified that nursing

research intertwines healthcare disciplines supporting clinical and basic research to

improve and maximize the health of all patients (2016). Research conducted by the PhD-

prepared nurse contributes to the nursing discipline while engaging in traditional research

methodologies (Gray et al., 2017). The PhD-prepared nurse actively engages in research

concepts and research conduct; nurses contribute to the nursing process, theory, vision,

social directives, and clinical practice (Gray et al., 2017). The National Institutes of

Health (nIH) clinical center has established a framework to identify RNs at the

undergraduate and graduate level as an important part of the research team emphasizing

patient safety, care, and informed participation to endow national leadership for research

(nIH Clinical Center, 2020). The NIH framework for the RNs' research practice includes

expertise in research, accountability for development, implementation, coordination and

evaluation of research and care during research providing continuity of care and

advocacy for the human research subject (nIH Clinical Center, 2020).

The American Association of Colleges of Nursing (AACN), in collaboration with

the NINR, published a position statement in 2018 on sustaining the science, the PhD

pathway in nursing (American Nurses Association [ANA] & International Association of

Clinical Research Nurses [IACRN], 2017). The position statement indicated that after a

6-year increase in PhD enrollments, there was a decrease of 9.6% in PhD enrollments in

2014 (AACN, 2020). The AACN and NINR indicated it is not currently known why there

is a decrease in PhD enrollment and that nursing research studies are needed to identify national trends and nursing perceptions regarding nursing research and research degree pathway for the PhD (AACN, 2020; NINR, 2019).

The AACN published a position statement that bases the nurses' role in research upon the RN's degree (2006). The baccalaureate nursing curriculum offers educational instruction to support the nurse to use research findings and implement evidence-based practice in designing and implementing care (AACN, 2008). Masters-prepared nurses receive education to develop and apply research outcomes to the practice setting and resolving practice problems serving as a change agent for research practice (AACN, 2011). The Doctor of Nursing Practice (DNP) receives educational training to engage in practice supporting the PhD prepared nursing while developing the research protocol (AACN, 2017). The PhD-prepared nurse scientist receives a research-focused education that prepares nurses to "steward the profession, develop its science, define its uniqueness, maintain its professional integrity, and educate the next generation of nursing professionals," as well as "communicate new knowledge as leaders within institutions of higher education and outside of academia" (AACN, 2021). The nurse's educational background, knowledge and perceptions of nursing research can create a positive connection to research outcomes based on educational experiences (AACN, 2006).

In 2010, the Institute of Medicine (IOM), now known as the Health and Medicine Division of the National Academies of Science, Engineering and Medicine, issued a charge to the nursing profession to "lead and manage collaborative efforts with physicians and other members of the health care team to conduct research" (national

Academies Press, 2011, p. 2). In response, the IOM, and the Robert Woods Johnson Foundation (RWJF) established the "Campaign for Action" to increase doctoral prepared nurses to expand the number of nurse faculty and researchers (AACN, 2008; Campaign for Action, 2019). The nursing profession has not responded to the IOM's call to action as less than 1% of total RNs have received a doctoral degree. The AACN and the Campaign for Action data sets identified a steady decline in PhD-prepared nurse scientists, 801 graduates in 2019, as compared to the DNP-prepared nurse in 2019 with 7,944 graduates (AACN, 2020; Campaign for Action, 2020).

An integral part of the research team is the PhD-prepared nurse scientist as identified by the IOM call to action. A nurse scientist is defined as a PhD-prepared RN who engages in research. The nurse scientist conducts nursing research connecting safety and quality of care though the engagement of research in alignment with the NINR mission (Grady & Gough, 2015; Grimes-Stanfill et al., 2019; Hickey et. al., 2019). Research conduct is defined as the nurse's engagement to create, support, co-develop, implement, or manage research related activities for the purposes of research as defined by The Common Rule. The Common Rule defines research as "systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of Human Subjects*, 2021). Research is the rigorous scientific inquiry for the purposes of advancing nursing practice, healthcare policy and improved outcomes of patients (AACN, 2006, p. 1).

The NIH domain of practice for nursing research includes the care provided to human research subjects, daily tasks for implementation of research protocols, data

collection, and protection for the rights and welfare of human research subjects grounded on educational background and competencies (nIH Clinical Center Nursing and Patient Care Services, 2009). The development of the NIH domain of practice for nursing research provides a focus for the specialty practice of nursing in research founded on educational competencies (ANA & IACRN, 2017). Foundational development of the domain incorporates clinical practice, study management, care coordination and continuity, contributing to the science of research, and human subject protection. The RN's educational pathway weaves research courses from the entry level to the doctoral level for formal education; however, research studies identify nurses do not feel prepared, educated, trained, prepared, or supported to participate or conduct in research as part of their nursing practice.

Problem Statement

The RN's educational curriculum from baccalaureate to the doctoral level, offers research education at each level; however, there remains a paucity in literature related to nurses' interest, experience, confidence, and attitude of research conduct. While RNs acknowledge the importance of research, RNs perceive that research activities are complex and difficult, resulting in a decline in engagement in research (Spilsbury et al., 2007; Vijayalakshmi et al., 2014). There is a lack of data on what factors contribute to nurses who express difficulty understanding research, statistical methods, research concepts, and practicing in research as a career (Vijayalakshmi et al., 2014). With the continued shortage of nurse scientists and the charge by the IOM to prepare future nurse scientists, it is critical to understand RNs' basic conceptual and educational

understanding of research conduct (Campaign for Action, 2019). What is not known in the literature is why RNs do not engage in research, what their research experience is, and what factors may be related to an RN's interest in conducting research (Burkhart & Hall, 2015; Eller et al., 2003; Vijayalakshmi et al., 2014). The AACN curriculum outlines a research focus for all levels of education utilizing scaffolding for each degree (AACN, 2006). The focus of nursing studies on research is research utilization of evidence-based practice. However, it is critical to understand the difference between knowledge and degree levels of research conduct to assess whether there is a knowledge gap at one specific degree level or across the continuum of nursing degrees as there is little focus and information on the PhD-prepared nurse.

Additionally, it is not known whether any of the following demographic data points identify any correlation between degree level, age range, gender, ethnicity, practice specialization, years of practice as a nurse, number of research related educational courses, years of practice in research, engagement in translational research, engagement in clinical research of the RN, and interest, experience, and attitude of research conduct may offer insight into the current practice gap in nursing research which will affect positive social change.

Background

I conducted a review of literature to identify what was known about nurses' interest, experience, confidence, attitude, and educational background related to research conduct. The keywords searched were *nursing, nurse scientist, nurse(s), interest, experience, confidence, attitudes, attitude, beliefs, perceptions, values, education,*

research conduct, research, clinical research clinical research nursing, clinical research trials, mentorship, mentor, research knowledge, nursing degree, BSN, MSN, DNP, Ph.D, American Colleges of Nursing, nursing curriculum, essentials of nursing, scope and standards of practice, domains of practice, ethics, ethical conduct, nursing professional practice, new knowledge, evidence based practice, research utilization, nursing position statements, National Institute of Nursing Research, and *future of nursing.* Databases searched included CINAHL, Cocharane, MEDLINE, Dissertations & Theses @ Walden University, Education Source, ProQuest Central, ProQuest Dissertations & Theses Global, ProQuest Health & Medical Collection, PubMed, SAGE Journals, SAGE Research Methods Online, and ScienceDirect.

Nursing Profession and Research Practice

The PhD-prepared nurse scientist is vital to contribute to and inform solutions to the health challenges of today's patient population by defining the future of nursing practice (Grady & Gough, 2015). Knowing the nursing profession has a disparate proportion between the DNP and PhD graduation rate, it is important for the nursing profession to assess distinct milestones prior to nurses engaging in a PhD program (Grimes-Stanfill et al., 2019). The nursing profession requires continued growth of the number of PhD-prepared nurse to produce and implement methodologies relevant to the discipline of nursing by engaging in traditional research methods to produce new knowledge (Gray et al., 2017). Identifying strategies to increase the PhD pathway is critical to enhancing research-focused nursing practice understanding (Grimes-Stanfill et al., 2019). Understanding RNs' perceptions and attitudes regarding research could offer

future strategies to engage nurses in a research practice career (Grimes-Stanfill et al., 2019). Research has shown there are three areas for strategic focus areas to increase the PhD-prepared nurse scientists, prior to the PhD program, during the PhD program, and in postdoctoral or early career paths (Grimes-Stanfill et al., 2019).

Assessing RNs' interest, experience, confidence, and attitude toward conducting research prior to entering a PhD program of study could offer insight into the current PhD decline in nursing practice. Burkhart and Hall (2015) stated that undergraduate level nursing students do not understand the importance of nursing research or the impact to nursing science and sustainability of nursing profession through nursing research, and by helping students to understand the important role of research, student nurses' interest in nursing research at the undergraduate level may help in developing a future supply of nurse scientists (Burkhart & Hall, 2015).

Once nurses graduate and begin practice, similar findings of lack of confidence with research have been reported (Spilsbury et al., 2007). A focus group conducted with nine baccalaureate-prepared research nurses identified that nurses who entered a research nurse role as part of a larger research team at the undergraduate level found a career in research to be rewarding; however, the nurses did not feel confident or knowledgeable in the new role of a research nurse and did not feel their education had prepared them for an entry level career in research (Spilsbury et al., 2007). The focus group also reported that nurses who participated in research felt resistance from fellow nurses with whom they would interact while providing care to a research subject during direct patient care (Spilsbury et al., 2007). Identifying the nurse's foundational knowledge of research

practice could identify strategies in teaching modalities to support future pipelines in PhD

programs increasing nurse scientists and perhaps help to overcome some of the barriers

faced by new nurse researchers (Burkhart & Hall, 2015; Stanfill, et. al., 2019).

Research Constraints and Perceptions of Nurses

Various studies have identified diverse research constraints, perceptions, and

attitudes of nurses as barriers to engaging in research conduct. For instance, research has

indicated nurses' perceptions of research are complex and challenging to navigate,

resulting in nurses not engaging in research activities (Vijayalakshmi et al., 2014).

Another descriptive survey of 784 health care professionals showed that nurses compared

to non-nurses scored lower in knowledge of research and attitudes (Eller et al., 2003).

Nurses also scored higher in translating research outcomes into practice as compared to

the non-nurse group (Eller et al., 2003). However, the results of the study identified that

the use of research utilization is confusing and difficult for nurses to understand, resulting

in decreased interest in engaging in research practice (Eller et al., 2003). Nurses reported

negative attitudes and low knowledge regarding translation of research utilization into

practice and discomfort with research practice in general related to developing evidence-

based practice (Eller et al., 2003).

An exploratory qualitative study with 35 participants showed that constraints to

undertaking research activities included not having support from senior nurses, lack of

time to participate in research activities, no support network within organizations for

nurses to be active in research, and negative attitudes to undertaking and participating in

research from peers (Roxburgh, 2005). A knowledge deficit regarding research

knowledge was also reported during the individual nursing interviews in the study regarding educational skills to undertake research and levels of educational preparation (Roxburgh, 2005).

A systematic review of research models identified that poor quality and unstructured frameworks produce a divide between theoretically based conceptual models and those that are based on subjections and not structured frameworks, contributing to decreased knowledge and understanding of research methods (Moody, 2005). Three key factors contributing to decreases in quality research development were also identified: (a) a dearth of theoretical based research to develop and support nursing, (b) numerous nursing research studies that are not tied to a theoretical framework or founded in theoretical applications, and (c) a lack of engagement to link theory data and information throughout research knowledge (Moody, 2005). The future of quality and scientific rigor of nursing research is dependent upon the growth of PhD-prepared nurses to promote and support nursing research utilizing scientific and theoretical foundations.

A positive relationship has been found between mentorship and research productivity, general research knowledge and skill, career development, leadership and skills, the nurse's well-being, staff relationships, publications as well as presentations, work culture, collaboration, and income when offering mentorship programs to post-doctoral nurse researchers (Hafsteinsdottir et al., 2017). The research identified the importance of mentorship and support during the post-doctoral phase in the nurses' career pathway (Hafsteinsdottir et al., 2017). However, no studies were identified supporting the

trajectory related to the nurses' pre-doctoral pathway for educational development and mentorship support to engage in a research practice (Hafsteinsdottir et al., 2017).

Nurses have felt supported when there was a dedicated nurse researcher, nursing research director, and dedicated nursing research departments, further supporting the need for qualified, trained and educated PhD nurses (Pintz et al., 2018). However, though nursing leadership support nursing research and evidence-based practice, barriers to embracing nursing research at the clinical practice level remains (Pintz et al., 2018). Additional research is needed to understand nurses' constraints to engaging in research participation and conducting nursing research, as there is a knowledge gap between nurses using research for practice and nurses conducting research and advancing research (Eller et al., 2003; Roxburgh, 2005). The nursing profession has a need to promote and empower nurses in a PhD nursing role; without quality theoretical frameworks and conceptual models, the nursing profession cannot advance nursing science (Grady & Gough, 2015).

Knowledge Translation Theory

The concept of knowledge relates to the phenomenon of interest regarding nurse's knowledge and perceptions of nursing research conduct. Knowledge translation (KT) was defined by the Canadian Institutes of Health Research (CIHR) as the engagement of morally just application of knowledge interactions between research and people to capture the positive advantages of research (2007). The KT theory supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge. Applying the KT model to educating nurses regarding

research conduct and career pathways can support developing a model that could be translated into nursing research. Using the KT theory offers the synthesis, exchange, and support of new knowledge through education, career pathways, and mentoring.

Knowing establishes four patterns: empirical, personal, ethical, and aesthetics, or the "art of nursing" (Carper, 1978). The development of nursing science generates conceptual structures and theoretical models supporting health, illness, and human life within the art of nursing. The origins of the fundamental patterns are empirical related to nursing science, personal knowledge within nursing, ethical and moral knowledge in nursing practice, and aesthetics, the "art of nursing" (Carper, 1978). Carper's theory notes the important development of nursing science is to identify conceptual structures and theoretical models to reflect the phenomenon of health, illness, and human life within the art of nursing (1978). Each level of knowing supports the research process constructing the research conduct knowledge theory foundation.

A comprehensive research team can include all levels of education to create a single research unit to produce safe, ethical, quality research (Burkhart & Hall, 2015; Grimes-Stanfill et al., 2019). The PhD nurse develops, oversees, and analyzes the conduct of the research protocol. The master's-prepared nurse supports the conduct of the study in a supporting role of the clinical research coordinator, providing an advanced assessment of the human research subject (ANA & IACRN, 2016). The baccalaureate nurse engages in research conduct offering support as the research nurse providing clinical care to human research subjects (AACN, 2008b). The master's-prepared nurse supports research by applying research outcomes to the practice setting (AACN, 2011)

The DNP is engaged during the construction of the research protocol to incorporate practice needs, further advancing the nursing profession (AACN, 2017). The research team collectively moves through the continuum of the research practice domains to support the human research subject's care continuum. The practice domains' focus offers the study team varying degrees of knowledge regarding study management, clinical practice, human subject protections, contributing to the science and care coordination and continuity (AACN, 2008b, 2011, 2017). Describing what nurses do and why they choose to engage in research is of critical importance and urgency to continue advancing the professional practice of nursing (ANA & IACRN, 2016; NINR, 2019; NINR & Zenk, 2020). Utilizing both the KT and knowing theories to develop a nursing research knowledge model could identify ongoing educational needs and career pathways to empower and educate nurses in selecting a nursing practice centered in research conduct.

Summary of Existing Literature and Gaps in the Literature

From 1994 to 2022, nursing research studies have identified that nurses report negative perceptions and anxiety related to research, lack of knowledge, no funding or time and a continued low confidence regarding research knowledge and skills (Roxburgh, 2005). What is not known in the literature is why RNs do not engage in research, what their experience is, and what factors may be related to an RN's interest in conducting research (Burkhart & Hall, 2015; Eller et al., 2003; Vijayalakshmi et al., 2014). Additionally, it is not known whether any of the following demographic data points identify a correlation between degree level, age range, gender, ethnicity, practice specialization, years of practice as a nurse, number of research related educational

courses, years of practice in research or clinical research, engagement in translational research, engagement in clinical research of the RN, and interest, experience, confidence, and attitude of research conduct. Research into such relationships may offer insight into the current practice gap in nursing research.

Framework

I used the KT theory as a framework. The concept of knowledge relates to the phenomenon of interest regarding nurse's knowledge and perceptions of nursing research conduct. KT was defined by the CIHR as the engagement of morally just application of knowledge interactions between research and people to capture the positive advantages of research (2007). The KT theory supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge. Applying the KT model to educating nurses regarding research conduct and career pathways can support developing a model that could be translated into nursing research. Using the KT offers the synthesis, exchange, and support of new knowledge through education, career pathways, and mentoring.

Knowing establishes four patterns: empirical, personal, ethical, and aesthetics, the "art of nursing" (Carper, 1978). The development of nursing science generates conceptual structures and theoretical models supporting health, illness, and human life within the art of nursing. The origins of the fundamental patterns are empirical related to nursing science, personal knowledge within nursing; ethical and moral knowledge in nursing practice, and aesthetics, the "art of nursing" (Carper, 1978). Carper's theory notes the important development of nursing science is to identify conceptual structures and

theoretical models to reflect the phenomenon of health, illness, and human life within the art of nursing (1978). Each level of knowing supports the research process constructing the research conduct knowledge theory foundation.

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KT and Knowing theories to develop a nursing research knowledge model could identify ongoing educational needs and career pathways to empower and educate nurses in selecting a nursing practice centered in research conduct. The nursing research conduct knowledge model is displayed in Figure 1.

Figure 1

Nursing Research Conduct Knowledge Model
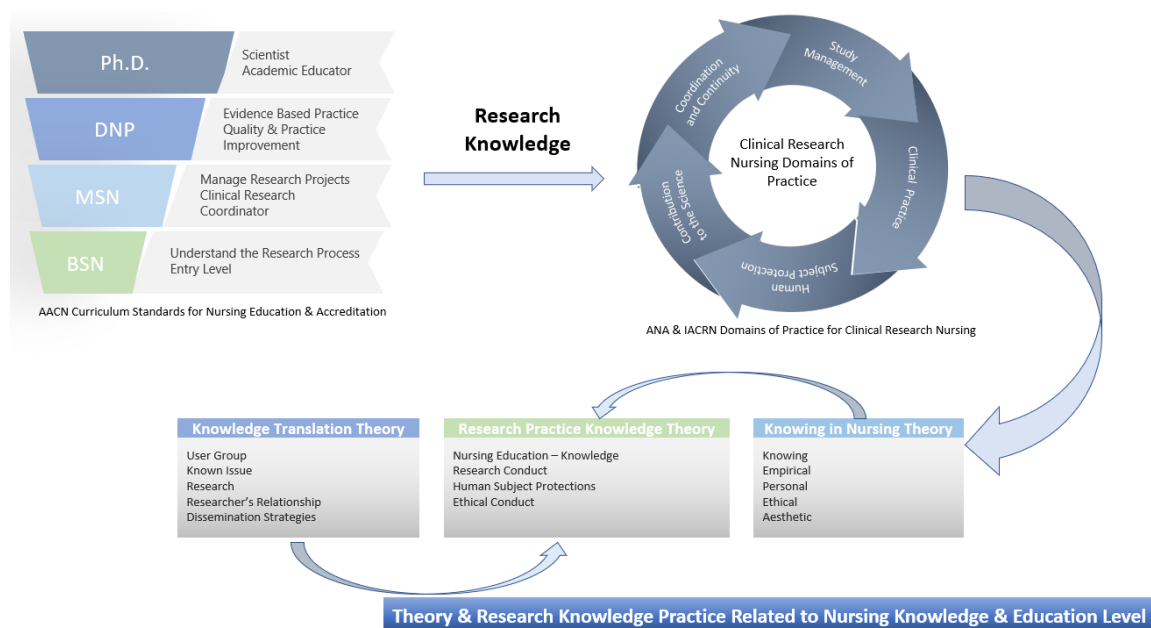
Overview of the Manuscripts

I conducted a study for a three-manuscript approach with each of the studies focusing on equal constructs interest, experience, confidence, and attitude of research conduct. The purposes of the studies were to determine: (a) whether there is a difference in the level of interest, experience, confidence, and attitude toward conducting research between RNs who work in clinical settings compared to RNs who work in academic settings controlling for different degree achievement; (b) what effect the educational level

of the RN has on the level of interest, experience, confidence, and attitude toward conducting research; and (c) whether there is difference in attitudes toward conducting research and years of practice in RNs who work in a clinical setting compared to RNs who work in an academic setting controlling for years of practice.

The three separate manuscripts were designed to offer a comprehensive view of the RNs' overall knowledge and perception regarding research conduct. By conducting this study, my intent was to create new knowledge regarding the nurse's interest, experience, and attitude toward conducting research, whereas past nursing research studies have focused on the nurse's utilization of research in practice, known as evidence-based practice skills, using attitude and perceptions as core constructs (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). To increase and support a continued pipeline for the PhD program, it will be important to understand the impact, if any, based upon the RNs' degree level and interest, experience, and attitude toward conducting research.

Understanding the relationship, if any, between the RNs' demographic, educational courses, and specialty practice background and the RNs' interest, experience, and attitude toward conducting research will further support possible strategic pathways to further inform the further growth of the number of PhD-prepared nurses.

Manuscript 1

Specific Problem

Nursing studies have been conducted to investigate nurses' perceptions of research in general and the use of research utilization as it applies to evidence-based

practice. However, there remains a paucity in the literature researching the nurses'

engagement in research conduct during the trajectory of a nurses' career pathway.

Research Question

What is the difference in the level of interest, experience, confidence, and attitude

toward conducting research between RNs who work in clinical settings compared to RNs

who work in academic settings controlling for different degree achievement?

$H_0 1$: There is no difference in the level of interest, experience, confidence, and

attitude toward conducting research between RNs who work in a clinical setting

compared to RNs who work in academic settings.

$H_A 1$: There is a difference in the level of interest, experience, confidence, and

attitude toward conducting research between RNs who work in a clinical setting

compared to RNs who work in academic settings.

Nature of the Study

I conducted a quantitative cross-sectional comparative analysis to collect

quantifiable information regarding nurses' interest, experience, and attitude of research

conduct. The dependent variables of interest, experience, confidence, and attitude toward

conducting research were measured using an instrument designed on a Likert scale. There

were four groups based on degree achievement, Bachelor of Science in Nursing (BSN),

Master of Science in Nursing (MSN), DNP, and PhD. The independent variable was

work setting (clinical or academic). The statistical analysis used a multivariate analysis of

covariance.

Types and Sources of Data

I collected data using a survey that was designed to measure the interest, experience, confidence, and attitude toward research conduct (please note the survey tool is licensed by Elsevier and created by Stewart et al., 2019). I used SurveyMonkey https://www.surveymonkey.com) for the data collection survey tool. I obtained permission to use and reproduce the interest, experience, and confidence survey tool from its creator, Stewart et al. (2019), and from Copyright Clearance Center Rights Link and Elsevier to reproduce the survey tool (see Appendix C). The survey tool incorporated multiple domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest. All items were measured on a 5-point Likert scale, and the demographics section was used for descriptive statistics.

Manuscript 2

Specific Problem

The nursing professional standards state that a focus on research during educational preparation is key throughout the development of the RN from baccalaureate to doctoral academic preparation. To date, there remains a gap in research to correlate the relationship between a nurses' educational preparation and the engagement in research conduct.

Research Question

What effect does educational level of the RN have on the level of interest, experience, confidence, and attitude toward conducting research?

$H_0 2$: There is no effect in educational level of the RN on the level of interest, experience, confidence, and attitude toward conducting research.

$H_A 2$: There is an effect in educational level of the RN on the level of interest, experience, confidence, and attitude toward conducting research.

Nature of the Study

I conducted a quantitative cross-sectional nonexperimental correlational study to assess the relationship and degree of association between nurses' educational degree level and interest, experience, and attitude of research conduct. The dependent variables were interest, experience, confidence, and attitude toward conducting research utilizing four Likert scales. The independent variable was educational degree based on four levels of degree achievement, BSN, MSN, DNP, and PhD. The coefficient of variation was work setting clinical and academic. The statistical analysis used a multiple linear regression analysis.

Types and Sources of Data

I collected data using a survey (licensed by Elsevier and created by Stewart et al., 2019) that was designed to measure the interest, experience, confidence, and attitude toward research conduct . I used SurveyMonkey (https://www.surveymonkey) for the data collection survey tool. I obtained permission to use and reproduce the interest, experience, and confidence survey tool from tool the survey creator Stewart et al. (2019),

and from Copyright Clearance Center Rights Link and Elsevier to reproduce the survey

tool (see Appendix C). The survey tool incorporated multiple domains of assessment:

demographics; research activities; research interest, experience, and confidence; research

conduct and dissemination; translating research; readiness to participate in research;

research training; and research plans and areas of interest. All items were measured on a

5-point Likert scale, and the demographics section was used for descriptive statistics.

Manuscript 3

Specific Problem

There is a gap in current research related to the relationship between the RNs

demographic background, educational courses in research, and specialty practice

background and the RNs interest, experience, and attitude toward conducting research.

Research Question

What is the difference in attitudes toward conducting research and years of

practice in RNs who work in a clinical setting compared to RNs who work in an

academic setting controlling for years of practice?

$H_0$3: There will be no difference in attitudes toward conducting research and years

of practice in RNs who work in a clinical setting compared to RNs who work in an

academic setting controlling for years of practice.

H_A3: There will be a difference in attitudes toward conducting research and years

of practice in RNs who work in a clinical setting compared to RNs who work in an

academic setting controlling for years of practice.

Types and Sources of Data

I collected data using a survey (licensed by Elsevier and created by Stewart et al., 2019) that was designed to measure the interest, experience, confidence, and attitude toward research conduct survey tool. I used SurveyMonkey (https://www.surveymonkey) for the data collection survey tool. I obtained permission to use and reproduce the interest, experience, and confidence survey tool from tool the survey creator Stewart et al. (2019), and from Copyright Clearance Center Rights Link and Elsevier to reproduce the survey tool (see Appendix C). The survey tool incorporated multiple domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest. All items were measured on a 5-point Likert scale, and the demographics section was used for descriptive statistics.

Nature of the Study

I conducted a quantitative cross-sectional comparative analysis to collect quantifiable information regarding nurses' interest, experience, and attitude of research conduct. The dependent variables were interest, experience, confidence, and attitude toward conducting research were measured using an instrument designed on a Likert scale. There are five groups based on nursing position, staff nursing, manager, director, chief nursing officer and leadership. The covariant is number of years of practice. The statistical analysis used a multivariate analysis of covariance.

Types and Sources of Data

I collected data using a survey that was designed to measure the interest, experience, confidence, and attitude toward research conduct survey tool (please note: there is no official name to this survey). I used Survey Monkey for the data collection survey tool. I obtained permission to use and reproduce the interest, experience and confidence survey tool from Copyright Clearance Center Rights Link and Elsevier to reproduce the survey tool (see Appendix C). The survey tool incorporated multiple domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest. All items were measured on a 5-point Likert scale and the demographics section was used for descriptive statistics.

Significance

Understanding the RNs' perceptions regarding research participation and engagement from the undergraduate and graduate level could offer insight into nurses' interest, experience, confidence, and attitude related to research conduct (Grimes-Stanfill et al., 2019). Assessing the undergraduate and graduate knowledge regarding research throughout their educational pathway could provide insight into nursing research thereby generating scientific evidence to assess practice gaps while informing clinical practice outcomes (Grimes-Stanfill et al., 2019). Research studies have identified that RNs are not engaging in research within the clinical practice settings, and with a continued decline in PhD nurse scientists, the future of nursing research could be left without strong

mentorship to support the next generation of nurse scientist (Pintz et al., 2018). Exposing

students to research practice and conduct at the undergraduate level could support an

increase in research skills to become advanced (Burkhart & Hall, 2015). The

baccalaureate level preparation provides foundational skills for graduate preparation

providing research knowledge, research process, and scholarly writing (Burkhart & Hall,

2015).

Identifying the relationship between nurses' interest, experience, confidence, and

attitude toward conducting research will assist in identifying a rationale regarding the

nurse's selection to engage or not engage in research conduct. Each level of nursing

education supports the building blocks regarding the research process constructing the

research practice knowledge theory foundation (see Figure 1). The nurse receives

knowledge regarding the use of research findings and research outcomes; however, there

remains a knowledge gap as identified by a paucity in the literature regarding research

practice knowledge and research conduct of RNs at the undergraduate and graduate level

(Burkhart & Hall, 2015; Pintz et al, 2018). It is critical to understand RNs' perceptions at

each degree level to understand where a knowledge gap exists regarding nursing research

knowledge to identify new current practice gaps to inform nursing research.

Summary

Florence Nightingale in the 1800s recommended clinical nursing research as a

standard; however, to current date there remains a disparate proportion of nurses

engaging in clinical nursing research practice (ANA, 2010, p. 15). The initial engagement

of advanced degrees began in the early 1900s (ANA, 2010, p. 15). The initial focus was

towards advanced degrees in education during the 1900s; nurses also began to research nursing education (ANA, 2010, p. 16). It was not until 1952 that the first issue of the journal *Nursing Research* was published, indicating nurses were beginning to engage in practice, interventional, and patient-centric research (ANA, 2010, p. 15). Additionally, nurses began to study nursing theoretical and conceptual models for practice standards (ANA, 2010, p. 16). A literature review of studies on nurses and research identified multiple barriers for nurses regarding research practice.

Sixty-nine years after the initial publication in *Nursing Research*, nurses continue to report that research has value to clinical practice, but the research in general remains intimidating, and complex to navigate with limited support towards education, knowledge, skill, and time to engage in research conduct. A key limitation to previous studies was the focus on evidence-based practice adoption, research utilization, perceptions, and attitudes toward research and not the engagement in research conduct. Developing a three-study methodology regarding nursing research conduct regarding relationships with nurses as clinicians and scientists is critical to emerging and engaging the next generation of nurse scientists and educators.

Part 2: Manuscripts

Relationship Between Nurses' Education Level, Interest, Experience, and Attitude

Toward Research by Academic or Clinical Practice Area

Candida Suzanne Barlow

Walden University

Outlet for Manuscript

American Journal of Nursing (AJN) is the oldest nursing journal supporting peer-reviewed evidence-based articles as a premier nursing journal (AJN, n.d.). The AJN publishing standards are based on the International Committee of Medical Journal Editors, the World Association of Medical Editors, and the Committee on Publication Ethics, offering transparency of actual and potential conflicts of interests of the authors, editors, and reviewers (AJN, 2021). The AJN welcomes "evidence-based clinical application papers and descriptions of best clinical practices, original research, and QI reports, case studies, narratives, commentaries on a variety of clinical and professional topics" (AJN, 2021). The mission of AJN promotes nursing excellence through disseminating high standards for publication. It supports discussions of relevant and controversial professional issues by upholding journalistic integrity and excellence standards by applying a double-blind peer review process (AJN, 2021). Manuscript submissions require a query letter, and the manuscript submissions should be written in the American Psychological Association (APA) style (AJN, 2021). Original research works must notice the institutional review board (IRB) approval and informed consent (AJN, 2021). Original research submissions should adhere to the International Committee of Medical Journal Editors (ICMJE) and include an introduction, methods, results, and discussion sections representing the scientific discovery process (AJN, n.d.). The author guidelines for the *AJN* can be found here:

https://journals.lww.com/ajnonline/Pages/informationforauthors.aspx

Abstract

Research has revealed that RNs express difficulty understanding research, statistical methods, research concepts, and research conduct. There is a paucity of literature identifying what contributes to nurses' difficulty understanding research, statistical methods, research concepts, and practicing research as a career. This quantitative, cross-sectional, nonexperimental, correlational study aimed to determine if there is a relationship between nurses' educational degree level and interest, experience, and attitude toward research conduct based on academic or clinical practice area. The population was surveyed using a convenience sample of RNs. The survey instrument used a 5-point Likert scale. A multivariate analysis of covariance was used to analyze the data. Upon review, 51 incomplete surveys were removed from data analysis, resulting in a sample size of $N = 283$. Results revealed positive associations for research conduct from nurses practicing in academic settings compared to the clinical practice setting. The RNs' degree achievement also impacted the RNs' perceptions of research conduct. Conclusions included that RNs perceive an absence of research mentorship and support from leadership, research is challenging to understand, and a large number reported they did not feel adequately prepared to engage in the development or conduct of research. The Walden University Institutional Review Board oversaw a full board review for this study.

The keywords searched were *nursing, nurse scientist, nurse(s), interest, , attitude, beliefs, research, nursing degree, research utilization, nursing position statements, National Institute of Nursing Research, and future of nursing.*

Introduction

Research utilization studies, defined as implementing completed research works into evidence-based practice standards, have identified RNs of all educational levels who acknowledge the importance of research while also identifying nurses have negative perceptions of research and were not engaged in research (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). The American Association of Colleges of Nursing (AACN) and the Campaign for Action data sets identified a steady decline in the number of PhD-prepared nurse scientists as there were 801 graduates in 2019, as compared to 7,944 graduates with the Doctor of Nursing Practice (DNP) in 2019 (AACN, 2020; Campaign for Action, 2020). A nurse scientist is defined as a PhD-prepared RN who engages in research. The nurse scientist conducts nursing research connecting safety and quality of care through the engagement of research in alignment with the NINR mission (Grady & Gough, 2015; Grimes-Stanfill et al., 2019; Hickey et al., 2019). Research conduct is defined as the nurse's engagement to create, support, co-develop, implement, or manage research-related activities for research as defined by The Common Rule. The Common Rule defines research as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of Human Subjects*, 2021). Research is the rigorous scientific inquiry to advance nursing practice, healthcare policy, and improved outcomes of patients (AACN, 2006, p. 1).

With the continued decline of enrollment in PhD nursing programs, at a rate of 9.6% since 2014, it is critical to understand why RNs do not engage in research (AACN,

2020). The AACN and NINR indicated that it is not currently known why there is a decrease in PhD enrollment (AACN, 2020; NINR, 2019). Nursing research studies are needed to identify national trends and nursing perceptions regarding nursing research and the research degree pathway for the PhD (AACN, 2020; NINR, 2019). The RN receives knowledge and training concerning the use of research findings, research outcomes and research utilization throughout the nurses' educational pathway. However, a knowledge gap remains regarding research practice knowledge and research conduct of RNs (Burkhart & Hall, 2015; Pintz et al., 2018).

Significance

Nursing research intertwines healthcare disciplines supporting clinical and basic research to improve and maximize the health of all patients (nINR, 2016). Research conducted by the PhD-prepared nurse scientist contributes to the nursing discipline using traditional research methodologies (Gray et al., 2017). By actively engaging in research concepts and research conduct, nurses contribute to the nursing process and focus on developing theory, vision, and social directives (Gray et al., 2017). The amount of interest, experience, confidence, and attitude toward conducting research developed during the educational and experiential pathway between baccalaureate and doctoral education is key in understanding future recommendations for the development of the PhD prepared nurse scientist. There is a knowledge gap indicating what factors contribute to nurses expressing difficulty understanding research, understanding statistical methods, and understanding research concepts (Vijayalakshmi et al., 2014).

I used the knowledge translation (KT) theory to develop the nursing research conduct knowledge model (see Figure 1). The nursing research conduct knowledge conceptual model guides the framework of this study. The concept of knowledge relates to the phenomenon of interest, which is nurse's knowledge and perceptions of research. Research conduct is defined by the nurse's engagement in research, while creating or managing research protocols and research is defined as "systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of Human Subjects*, 2021). KT was defined by the Canadian Institutes of Health Research (CIHR) as the engagement of morally just application of knowledge interactions between research and people to capture the positive advantages of research (2007). The KT supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge. I conducted this study to understand the difference in interest, experience, confidence, and attitude toward conducting research among RNs with varying educational degree levels and practice settings.

Figure 1

Nursing Research Conduct Knowledge Model
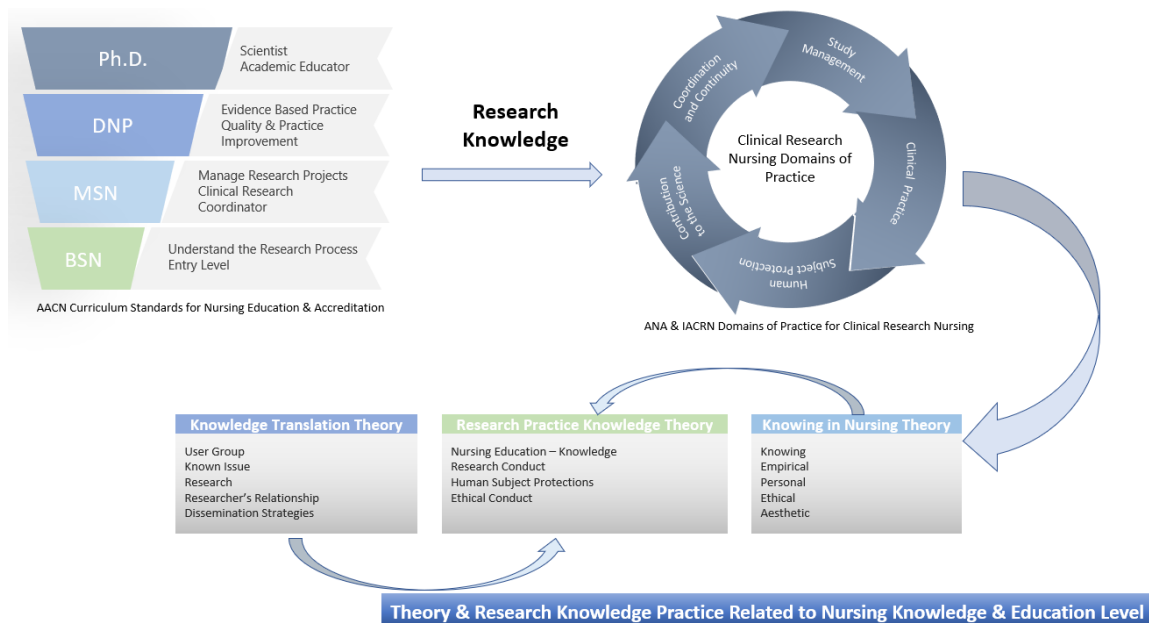
The results of my study provided new knowledge regarding nurses' interest, experience, and attitude toward conducting research where past nursing research studies have focused on nurses' knowledge of research utilization known as evidence-based practice skills using attitude and perceptions as core constructs (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014).

Relevant Scholarship

Educational Pathway

The AACN curriculum pathway for research education for the RN begins at the bachelor's level and is enhanced with more depth of knowledge and competency at each advancing degree level. Providing an awareness of how evidence is developed by integrating the research processes, the foundation for research knowledge is created

throughout the educational pathway of the baccalaureate nurse (AACN, 2021). The baccalaureate-prepared nurse engages in research conduct by offering support as the research nurse by providing clinical care to human research subjects (AACN, 2021). The master's-prepared nurse receives an education in understanding research outcomes and resolves practice problems by applying research and disseminating results (AACN, 2011). The master's-prepared nurse supports research by applying research outcomes to the practice setting and ensuring the safe, ethical care of the research subject (AACN, 2011). The DNP-prepared nurse is engaged during the construction of the research protocol to incorporate practice needs, further advancing the nursing profession by applying evidence to practice (AACN, 2017). The PhD nurse develops, oversees, and analyzes the conduct of the research protocol and creates new knowledge. Each level of education increases the RN's research knowledge and concepts, affording nursing a structural foundation throughout the continuum of nursing education (AACN, 2021).

History of Nursing Research

To comprehend the current state of nursing research, a historical review below outlined centuries between the initial nursing research study to the current nursing research practice in 2022. Florence Nightingale, the initial nurse scientist, began conducting research in the 1800s during the Crimean War (Gray et al., 2017). However, it would be over a century before the nursing profession would establish the first PhD nursing programs at Teachers College, Columbia University, and New York University to prepare nursing faculty to educate future nurses (Ketefian & Redman, 2015). An additional 10 years would pass before the promotion of research conduct would occur in

1932 at the Association of Collegiate Schools of Nursing (McEwen & Wills, 2014). During the 1940s and 1950s, states implemented formalized testing for RNs and the first journal titled Nursing Research was published in 1952 (McEwen & Wills, 2014). In 1952 the ANA along with the *Nursing of Research* journal endorsed graduate education and the study of nursing as a formal practice (McEwen & Wills, 2014). The first nursing research conferences and additional nursing research journals emerged during the 1960s and 1970s, which promoted nursing research (McEwen & Wills, 2014).

The National Institutes of Health (nIH) clinical center established a framework to identify RNs as an important part of the research team, emphasizing patient safety, care, and informed participation to endow national leadership for research (nIH Clinical Center, 2020). The NIH framework for RNs' research practice includes expertise in research, accountability for development, implementation, coordination and evaluation of research and care while providing continuity of care and advocacy for the human research subject (nIH Clinical Center, 2020). The AACN, in collaboration with the NINR, published a position statement in 2018 on sustaining the science, the PhD pathway in nursing (ANA & IACRN, 2017).

In 2010, the Institute of Medicine (IOM) created a charge to the nursing profession to "lead and manage collaborative efforts with physicians and other health care team members to conduct research" (national Academies Press, 2011, p. 2). In response, the IOM, and the Robert Woods Johnson Foundation (RWJF) established the "Campaign for Action" to increase doctoral prepared nurses to expand the number of nurse faculty and researchers (AACN, 2008; Campaign for Action, 2020). The nursing

profession must identify knowledge gaps around research conduct and establish a plan of action to empower the nursing profession to educate and develop future PhD prepared nurse scientists (national Institute of Nursing Research [NINR], 2019)

Research Constraints and Perceptions of Nurses

Various studies have identified research constraints, perceptions, and attitudes of nursing students and RNs as barriers to engaging in research. For instance, nurses' perceptions of research are "stressful, and complex subject" and "difficult to understand concepts of research," resulting in nurses not engaging in research activities (Vijayalakshmi et al., 2014). Another descriptive survey of 784 health care professionals revealed that using (or interpreting) research results were confusing and difficult for nurses without a PhD to understand, resulting in decreased interest in engaging in research (Eller et al., 2003, Ross & Burrell, 2019). Study results revealed that RNs have negative attitudes and a low level of knowledge regarding the translation of research utilization into practice and were not comfortable with research practice in general related to developing evidence-based practice (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014). An integrative review conducted by Ross and Burrell (2019) identified an increase in research utilization studies with nursing students since 2016 outside of the United States.

A systematic review of research models identified poor quality, and unstructured frameworks based on subjections were published more often than studies based on conceptual, theoretical models (Moody, 2005; Ross & Burrell, 2019). Additional study findings identified there were three key factors contributing to decreases in research

framework development: (a) a dearth of theoretical based research to develop and support

nursing, (b) numerous nursing research studies that are not tied to a theoretical

framework or founded in theoretical applications, and (c) a lack of engagement to link

theory data and information throughout research knowledge (Moody, 2005; Ross &

Burrell, 2019). The quality and scientific rigor of nursing research depend upon

increasing the number of PhD-prepared nurses to promote and support nursing research

that produces data based on scientific and theoretical foundations. An exhaustive search

of the literature identified there were multiple studies regarding the RNs knowledge of

evidence-based practice; however, there is a paucity of research studies on research

conduct. There is a gap in research related to RNs conducting research, as noted by

studies ranging from 1980 to 2022.

Research Questions and Design

The research question was "What is the difference in the level of interest,

experience, confidence, and attitude toward conducting research between RNs who work

in clinical settings compared to RNs who work in academic settings controlling for

different degree achievement?" Understanding the differences in the level of interest,

experience, confidence, and attitude toward conducting research of nurses who work in

clinical settings compared to RNs who work in academic settings could determine a

difference in research engagement between educational levels. Using a quantitative cross-

sectional comparative analysis, I collected quantifiable information regarding nurses'

interests, experience, and attitudes toward research conduct, answering the call of the

AACN and NINR to identify national trends and nursing perceptions regarding nursing research conduct.

Methods

Participants

The target population was licensed RNs who work/reside in the United States. An RN is defined as a nurse who holds registered nursing licensure as defined by their state or government agency overseeing RNs (nCSBN Leading Regulatory Excellence [NCSBN], 2022). I posted a recruitment flyer on social media (such as Facebook and LinkedIn) to all individuals that contained an invitation to participate, which described the study. Participants were invited to participate in an online web survey using the SurveyMonkey (https://www.surveymonkey.com) link. Participants' identities were protected using SurveyMonkey through the anonymous web-based survey tool for data collection. Participant criteria included RNs and excluded any participants who were not licensed RNs.

If an individual was interested in participating, they accessed a link to take them to the inclusion criteria question assessing if they were an RN. If they answer "yes," the link took them to the consent form. If the individual agreed to participate, the next screen led to the demographics and survey questions (see Appendices A and B, respectively). After completing the demographic datasheet, the screen advanced to the determinants of behavior questionnaire.

Sample and Power

I determined the sample size using the G*-Power tool to analyze statistical power for the multivariate analysis of covariance (MANCOVA) for analysis (Faul et al., 2007). With an effect size of 0.25, the alpha error probability of 0.05, power of 0.80, with the numerator degrees of freedom of 10, using four groups with the covariates yielded sample size of 269. The noncentrality parameter A totaled 16.8125000 with a critical F of 1.8666726 with denominator degrees of freedom of 264 for a sample size of 269 with an actual power of 0.8001280.0.

Variables/Sources of Data

The independent variable was the RNs degree level. The groups are the levels of nursing degree baccalaureate (BSN), masters (MSN), doctor of nursing practice (DNP), and the doctor of nursing philosophy (PhD) degree. The dependent variables are level of interest, experience, confidence, and attitude toward conducting research. The covariates are clinical and academic work settings.

Instrumentation or Measures

I used a research survey tool by Stewart et al. (2019), licensed by Elsevier. Permission to use and reproduce the interest, experience and confidence survey tool was granted (see Appendix C). The survey tool contains eight domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest (Stewart et al., 2019). The section for assessment of research interest, experience, and confidence used a 5-point

Likert scale rated from *no interest*, *experience*, *confidence* to *very interested*, *experienced*, and *confident*, respectively (Stewart et al., 2019). The remaining sections used a 5-point Likert scale ranging from *strongly agree* to *strongly disagree* (Stewart et al., 2019).

The survey by Stewart et al. (2019) was reviewed for validity by individuals in academia, researchers and practicing pharmacists using contextualization. The framework used to support validity of the survey tool incorporated the theoretical domains framework from the Determinants of Implementation Behavior Questionnaire (Stewart et al., 2019). The researchers' aims were to measure subjective survey results regarding attitudes and opinions of research (Stewart et al., 2019). The validity of subjective data can be assessed by correlations with respondents' responses inferred from patterns identified from the scales assessed (Creswell & Creswell, 2022; Fowler, 2014). The survey tool's validity is supported based on the respondents' correlation to patterns reviewed, noting all results ranged from $\alpha = .87$ to $\alpha = .97$, indicating high validity (Stewart et al., 2019). The survey tool incorporates multiple domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest (Stewart et al., 2019).

The aspects of research consisted of 16 items with a Cronbach's alpha score indicating the internal consistency identifying close relationship for each grouping, interest ($\alpha = .96$), experience ($\alpha = .96$) and confidence ($\alpha = .97$) in specific aspects of research. Attitudinal items consisted of 17 items with a high Cronbach's alpha score ($\alpha =$

.93; Stewart et al., 2019). The motivation for and outcomes of participation research

consisted of seven items with the Cronbach's alpha score indicating a close relationship

(α = .89; Stewart et al., 2019). The individual roles and characteristics around

participating in the research included 10 items (α = .87; Stewart et al., 2019).

Design and Analysis

    I analyzed the data using SPSS (Version 27). Descriptive statistics consisted of

age, gender, race, ethnicity, nursing position, and years of practice (see Appendix A). I

calculated the means, standard deviations, sample size, medians, and confidence intervals

identifying any relationship between the variables of age, gender, race, ethnicity, nursing

position, and years of practice concerning the RN's interest, experience, confidence, and

attitude toward conducting research. I used a one-way MANCOVA to analyze my data. I

calculated the differences between the groups of the categorical independent variable on

the dependent variable, identifying a difference between the degree groups of an RN who

practices within a clinical setting compared to an academic setting using MANCOVA. I

selected MANCOVA to assess the differences in the categorical independent variable of

the RN grouped by degree level (baccalaureate, masters, DNP, and PhD) evaluating the

differences of the dependent variables (interest, experience, confidence, and attitude

toward research conduct) while controlling for the covariate practice setting of the RN in

either a clinical or academic setting. The assumptions for the MANOVA included

multivariate normality, homoscedasticity, linearity and independence and randomness. I

tested for the assumptions for MANOVA prior to analyzing the data. If the data violated

any assumptions, I consulted with a statistician and my committee to determine how I

analyzed the data. I conducted a Cronbach's alpha on the results of the research survey by Stewart et al. (2019) to evaluate reliability of the instrument with the sample used in my study.

<div align="center">

Results

</div>

Execution

I received a total of 334 responses from RNs. Upon inspecting the data, I removed 51 incomplete surveys, leaving $N = 283$. The survey was disseminated using the internet and social media. I used a series of Likert scales from a validated and reliable survey by Stewart et al. (2019) that contained eight domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest. The Likert scale assessed the RNs' interest, experience, confidence and attitude regarding research conduct. The interest, experience, and confidence scales were all independent scales, each consisting of 16 items; all three scales had a Cronbach's Alpha value of $\alpha = .96$. The final scale measured nurses' attitudes regarding research conduct. The attitudinal scales included three subscales (Support and Opportunities, Motivation, Individual Roles & Characteristics) using a Likert scale to identify nurses' attitudes and perceptions of research. The combined subscales consisted of 34 items with a Cronbach Alpha value of $\alpha = .94$. All scales indicated each grouping of items has an internal consistency of $\alpha > 0.90$ (see Table 1).

Table 1

Reliability Statistics

Variable	α	α Based on standardized items	*N*
Interest	0.956	0.956	16
Experience	0.96	0.961	15
Confidence	0.964	0.964	16
Attitudinal	0.941	0.94	34

Results

Descriptive Statistics

Respondent demographics are listed in Table 2 - 3. Of the 283 responses analyzed 94% (n = 265) were female and 6% (n = 18) were male, with 73% of respondents between the ages of 35 to 64 years of age (see Table 2).

Table 2

Age of Respondents

Age	*n*	%
18–24	5	1.8
25–34	49	17.3
35–44	69	24.4
45–54	71	25.1
55–64	66	23.3
65+	23	8.1
Total	283	100.0

The racial demographics were self-identified with the largest group identified was White or Caucasian at 83% (n = 234), the second largest group identified as American Indian or Alaska Native 7.2% (n = 19) and the next group was Hispanic or Latino at 5% (n = 14; see Table 3).

Table 3

*Race * Gender Crosstabulation*

	Gender					
	Female		Male		Total	
Race	n	%	n	%	n	%
American Indian or Alaska Native	19$_a$	7.2	0$_a$	0.0	19	6.7
Another race	2$_a$	0.8	0$_a$	0.0	2	0.7
Asian or Asian American	6$_a$	2.3	0$_a$	0.0	6	2.1
Black or African American	7$_a$	2.6	0$_a$	0.0	7	2.5
Hispanic or Latino	13$_a$	4.9	1$_a$	5.6	14	4.9
Native Hawaiian or other Pacific Islander	1$_a$	0.4	0$_a$	0.0	1	0.4
White or Caucasian	217$_a$	81.9	17$_a$	94.4	234	82.7
Total	265	100.0	18	100.0	283	100.0

Note. Each subscript letter denotes a subset of Gender categories whose column

proportions do not differ significantly from each other at the *p*= .05 level.

Degrees held by the RNs are identified in Table 4 noting the highest number of

responses were from the BSN at 54.4% (n = 154; see Table 4).

Table 4

RN Degree Level of Respondents

Degree level	n	%
ADN	23	8.1
BSN	154	54.4
MSN	76	26.9
DNP	8	2.8
PhD	22	7.8
Total	283	100.0

Practice Area Descriptive Statistics

Years of practice as an RN identified that 45% had greater than twenty years of

experience and the mean years of experience averaged 15 years (see Table 5).

Table 5

Descriptive Statistics by Practice Setting and Years of Practice

Years practice	Setting practice area	%	*M*	*SD*
2–5 years	Academic setting	15	0.1527	1.23
	Clinical setting	13	-0.127	0.83973
7–10 years	Academic setting	19	0.194	1.0649
	Clinical setting	10	-0.092	0.75904
12–15 years	Academic setting	41	0.4132	0.8133
	Clinical setting	10	-0.103	0.81284
17–20 years	Academic setting	25	0.2458	0.64155
	Clinical setting	20	-0.197	0.85445
>20 years	Academic setting	57	0.5759	0.72877
	Clinical setting	6	-0.066	0.98017

Of the 283 RNs, 48.1% (n = 136) reported they did not have experience in

research practice (seeTable 6).

Table 6

*Setting Practice Area * Years of Research Practice Crosstabulation*

Setting practice area	Years of research practice					
	none	1–5	6–10	11–15	>15	Total
Academic setting	10	10	12	3	16	51
Clinical setting	126	67	17	3	19	232
Total	136	77	29	6	35	283

The hospital health system was identified as the main practice setting by the

following: ADN 70%, BNS 61%, MSN 45%, and DNP 50%. The PhD respondents

reported that 64% worked in an academic medical center or academic university (see

Table 7).

Table 7

MAIN Practice Setting Degree Crosstabulation

| Variable | Degree | | | | | | | | | | Total | |
| | ADN | | BSN | | MSN | | DNP | | PhD | | | |
	n	%	n	%	n	%	n	%	n	%	N	%
Academic medical center or academic university	1	4.3	13	8.4	15	19.5	2	28.6	14	63.6	45	15.9
Clinic setting	5	21.7	30	19.5	17	22.1	2	28.6	0	0.0	54	19.1
Hospital health system	16	69.6	94	61.0	35	45.5	3	42.9	4	18.2	152	53.7
Remote	1	4.3	13	8.4	8	10.4	0	0.0	4	18.2	26	9.2
Urgent care - out patient	0	0.0	4	2.6	2	2.6	0	0.0	0	0.0	6	2.1
Total	23	100.0	154	100.0	77	100.0	7	100.0	22	100.0	283	100.0

Two hundred thirty-two (82%) of the participants worked in the clinical setting, and nurses practicing in the academic setting represented 18% (n = 51) of the sample. Of the 283 practicing nurses, there was nearly equal representation between direct care and non-direct care practicing nurses at 55.5% (n = 157) and 44.5% (n= 126) respectively.

Nurses working within a hospital health system represented the largest area of practice at 53.7% (n = 152), the clinic setting was second at 19.1% (n = 54; see Table 8).

Table 8

MAIN Practice Setting

	Variable	Frequency	%	Valid percent	Cumulative percent
Valid	Academic medical center or academic university	45	15.9	15.9	15.9
	Clinic setting	54	19.1	19.1	35.0
	Hospital health system	152	53.7	53.7	88.7
	Remote	26	9.2	9.2	97.9
	Urgent care - out patient	6	2.1	2.1	100.0
	Total	283	100.0	100.0	

Additionally, I asked the participants to identify as direct patient care (n = 157) or non-direct patient care (n = 126) roles, and which area they identified as their therapeutic area (see Table 9).

Table 9

Therapeutic Area

Variable	*n*	%
Cardiac	28	9.9
Clinical research	28	9.9
Critical care	40	14.1
Dialysis	3	1.1
Education	36	12.7
Leadership/management	45	15.9
Medical surgical	34	12.0
Nurse practitioner/clinical nurse specialist	28	9.9
Oncology	28	9.9
Pediatrics	10	3.5
Stroke	1	0.4
Trauma	2	0.7

The overall univariate analysis of variance descriptive statistics for the RN in the academic practice setting for interest, experience, confidence, support, motivation, and individual roles and characteristics for research conduct had a positive mean score for each category as compared to negative mean scores in the clinical setting. The RN's interest in research conduct was higher in the academic setting with a mean of 0.4844 compared to mean of -0.0956 in the clinical setting. The mean value for academic nurses reported experience in research conduct was 0.5299, whereas in the clinical setting the mean value was -0.1166. The descriptive statistics indicated that academic RNs expressed more experience in research conduct with the mean value 64.59% higher than the RNs in the clinical setting. RNs in the academic setting had a 43.79% higher

confidence level in research conduct than RNs in the clinical setting. RNs in the

academic setting indicated positive attitudinal mean scores for support ($M = 0.3613$),

motivation ($M = 0.2345$), and individual roles and characteristics ($M = 0.2206$) when

analyzed by practice setting without the degree. The individual questions for each scale:

assessment, interest experience, confidence, support and opportunities, motivation, and

individual roles and characteristics scales are listed in Appendix B.

Tests of Assumptions

MANCOVA Assumptions. I analyzed the data using a one-way MANCOVA.

The first assumption for MANCOVA is that there is a linear relationship between the

outcome variable and the independent variables assuming a scatter plot of interest,

experience, confidence and attitude against practice setting area (academic and clinical)

was plotted. Visual inspection indicated a linear relationship between the variables (see

Figure 2). I analyzed the second assumption of no multicollinearity by splitting the data

into academic and clinical using a split data file. A correlation coefficient closer to -1

indicates a strong negative relationship; inversely, closer to +1 indicates a very strong

positive one (Bhandari, 2022a).

Figure 2

Setting Practice Area
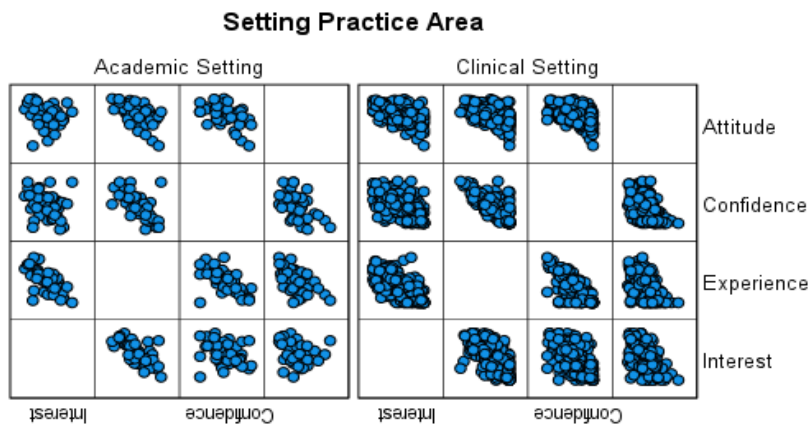
Setting Practice Area

I completed a bivariate correlation analysis indicating the Pearson Correlation was between 0.3 and 0.8 which means there was no multicollinearity between the dependent variables (see Tables 10, 11, 12). The correlations for the dependent variables interest, experience, confidence, and attitude between the practice settings indicated there is a linear relationship indicating the independence and multicollinearity were met.

Table 10

Correlations Between Dependent Variables

Variable		Confidence	Experience	Interest	Attitude
Confidence	Pearson correlation	1	.742**	.543**	.534**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	283	283	283	283
Experience	Pearson correlation	.742**	1	.680**	.522**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	283	283	283	283
Interest	Pearson correlation	.543**	.680**	1	.450**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	283	283	283	283
Attitude	Pearson correlation	.534**	.522**	.450**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	283	283	283	283

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11

Correlations[a] Academic Setting

Variable		Interest	Experience	Confidence	Attitude
Interest	Pearson correlation	1	.675**	.250	.212
	Sig. (2-tailed)		<.001	.076	.136
	N	51	51	51	51
Experience	Pearson correlation	.675**	1	.618**	.547**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	51	51	51	51
Confidence	Pearson correlation	.250	.618**	1	.479**
	Sig. (2-tailed)	.076	<.001		<.001
	N	51	51	51	51
Attitude	Pearson correlation	.212	.547**	.479**	1
	Sig. (2-tailed)	.136	<.001	<.001	
	N	51	51	51	51

**. Correlation is significant at the 0.01 level (2-tailed).
[a.] Setting Practice Area = Academic Setting

Table 12

Correlations[a] Clinical Setting

Variable		Interest	Experience	Confidence	Attitude
Interest	Pearson correlation	1	.652[**]	.559[**]	.462[**]
	Sig. (2-tailed)		<.001	<.001	<.001
	N	232	232	232	232
Experience	Pearson correlation	.652[**]	1	.743[**]	.482[**]
	Sig. (2-tailed)	<.001		<.001	<.001
	N	232	232	232	232
Confidence	Pearson correlation	.559[**]	.743[**]	1	.516[**]
	Sig. (2-tailed)	<.001	<.001		<.001
	N	232	232	232	232
Attitude	Pearson correlation	.462[**]	.482[**]	.516[**]	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	232	232	232	232

**. Correlation is significant at the 0.01 level (2-tailed).
[a] Setting Practice Area = Clinical Setting

The third assumption of MANCOVA is independence of groups. The participants were assigned to either the academic practice setting or the clinical practice setting during the study design process. The fourth assumption of MANCOVA is there should be no multivariate outliers. A linear regression analysis was used to test for the Mahalanobis' distance using two *df* and a critical value of 13.82 was used to test for outliers. Prior to removing the outliers, the Mahalanobis was 28.220 (see Table 13). After removing the outliers, the Mahalanobis *df* was 2 and the critical value was 13.605 (see Table 14) indicating no outliers are present meeting the assumption of independence of observations was met.

Table 13

Residuals Statistics[a] with Outliers Included

Source	Minimum	Maximum	M	SD	N
Predicted value	1.53	2.07	1.82	.119	283
Std. predicted value	-2.414	2.127	.000	1.000	283
Standard error of predicted value	.023	.119	.047	.015	283
Adjusted predicted value	1.52	2.08	1.82	.120	283
Residual	-.934	.468	.000	.366	283
Std. residual	-2.534	1.268	.000	.993	283
Stud. residual	-2.615	1.284	.000	1.003	283
Deleted residual	-1.015	.480	.000	.374	283
Stud. deleted residual	-2.643	1.286	-.003	1.008	283
Mahal. distance	.143	28.220	3.986	3.567	283
Cook's distance	.000	.157	.004	.013	283
Centered leverage value	.001	.100	.014	.013	283

a. Dependent Variable: Setting Practice Area

Table 14

Residuals Statistics[a] with Outliers Removed

Source	Minimum	Maximum	M	SD	N
Predicted Value	1.53	2.06	1.82	.121	271
Std. Predicted Value	-2.434	1.923	.000	1.000	271
Standard Error of Predicted Value	.024	.085	.048	.013	271
Adjusted Predicted Value	1.52	2.06	1.82	.122	271
Residual	-.940	.472	.000	.363	271
Std. Residual	-2.572	1.290	.000	.993	271
Stud. Residual	-2.623	1.308	.000	1.002	271
Deleted Residual	-.978	.484	.000	.370	271
Stud. Deleted Residual	-2.653	1.309	-.002	1.007	271
Mahal. Distance	.146	13.605	3.985	2.612	271
Cook's Distance	.000	.055	.004	.007	271
Centered Leverage Value	.001	.050	.015	.010	271

a. Dependent Variable: Setting Practice Area

The fifth assumption of MANCOVA is multivariate normality. The descriptives statistical analysis identified the skewness and kurtosis is between -1 and +1 indicating multivariate normality exists (see Table 15, Figure 3, 4, 5, 6, 7).

Table 15

Descriptive Statistics

Variable	*N* Statistic	Min Statistic	Max Statistic	*M* Statistic	*SD* Statistic	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
Interest	283	-1.55	1.87	.0090	.88063	.163	.145	-.730	.289
Experience	283	-1.11	2.19	-.0001	.84302	.444	.145	-.670	.289
Confidence	283	-1.09	1.60	.0048	.67800	.263	.145	-.535	.289
Attitude	283	-1.69	.90	.0027	.43685	-.418	.145	.529	.289
Valid N (listwise)	283								

Figure 3

Simple Histogram Means of Interest, Experience, Confidence, and Attitude
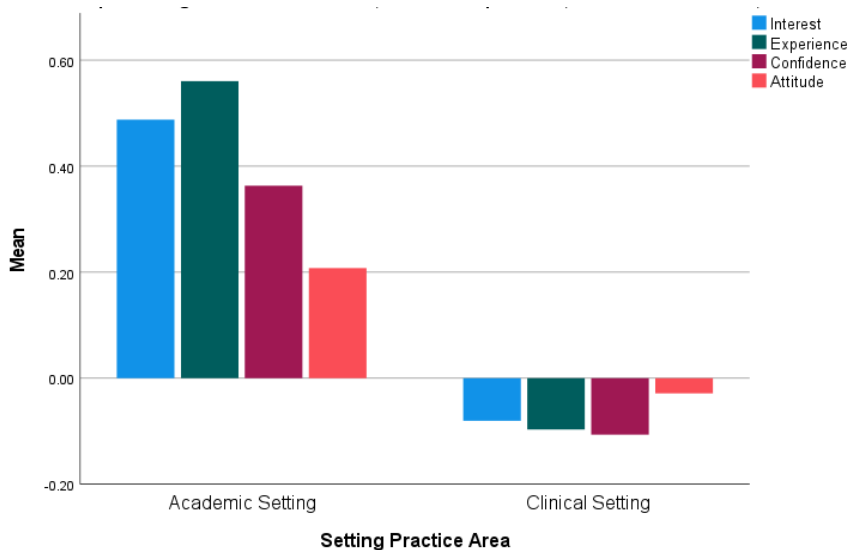
Figure 4

Normal P-P Plot of Interest
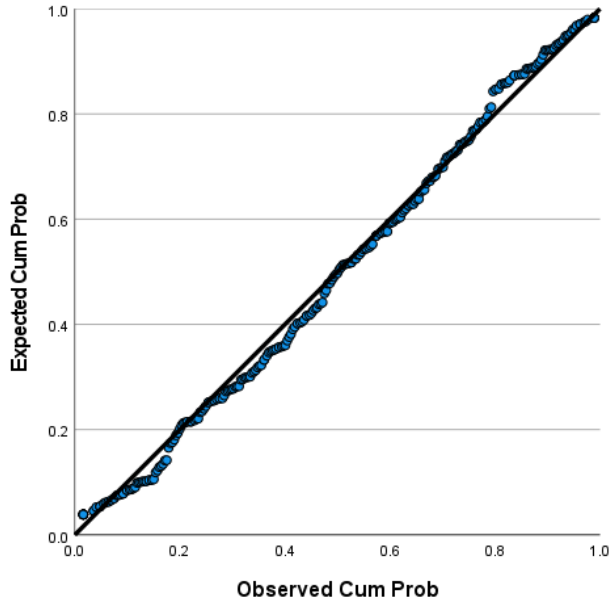
Figure 5

Normal P-P Plot of Experience
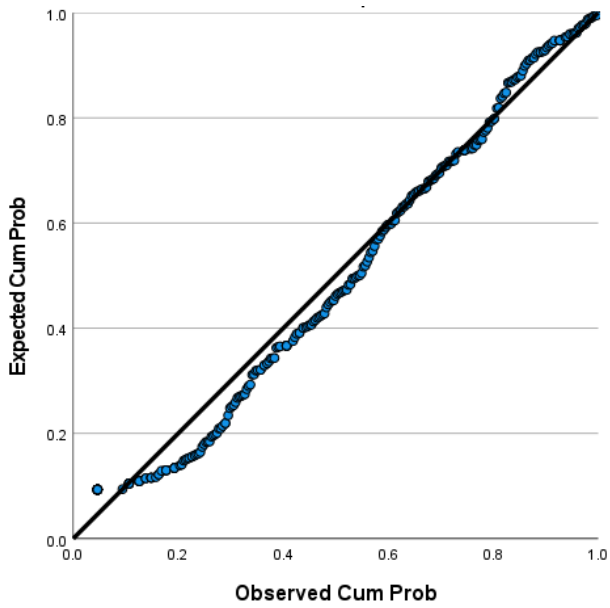
Figure 6

Normal P-P of Confidence
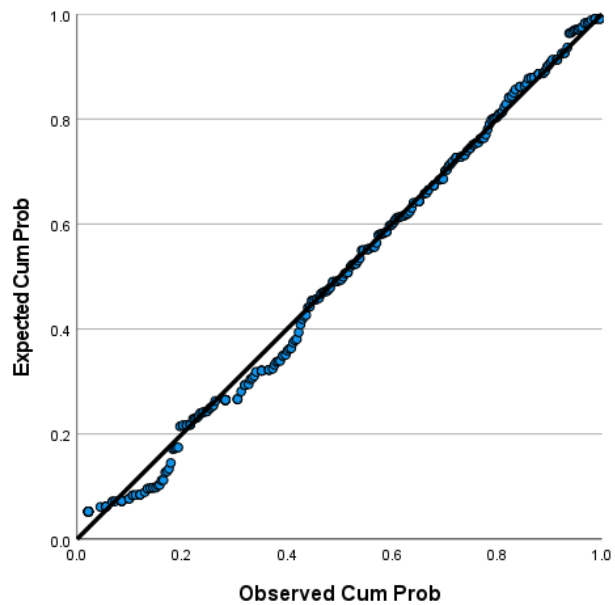
Figure 7

Normal P-P Plot of Attitude
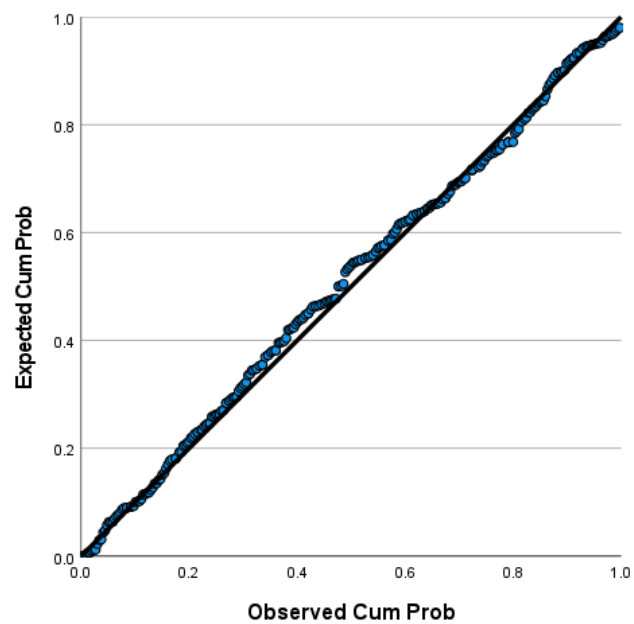
The sixth assumption of MANCOVA is the equality of covariance matrices which I tested using the general linear model multivariate analysis. Examining the Box's test of Equality of Covariance Matrices. Each of the dependent variables were analyzed; interest, experience, confidence, and attitude ($p = .018$) indicating statistical significance thus the assumption for equality of covariances matrices was not met (see Table 16).

Table 16

Box's Test of Equality of Covariance Matrices[a]

Box's M	69.036
F	1.532
df1	40
df2	2903.335
Sig.	.018

Note. Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.
[a] Design: Intercept + Setting + Degree

The seventh test of assumptions is for homogeneity of covariances using the Levene's test. I ran the test for homogeneity of covariance matrices for interest experience confidence, and attitude with the independent variable degree and covariance of setting statistical significance was not met (see Table 17) indicating there is no variance in the groups between the intercept, setting and degree of the RN. A nonsignificant result indicates that the matrices between the groups are generally equal indicating homogeneity of variance thus meeting the seventh assumption for homogeneity of covariances (Field, 2018).

Table 17

Levene's Test of Equality of Error Variances[a]

Variable	F	df1	df2	Sig.
Interest	1.185	4	278	.317
Experience	1.702	4	278	.150
Confidence	2.055	4	278	.087
Attitude	1.729	4	278	.144

Note. Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
[a] Design: Intercept + Setting + Degree

Because the MANCOVA assumptions for equality of covariances matrices were violated, I decided to use an ANCOVA to analyze the data.

ANCOVA Assumptions. The assumptions for ANCOVA are (a) normality, (b) independence, (c) linearity, and (d) homogeneity of regression slopes. I assessed the first assumption of normality and independence using descriptive statistics. The skewness and kurtosis were between -1 and +1 indicating the data were normally distributed (see Table 18).

Table 18

Statistics

	N		Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Variable	Valid	Missing				
Interest	283	0	0.163	0.145	-0.73	0.289
Experience	283	0	0.444	0.145	-0.67	0.289
Confidence	283	0	0.263	0.145	-0.535	0.289
Attitude	283	0	-0.418	0.145	0.529	0.289

I ran the Shapiro-Wilks test for each of the dependent variables controlling for practice setting. RNs' interest in research conduct was normally distributed in the

academic setting and not in the clinical setting (see Table 19). The RNs' experience in

research conduct was normally distributed in academic setting and not in the clinical

setting (see Table 19). The RNs confidence in research conduct was normally distributed

in the academic setting and not in the clinical setting (see Table 19). RNs' support and

opportunities in research conduct was normally distributed in the academic setting and

not in the clinical setting (see Table 19). RNs' motivation and individual roles and

characteristics in research conduct was not normally distributed across the academic and

clinical setting (see Table 19). The assumptions for normality were partially met when

analyzing by degree. However, ANCOVAs are robust with respect to normality of group

data (Laerd Statistics, 2023). The significance level was set at $p = .05$ indicating that if the

null hypothesis is true then there would be a 5% chance or less of the results not seeing

an effect on the RNs interest experience confidence, support and opportunities,

motivation, and individual roles and characteristics in the conduct of research (Laerd

Statistics, 2023). ANCOVA can tolerate skewed distributions of groups with minimal

effect of causing a Type 1 error (Bhandari, 2022b).

Table 19

Tests of Normality

Variable	Setting practice area	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Interest	Academic setting	.100	51	.200[*]	.981	51	.561
	Clinical setting	.054	232	.098	.974	232	<.001
Experience	Academic setting	.077	51	.200[*]	.985	51	.751
	Clinical setting	.110	232	<.001	.932	232	<.001
Confidence	Academic setting	.089	51	.200[*]	.973	51	.299
	Clinical setting	.062	232	.030	.967	232	<.001
Attitude	Academic setting	.135	51	.021	.923	51	.003
	Clinical setting	.034	232	.200[*]	.986	232	.019

* This is a lower bound of the true significance.
a. Lilliefors Significance Correction

I assessed the third assumption linearity by examining the correlations between the dependent variable and covariates The correlation was statistically significant between the covariate setting and the dependent variables interest, experience, confidence, and attitude (see Tables 20).

Table 20

Correlations

Variable		Setting practice area	Interest	Experience	Confidence	Attitude
Setting practice area	Pearson correlation	1	-.254**	-.295**	-.249**	-.206**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	283	283	283	283	283
Interest	Pearson correlation	-.254**	1	.680**	.543**	.450**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	283	283	283	283	283
Experience	Pearson correlation	-.295**	.680**	1	.742**	.522**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	283	283	283	283	283
Confidence	Pearson correlation	-.249**	.543**	.742**	1	.534**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	283	283	283	283	283
Attitude	Pearson correlation	-.206**	.450**	.522**	.534**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	283	283	283	283	283

**. Correlation is significant at the 0.01 level (2-tailed).

The fourth assumption is the test of homogeneity of regression which is used to test for the interaction between degree and setting using a univariate analysis of variance model. The degree and setting interaction were not statistically significant indicating that the homogeneity of regression was met. There were no significant interactions between the dependent variables interest, confidence, and the attitudinal subscales (see Table 21 - 24).

Table 21

Tests of Between-Subjects Effects DV Interest

Source	Type III Sum of Squares	df	M²	F	Sig.	Partial Eta Squared
Corrected Model	34.726[a]	9	3.858	5.726	<.001	.159
Intercept	3.612	1	3.612	5.360	.021	.019
Degree	2.644	4	.661	.981	.418	.014
Setting	1.333	1	1.333	1.978	.161	.007
Degree * Setting	5.374	4	1.344	1.994	.096	.028
Error	183.969	273	.674			
Total	218.718	283				
Corrected Total	218.695	282				

a. R Squared = .159 (Adjusted R Squared = .131)

Table 22

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	df	M²	F	Sig.	Partial Eta Squared
Corrected Model	53.220[a]	9	5.913	10.967	<.001	.266
Intercept	5.288	1	5.288	9.807	.002	.035
Degree	3.512	4	.878	1.628	.167	.023
Setting	2.676	1	2.676	4.964	.027	.018
Degree * Setting	6.297	4	1.574	2.920	.022	.041
Error	147.195	273	.539			
Total	200.415	283				
Corrected Total	200.415	282				

a. R Squared = .266 (Adjusted R Squared = .241)

Table 23

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M^2	F	Sig.	Partial Eta Squared
Corrected Model	23.961[a]	9	2.662	6.878	<.001	.185
Intercept	1.583	1	1.583	4.089	.044	.015
Degree	3.101	4	.775	2.003	.094	.029
Setting	.556	1	.556	1.435	.232	.005
Degree * Setting	3.633	4	.908	2.347	.055	.033
Error	105.670	273	.387			
Total	129.637	283				
Corrected Total	129.631	282				

a. R Squared = .185 (Adjusted R Squared = .158)

Table 24

Tests of Between-Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M^2	F	Sig.	Partial Eta Squared
Corrected Model	4.816[a]	9	.535	2.982	.002	.089
Intercept	.640	1	.640	3.564	.060	.013
Degree	.873	4	.218	1.216	.304	.018
Setting	.347	1	.347	1.933	.166	.007
Degree * Setting	1.316	4	.329	1.833	.123	.026
Error	48.999	273	.179			
Total	53.818	283				
Corrected Total	53.816	282				

a. R Squared = .089 (Adjusted R Squared = .059)

The fifth assumption is the tests of homogeneity of variances which is used to assess if the comparison groups have the same variances. The Box's test of equality of covariance matrices test indicated that the observed covariances matrices of the dependent variables were equal across the RN groups (Bhandari, 2022a; Laerd Statistics, 2023). Therefore, homogeneity of variance was not violated, and the RN groups had independence, normality, and linearity (Bhandari, 2022a; Laerd Statistics, 2023).

Levene's test indicated the assumption of homogeneity of variance was not violated for

each of the dependent variables (see Table 25).

Table 25

Levene's Test of Equality of Error Variances[a]

Dependent Variable	F	*df1*	*df2*	Sig.
Interest	1.185	4	278	.317
Experience	1.702	4	278	.150
Confidence	2.055	4	279	.087
Attitude	1.729	4	278	.144
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.				

a. Design: Intercept + Degree + Setting

ANCOVA Results

I used a univariate ANCOVA to analyze my research question "What is the

difference in the level of interest, experience, confidence, and attitude toward conducting

research between RNs who work in clinical settings compared to RNs who work in

academic settings controlling for different degree achievement?" I used the test between

the means to analyze each dependent variable interest, experience, confidence, and

attitudinal scales: support and opportunities, motivation, and individual roles and

characteristics, the analysis by dependent variable are listed below.

Interest. I analyzed the RNs level of interest toward conducting research by

academic degree controlling for practice setting using a univariate ANCOVA. The RNs

in the clinical practice setting (n = 232, M=10) had less interest in research conduct than

the academic practice setting (n = 51, M=49).

A test of between-subject effects main effects identified statistical significance for

the RNs interest in research conduct for the practice setting, [M=14.069 $F(1,281)$ =

19.320, $p <.001$]. The tests of between-subjects effects main effect for degree, [M=3.82

$F(4,277) = 5.589$, $p <.001$], and practice setting [M=2.85 $F(1,277) = 4.17$, $p = .042$],

found there was a statistical difference in the RNs interest in research conduct. Therefore,

the null hypothesis was rejected.

Next, I ran a univariate ANCOVA to determine where the difference was in the

practice setting group as compared to the RNs degree in interest of research conduct (see

Table 26). The test of between-subjects effects with degree found the degree as compared

to practice setting had an impact on the RNs interest in research conduct. There was no

significant interaction between degree and setting, for the dependent variable interest (see

Table 26).

Table 26

Tests of Between-Subjects Effects DV Interest

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	34.726[a]	9	3.858	5.726	<.001
Intercept	9.976	1	9.976	14.803	<.001
Degree	11.165	4	2.791	4.142	.003
Setting	1.333	1	1.333	1.978	.161
Degree * Setting	5.374	4	1.344	1.994	.096
Error	183.969	273	.674		
Total	218.718	283			
Corrected Total	218.695	282			

a. R Squared = .159 (Adjusted R Squared = .131)

The clinical practice setting (M=0.48) compared to the academic practice setting

(M=0.10) without the interaction of the degree did have statical significance ($p <.001$),

which indicates that setting alone, regardless of the RN's academic degree level,

influenced how RNs respond to interest in research conduct. When assessing the RNs

degree *p*<.001 and practice setting *p* = .042 without interaction, there is statistical

significance indicating the RNs interest in research conduct is dependent on the RNs

degree and practice setting independently.

The effect size for *t* tests can be calculated using a Cohen's d calculation for

populations greater than 20, if groups have unequal variances, the variance Cohen's d

calculation is used for *t* tests (Cohen, 1988; Field, 2018). The Cohen's d effect ranges for

small are 0.2, medium effect 0.5 and large effect 0.8 or greater (Cohen, 1988). To assess

effect size for ANOVA or ANCOVA the partial eta-squared methods is used with a small

effect at 0.01, medium effect at 0.06, and large effect 0.14 (Field, 2018). The covariate,

practice setting, was significantly related to the participants' interest, $F(1, 277) = 4.17$, *p*=

0.042, *d* = .97, indicating a large effect size (Cohen, 1988). There was also a significant

effect of degree for the difference of interest in research conduct after controlling for the

effect of practice setting, $F(4, 273) = 4.14$, $p = 0.003$, partial $\eta^2 = 0.057$, indicating degree

had a medium effect size. The null hypothesis was rejected for interest.

Experience. I analyzed the RNs level of experience toward conducting research

by academic degree controlling for practice setting using a univariate ANCOVA which

revealed that RNs in the clinical practice settings had less experience (n = 232, *M* = 0.18,

SD = 0.87) than RNs in the academic practice setting (n = 51, *M* = 0.48, *SD* = 0.75)

conducting research.

A test of between-subject effects main effects with practice setting, indicated

statistical significant regarding the RNs experience in research conduct (see Table 27).

The tests of between-subjects effects main effects with degree, and practice setting,

revealed there was a statistically significant difference in the RNs experience in research

conduct (see Table 28). The null hypothesis is rejected.

Table 27

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	17.480ᵃ	1	17.480	26.851	<.001
Intercept	7.146	1	7.146	10.977	.001
Setting	17.480	1	17.480	26.851	<.001
Error	182.934	281	.651		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .087 (Adjusted R Squared = .084)

Table 28

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	46.923ᵃ	5	9.385	16.936	<.001
Intercept	5.367	1	5.367	9.686	.002
Degree	29.442	4	7.361	13.283	<.001
Setting	2.509	1	2.509	4.528	.034
Error	153.492	277	.554		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .234 (Adjusted R Squared = .220)

Next, I ran a univariate ANCOVA to determine where the difference was in the

practice setting group as compared to the RNs degree and experience in research conduct

(see Table 29). The test of between-subjects effects for experience with degree found the

degree as compared to practice setting had an impact on the RNs experience in research

conduct. There was significant interaction between degree and setting, for the dependent

variable experience (see Table 29).

Table 29

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	53.220[a]	9	5.913	10.967	<.001
Intercept	9.643	1	9.643	17.884	<.001
Degree	15.655	4	3.914	7.259	<.001
Setting	2.676	1	2.676	4.964	.027
Degree * Setting	6.297	4	1.574	2.920	.022
Error	147.195	273	.539		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .266 (Adjusted R Squared = .241)

The clinical practice setting (53%) compared to the academic practice setting

(12%) without the effects of the degree were statically significant (p <.001) indicating

setting alone, regardless of the RN's academic degree level, does influence the RNs level

of experience in research conduct. RNs practicing in the academic practice setting were

more likely to have more experience in research conduct (53%) when compared to RNs

practicing in the clinical setting (12%). The null hypothesis is rejected as there is a

difference in the level of the RNs experience in conducting research based on the RNs

practice setting.

The effect size for T-tests can be calculated using Cohen's d calculation for

populations greater than 20, if groups have unequal variances, the variance Cohen's d

calculation is used for T-tests (Cohen, 1988; Field, 2018). The Cohen's d effect ranges

for small are 0.2, medium effect 0.5 and large effect 0.8 or greater (Cohen, 1988). To

assess effect size for ANOVA or ANCOVA the partial eta-squared methods is used with a small effect at 0.01, medium effect at 0.06, and large effect 0.14 (Field, 2018). The covariate, practice setting, was significantly related to the participants' experience, $F(1, 273) = 4.96$, $p= 0.027$, d=.96, indicating a large effect size (Cohen, 1988). There was also a significant effect of degree for the difference of experience in research conduct after controlling for the effect of practice setting, $F(4, 273) = 7.26$, $p <.001$, partial $\eta^2 = 0.22$, indicating degree also had a large effect size. The null hypothesis was rejected for experience.

Confidence. I analyzed the RNs level of confidence in conducting research by academic degree controlling for practice setting using a univariate ANOVA. The academic practice setting (n 51, $M = 0.36$, SD $= 0.63$) had higher confidence in research conduct than the clinical practice setting (n 232, $M = -0.07$, SD $= 0.66$).

A test of between-subject effects main effects with practice setting found statistical significance. The RNs confidence in research conduct is dependent on the practice setting (see Table 30). The tests of between-subjects effects main effects for degree, and practice setting, revealed no statistical significance for the practice area (see Table 31). The null hypothesis was retained.

Table 30

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	8.016ᵃ	1	8.016	18.523	<.001
Intercept	3.507	1	3.507	8.103	.005
Setting	8.016	1	8.016	18.523	<.001
Error	121.614	281	.433		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .062 (Adjusted R Squared = .059)

Table 31

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	20.327ᵃ	5	4.065	10.303	<.001
Intercept	3.547	1	3.547	8.989	.003
Degree	12.311	4	3.078	7.800	<.001
Setting	.951	1	.951	2.410	.122
Error	109.303	277	.395		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .157 (Adjusted R Squared = .142)

Next, I ran a univariate ANCOVA to determine where the difference was in the practice setting group as compared to the RNs degree. The test of between-subjects effects interaction with degree and setting, identified the degree and setting had no effect on the RNs confidence in research conduct (see Table 32). There was no significant interaction between degree and setting, for the dependent variable confidence and revealed no statistical significance for the practice area (see Table 32). The null hypothesis was retained.

Table 32

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	23.961ᵃ	9	2.662	6.878	<.001
Intercept	4.613	1	4.613	11.918	<.001
Degree	9.307	4	2.327	6.011	<.001
Setting	.556	1	.556	1.435	.232
Degree * Setting	3.633	4	.908	2.347	.055
Error	105.670	273	.387		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .185 (Adjusted R Squared = .158)

The clinical practice setting (36%) compared to the academic practice setting (7%) without the effects of the degree was statistically significant ($p < .001$) which indicates that setting alone, regardless of the RN's academic degree level, does influence how the RN responds to the level of confidence in research conduct. RNs practicing in the academic practice setting were more likely to have confidence in research conduct as compared to RNs practicing in the clinical setting. Therefore, the null hypothesis was retained.

Attitude. I analyzed the RNs level of attitude toward conducting research by academic degree controlling for practice setting using a univariate ANOVA. The academic practice setting (n 51, $M = 0.19$, SD = 0.45) had positive attitudes toward research conduct than the clinical practice setting (n 232, $M = -.04$, SD = 0.42).

A test of between-subject effects main effect for the RNs attitude in research conduct in the practice setting found statistical significance. The RNs attitude toward research conduct is dependent on the practice setting (see Table 33). The tests of

between-subjects effects main effect for degree and the RNs attitude toward research

conduct and practice setting revealed there was no statistical difference for degree (see

Table 34). There is statistically significant difference in the practice setting for the RNs

attitude toward research conduct. The null hypothesis is rejected.

The effect size for T-tests can be calculated using a Cohen's d calculation for

populations greater than 20, if groups have unequal variances, the variance Cohen's d

calculation is used for T-tests (Cohen, 1988; Field, 2018). The Cohen's d effect ranges

for small are 0.2, medium effect 0.5 and large effect 0.8 or greater (Cohen, 1988). The

covariate, practice setting, was significantly related to the participants' attitude, $F(1, 277)$

= 5.31, p= 0.022, d=.98, indicating a large effect size (Cohen, 1988).

Table 33

Tests of Between-Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	2.292[a]	1	2.292	12.498	<.001
Intercept	1.006	1	1.006	5.487	.020
Setting	2.292	1	2.292	12.498	<.001
Error	51.524	281	.183		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .043 (Adjusted R Squared = .039)

Table 34

Tests of Between-Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	3.500[a]	5	.700	3.854	.002
Intercept	.387	1	.387	2.129	.146
Degree	1.209	4	.302	1.664	.159
Setting	.965	1	.965	5.311	.022
Error	50.315	277	.182		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .065 (Adjusted R Squared = .048)

Next, I ran a univariate ANCOVA to determine if there was an interaction between the practice setting as compared to the RNs degree and attitude toward research conduct. The test of between-subjects effects interaction with degree, identifying the degree as compared to practice setting had no impact on the RNs attitude of research conduct (see Table 35). There was no significant interaction between degree and setting, for the dependent variable confidence [M=0.329 $F(4,273) = 1.833$, $p = .123$] (see Table 35). The null hypothesis was retrained.

Table 35

Tests of Between-Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	4.816[a]	9	.535	2.982	.002
Intercept	1.040	1	1.040	5.793	.017
Degree	1.033	4	.258	1.438	.222
Setting	.347	1	.347	1.933	.166
Degree * Setting	1.316	4	.329	1.833	.123
Error	48.999	273	.179		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .089 (Adjusted R Squared = .059)

Relationship, Interest, Experience, Confidence, Attitude

A Pearsons Correlation analysis was conducted to assess if a relationship exists between the independent and the dependent variables. The correlation analysis found a relationship exists between interest, experience, confidence and attitude in the academic and clinical practice setting (see Table 36-38). A relationship was also identified between the variables degree and interest, experience, confidence and attitude (see Table 38).

Table 36

Correlations Academic Setting[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.675[**]	.250	.212
	Sig. (2-tailed)		<.001	.076	.136
	N	51	51	51	51
Experience	Pearson Correlation	.675[**]	1	.618[**]	.547[**]
	Sig. (2-tailed)	<.001		<.001	<.001
	N	51	51	51	51
Confidence	Pearson Correlation	.250	.618[**]	1	.479[**]
	Sig. (2-tailed)	.076	<.001		<.001
	N	51	51	51	51
Attitude	Pearson Correlation	.212	.547[**]	.479[**]	1
	Sig. (2-tailed)	.136	<.001	<.001	
	N	51	51	51	51

[**]. Correlation is significant at the 0.01 level (2-tailed).
a. Setting Practice Area = Academic Setting

Table 37

Correlations Clinical Setting[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.652**	.559**	.462**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	232	232	232	232
Experience	Pearson Correlation	.652**	1	.743**	.482**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	232	232	232	232
Confidence	Pearson Correlation	.559**	.743**	1	.516**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	232	232	232	232
Attitude	Pearson Correlation	.462**	.482**	.516**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	232	232	232	232

**. Correlation is significant at the 0.01 level (2-tailed).
a. Setting Practice Area = Clinical Setting

Table 38

Correlations Degree

Variable	Source	Degree	Interest	Experience	Confidence	Attitude
Degree	Pearson Correlation	1	.344**	.470**	.367**	.203**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	Sum of Squares and Cross-products	262.551	82.497	107.771	67.753	24.121
	Covariance	.931	.293	.382	.240	.086
	N	283	283	283	283	283
Interest	Pearson Correlation	.344**	1	.680**	.543**	.450**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	Sum of Squares and Cross-products	82.497	218.695	142.359	91.470	48.784
	Covariance	.293	.776	.505	.324	.173
	N	283	283	283	283	283
Experience	Pearson Correlation	.470**	.680**	1	.742**	.522**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	Sum of Squares and Cross-products	107.771	142.359	200.415	119.665	54.194
	Covariance	.382	.505	.711	.424	.192
	N	283	283	283	283	283
Confidence	Pearson Correlation	.367**	.543**	.742**	1	.534**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	Sum of Squares and Cross-products	67.753	91.470	119.665	129.631	44.597
	Covariance	.240	.324	.424	.460	.158
	N	283	283	283	283	283
Attitude	Pearson Correlation	.203**	.450**	.522**	.534**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	Sum of Squares and Cross-products	24.121	48.784	54.194	44.597	53.816
	Covariance	.086	.173	.192	.158	.191
	N	283	283	283	283	283

**. Correlation is significant at the 0.01 level (2-tailed).

The academic practice setting (19%) compared to the clinical practice setting (4%) without the effects of the degree was statistically significant ($p < .001$) which indicates that setting alone, regardless of the RN's academic degree level does influence the RN attitude toward research conduct. RNs practicing in the academic practice setting

were more likely to have positive attitude toward research conduct when compared to RNs practicing in the clinical setting. I rejected the null hypothesis.

Reliability and Validity: Cronbach's Alpha

I used a series of Likert scales to assess the RNs interest, experience, confidence and attitude regarding research conduct. The interest, experience, and confidence scales were all independent scales each consisting of 16 items. All three scales had a Cronbach's alpha value of $\alpha = .96$. The final scale measured nurses' attitude regarding research conduct. The attitudinal scales included three sub scales (Support and Opportunities, Motivation, Individual Roles & Characteristics) and used a Likert scale to identify nurses' attitude and perception of research. The combined sub-scales consisted of 34 items with a Cronbach Alpha value of $\alpha = .94$. All scales indicated each grouping of items have an excellent internal consistence ($\alpha > 0.90$). When the attitudinal scales were assessed individually according to the three subscales, support and opportunities, motivation, and individual roles and characteristics the Cronbach's Alpha values remain strong to high respectively $\alpha = .95$, $\alpha = .92$, $\alpha = .73$ (Laerd, 2023).

Discussion

Interpretation

Interpretation of Results to Literature

The RNs positive interest in research within the academic setting supports earlier studies regarding research utilization (evidence-based practice) findings (Eller et al., 2003, Vijayalakshmi et al., 2014, Ross & Burrell, 2019). Past research indicated RNs agreed that research is positive for the nursing profession and that implementing research

findings and creating evidence-based practice was beneficial to the RN's practice. My findings identified that RNs have positive perceptions concerning implementing evidence-based practice and agreed that research advances nursing practice; however, RNs have low interest in generating and developing research ideas and questions. My study identified RNs' confidence in reviewing literature and finding relevant literature for nursing practice.

The findings could offer insight into past research constraints, perceptions, and attitudes of nursing students and RNs who identified research as a "stressful and complex subject" and "difficult to understand concepts of research" (Vijayalakshmi et al., 2014). My results indicated RNs had little to no confidence in developing research questions, aims, hypotheses, and objectives and little confidence in writing research proposals. My research indicated RNs expressed little confidence when using qualitative research methods and analyzing and interpreting qualitative results. My study found that RNs reported no confidence in giving an oral presentation at a national or international conference but did have confidence in presenting locally. My study also identified RNs identified no confidence in writing and publishing in research journals.

RNs in my study reported little to no experience or confidence in engaging in research using quantitative or qualitative methods, analyzing data, interpreting, and presenting or publishing research. My findings add insight into previous findings by Eller et al. (2003) and Ross and Burrell (2019), showing that RNs find research results confusing and challenging to read, resulting in decreased interest and research experience. Past studies have also reported a low level of knowledge and practice related

to research and the engagement of research conduct (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014). Additionally, past systematic reviews of nursing research models identified inadequate quality in research publications, and unstructured frameworks were based on subjections rather than theoretical models (Moody, 2005; Ross & Burrell, 2019). My study findings identifying the RNs low interest, experience, and confidence in developing and conducting research could offer insight into poor quality identified by Moody (2005) and Ross and Burrell (2019). The RNs low experience and confidence in my study results suggest that the educational pathway does not provide opportunities to develop knowledge and practice skills regarding research conduct.

My research found the RNs attitudinal perceptions of research conduct identified that RNs agree there are available resources, education, and opportunities to engage in research; however, they are not aware of training opportunities or funding related to research and are evenly distributed between unsure and agree if their managers support research. Educators and leadership within a six-health system hospital responded that they received support for education and access to resources such as the medical libraries for research utilization (Silka & Stombaugh, 2012). The bedside clinical nurses reported barriers to research utilization as lack of time, overwhelming, and not knowing how to identify support resources (Silka & Stombaugh, 2012). Most studies on research utilization found that RNs perceive there is a lack of support from their managers and senior leadership, however when a designated nurse scientist was part of the institution

RNs reported feeling supported and mentored by the nurse scientist (Karlberg et al., 2021; Nowlin et al., 2021; Patterson et al., 2013; Silka et al, 2012; Spiva et al, 2017).

My findings support previous nursing research utilization (evidence-based practice) study's findings that RNs, in general, have a low interest in engagement in research and a high level of interest in research utilization (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). Nursing research practice priorities include expertise in research, accountability for development, implementation, coordination, and research evaluation (nIH Clinical Center, 2020).

Interpretation of Theoretical Framework

The survey questions I used in the study align with the NIH and KT frameworks, assessing the RNs' interest, experience, confidence, and attitude to develop and implement research and dissemination. The KT supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge.

My survey assessed the RNs perceived role, confidence, skill, knowledge, competence, and training needs. Most RNs respondents agreed they possessed the necessary skills to conduct research identifying the user group. The known issues related to the RNs low level of interest and experience in research conduct are skill and knowledge. The confidence scales further identified research and the researcher's relationship, outlining RNs low confidence in the engagement of research conduct as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of*

Human Subjects, 2021). While nurses' educational curriculum layers in advancing research knowledge, the results of my study and other research indicated additional training, education, knowledge, and opportunities are needed based on the RNs interest, experience, confidence, and attitude toward research conduct (Cetinkaya et al., 2020; Coke, 2021; Patterson et al., 2013; Silka et al., 2012).

The phenomenon of interest, the nurse's knowledge, and perceptions of research are significant in my findings interrelating theoretical interest, experience, confidence and attitude. My research supports the nursing research conduct knowledge model as a conceptual model for research knowledge and conduct. My exploratory theory nursing research conduct knowledge model identifies relationships between the practice setting and the RNs knowledge of research conduct. The phenomenon of knowledge translation theory interconnects the user group of the RN, known negative perceptions of research by the user group, outlines negative and unknown relationships of the researcher by conducting correlational research on the RNs interest, experience, confidence, and attitude of research conduct. Using the self-reported survey tool to understand the RNs perception of research offers conceptual and propositional methods to engage and understand the RNs research practice knowledge regarding nursing knowledge thru education, research conduct, human subject protection knowledge and ethical conduct of the RNs knowledge.

Limitations

My initial research design for the MANCOVA created limitations related to the unequal distribution in the degree groups, and I could not use the MANCOVA method

for analysis. The assumption of multivariate normality was not met for the MANCOVA in the motivation group for the scales assessing attitudinal responses. The violation of normality violated the homogeneity of covariances matrices due to sample size within groups, as the degree groups were not evenly distributed (Bhandari, 2022a; Laerd, 2023). Skewed distributions do not adversely affect ANCOVA results with minimal effect of causing a Type 1 error (Bhandari, 2022b). As ANCOVAs are robust regarding normality, I changed the analysis to ANCOVA for the final analysis (Laerd, 2023). Using the covariate in my design created limitations as respondents in each independent variable of degree could share variances within the covariate's academic and clinical practice settings. Thus, the covariate does not control for or balance out the differences in the interaction between degree and setting (Field, 2018).

Implications

Although there are no studies to date that have investigated the constructs, perceptions, and attitudes of nurses based on practice setting, there are studies that identified that RNs have negative perceptions of research utilization, known as evidence-based practice (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014). My results revealed that RNs practicing in an academic setting have positive interest, experience, confidence, and attitude toward research. Further understanding RNs' interest, experience, confidence, and attitude in research conduct could offer additional educational and knowledge-sharing modalities to support the positive interest, experience, confidence, and attitudes of RNs in the academic setting.

The RNs lack of interest, experience and confidence in research could have negative and positive outcomes for the nursing profession. The adverse outcomes for the nursing profession are that RNs in my study reported negative perceptions and attitudes toward increasing the body of knowledge by conducting research and contributing to the literature. The negative responses in my research toward experience in research conduct in writing and publishing in academic research journals and reading and interpreting research results signal a concern for developing new research to disseminate into clinical practice as evidence-based practice from the nursing profession. Additionally, RNs not engaging in research conduct impacts the RNs ability to interact with local and national stakeholders to collaborate and generate new knowledge for patient care modalities and models (Hickman et al., 2018).

The positive outcome is identifying new knowledge to contribute to the body of knowledge within nursing practice. RNs engaging in research concepts and research conduct can contribute to the nursing process by developing theory, vision, and social directives (Gray et al., 2017). Increasing the RNs engagement in research conduct can have a positive social impact at the organizational and national levels by adding to the national body of nursing knowledge. The potential to impact the nursing profession by identifying methodologies to increase the awareness and need for the PhD-prepared nurse to support research conduct within the nursing profession can impact the nursing profession as a whole and social change at the national level (Hickman et al., 2018).

Recommendations

My study aimed to generate new knowledge of the RN related to the development, creation, and implementation of research by the RN. The survey instrument assessed the RNs interest, experience, confidence, and attitude toward research conduct practices among RNs. At the time of this research, there were no known studies of research conduct and the RN to compare results to regarding the RNs interest, experience, confidence, and attitude of original research conduct; this research compared existing literature on research utilization (EBP) practices to the study results. Additional research on the RN and research conduct is recommended.

Recommendations to further this research would be to repeat the study with a larger sample size to analyze the data with a MANCOVA. A larger sample size is also needed to increase the result outcomes by providing equal distributions between independent groups. A randomized design for future studies would create equal variances between the degree and covariate, ensuring equal distributions between degree and setting were included in the sample size for analysis using setting as the covariate. Creating a mixed methods methodology to the study design offering quantitative and qualitative results could offer additional insights into the RNs perceptions and attitudes of research conduct.

Conclusion

My research was conducted to understand the RNs interest, experience, confidence, and attitude toward conducting research assessing educational degree levels while looking at the academic and clinical practice settings. Using my conceptual model,

nursing research conduct knowledge conceptual model, and the KT as the framework assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge to understand the RNs perceptions of research conduct. I conducted my study, which aligned with the call from the AACN and NINR to understand national trends and nursing perceptions regarding nursing research and the RN degree pathway. RNs of all educational levels have identified the importance of research to their practice while also indicating RNs find research challenging to engage in and understand, as identified in various research utilization studies and within my research findings (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). While I found no interaction between the RNs degree and practice setting, there was statistical significance indicating the RNs practice setting impacts the RNs interest, experience, confidence, and attitude toward research conduct. RNs practicing in an academic setting had positive perceptions of research conduct. At the same time, RNs practicing in a clinical setting have negative to neutral perceptions toward research conduct. My findings suggest that RNs practicing in an academic setting have additional support, time, and resources to practice in a positive research environment. My research findings add to the body of knowledge to further understand the RNs' interest, experience, confidence, and attitude toward research conduct. Understanding the RNs attitude regarding research conduct could offer opportunities to improve upon knowledge to support interest, experience, and confidence in research conduct.

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1149

Difference Between the RNs' Educational Preparation and Research Conduct

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Outlet for Manuscript

Nurse Educator is a peer-reviewed journal for nursing faculty and nurse educators in the academic and clinical practice setting (n*urse Educator*, 2021). The *Nurse Educator* features topics related to developing nursing curriculum, courses, and nurse faculty development; teaching and learning in nursing programs and research in nursing education (n*urse Educator*, 2021). The *Nurse Educator* publishing standards are developed with the guidance of the editorial advisors (nurse Educator, 2021). Manuscript submissions are assessed for relevance, accuracy, and practicality to nursing educators (n*urse Educator*, 2021). Manuscript submissions recommend submitting a query letter and the manuscript submissions should be written in American Medical Association (AMA) style (11th ed.; *Nurse Educator*, 2021). Original research works must be approved by the institutional review board (IRB) and informed consent (n*urse Educator*, 2021). The *Nurse Educator* recommends research works include an introduction, methods, results, and discussion sections with a maximum page length of approximately 16 pages including abstract through references (n*urse Educator*, 2021). The author guidelines for the *Nurse Educator* can be found here:

https://edmgr.ovid.com/ne/accounts/ifauth.htm

Abstract

The educational pathway of the RN incorporates multiple modalities of research curriculum for training in clinical practice and fundamental research knowledge from the baccalaureate to the doctoral prepared degree. Research utilization studies identified that RNs' express difficulty understanding research, statistical methods, research concepts, and research conduct (Sisson & Ryan, 2017). Nursing professional standards reveal that a focus on research during educational preparation is key throughout the development of the RN from bachelor to doctoral academic preparation. This study was a quantitative, cross-sectional, nonexperimental, correlational study to assess the relationship and degree of association between nurses' educational degree level and interest, experience, and attitude of research conduct. A multivariate analysis of variance was used to analyze the data, $N = 283$ RNs. Results revealed there is a difference in the RNs degree achievement and the RNs perceptions and attitudes of research conduct. Conclusions identified RNs with graduate degree levels had high effect sizes as compared to RNs with undergraduate degrees. The graduate degree RNs had higher positive Pearson's correlation toward interest, experience, confidence and attitudes of research conduct. The Walden University Institutional Review Board oversaw a full board review for this study and consent form.

The keywords: *Nurse Scientist, nurse(s), interest, experience, confidence, attitudes, attitude, beliefs, perceptions, values, education, research conduct, research, clinical research, mentorship, mentor, research knowledge, nursing degree, BSN, MSN, DNP, PhD*

Introduction

The National Institutes of Health (nIH) clinical center established a framework to identify the RN at the undergraduate and graduate level, as an essential part of the research team emphasizing patient safety, care, and informed participation to endow national leadership for research (nIH Clinical Center, 2020). The NIH framework for the RNs research practice includes expertise in research, accountability for development, implementation, coordination and evaluation of research and care during research providing continuity of care and advocacy for the human research subject (nIH Clinical Center, 2020). The NIH Clinical Nursing Center identified entry-level to engage in research commences at the bachelor's degree level to prepare nurses for the clinical research nurse (CRN) role. The NIH listed career advancement practice areas for the masters and doctoral-prepared nurses in research as advanced practice nurses, Pre-Doctoral/Doctoral students, Post-Doctoral training and clinical nurse scientists (nIH Clinical Center, 2020). The NIH defined clinical research as "patient-oriented research on human subjects or material of human origin issues, specimens, and cognitive phenomena for which an investigator directly interacts with human subjects" (nIH Grants & Funding, 2021, para4). The clinical research definition further incorporates epidemiological and behavioral studies, outcomes research and health services research (nIH Grants & Funding, 2021). The NIH provides a separate and distinct definition of clinical trials to distinguish between clinical trials and clinical research, offering additional context (nIH Grants & Funding, 2021). The NIH defines clinical trials as practice comprised within the framework of clinical research and the impact that healthcare teams including the RN

engages in conduct with respect to mechanisms of human disease, therapeutic interventions, clinical trials, and development of new technologies (nIH Grants & Funding, 2021).

Educational Pathway

There are two distinct pathways for doctoral nursing programs one is research-focused, and the other is practice-focused (AACN, 2020). The Doctor of Philosophy (PhD) prepares RNs as nurse scientists and scholars, curriculum is focused on scientific content and research methodologies (AACN, 2017). The Doctor of Nursing Practice (DNP) prepares the RN as an expert in specialized advanced nursing practice; the curriculum focuses on evidence-based practice, applying credible research findings (AACN, 2017). The RN receives knowledge and training concerning the use of research findings and research outcomes throughout the nurses' educational pathway; however, a knowledge gap remains regarding research practice knowledge and research conduct of RNs (Burkhart & Hall, 2015; Pintz et al, 2018). There is a decline of enrollment in PhD nursing programs, at a rate of 9.6% since 2014, it is critical to understand why RNs do not engage in research (AACN, 2020). The AACN and NINR indicated it is not currently known why there is a decrease in PhD enrollment and that nursing research studies are needed to identify national trends and nursing perceptions regarding nursing research and research degree pathway for the PhD (AACN, 2020; NINR, 2019). The purpose of this research was to understand the attitude of RNs regarding research conduct based on their degree level.

The entry level for the RNs educational pathway is the baccalaureate level (AACN, 2021). Baccalaureate education provides a basic understanding of how evidence is developed, including the research process, clinical judgment, interprofessional perspectives, and patient preference as applied to practice (AACN, 2021). This basic understanding serves as a foundation for more complex research applications at the graduate level (AACN, 2006). Baccalaureate nurses integrate reliable evidence from multiple ways of knowing to inform practice and make clinical judgments (AACN, 2021).

The essentials of a baccalaureate program prepare the graduate to: (a) explain the interrelationships among theory, practice, and research. (b) demonstrate an understanding of the basic elements of the research process and models for applying evidence to clinical practice. (c) advocate for the protection of human subjects in the conduct of research. (d) evaluate the credibility of sources of information, including but not limited to databases and Internet resources. (e) participate in the process of retrieval, appraisal, and synthesis of evidence in collaboration with other members of the healthcare team to improve patient outcomes. (f) integrate evidence, clinical judgment, interprofessional perspectives, and patient preferences in planning, implementing, and evaluating outcomes of care. (g) collaborate in the collection, documentation, and dissemination of evidence. (h) acquire an understanding of the process for how nursing and related healthcare quality and safety measures are developed, validated, and endorsed and (h) describe mechanisms to resolve identified practice discrepancies between identified standards and practice that may adversely impact patient outcomes (AACN, 2021). The master's prepared nurse supports

the conduct of the study in a supporting role of the clinical research coordinator, providing an advanced assessment of the human research subject (ANA & IACRN, 2016). The master's prepared nurse supports research by applying research outcomes to the practice setting (AACN, 2011). The DNP prepared nurse is engaged during the construction of the research protocol to incorporate practice needs, further advancing the nursing profession (AACN, 2017). The PhD prepared nurse develops, oversees, and analyzes the conduct of the research protocol. The nurse's educational background, knowledge and perceptions of research can create a positive connection to research outcomes based on educational experiences (AACN, 2006).

Significance

The decline in PhD-trained nurses, and their value and importance to health outcomes, was a topic of the 2019 National Nursing Research Roundtable (nNRR) which is co-sponsored by the Eastern Nursing Research Society and the National Institute of Nursing Research (nINR, 2019). Held annually, the Roundtable provides an opportunity for leaders of nursing organizations and societies with a research mission to discuss and disseminate research findings that improve health outcomes, and priorities in science, education, practice, and policy. To continue moving the nursing profession forward, two objectives must be met: nursing engaging in research conduct and translation of research findings (AACN, 2020; NINR, 2019). To view nurses as clinicians and scientists as a single collective unit is critical to emerging and engaging the next generation of nurse scientists and educators (nINR, 2019).

Understanding the RN's attitude regarding research participation and engagement from the undergraduate and graduate levels could offer insight into nurses' interest, experience, confidence, and attitude related to research conduct (Grimes-Stanfill et al., 2019). Assessing the nursing undergraduate's and graduate's knowledge regarding research conduct could provide insight to evaluate research curriculum based on the nurse's perception regarding research conduct and practice gaps while informing clinical practice outcomes (Grimes-Stanfill et al., 2019). Research studies have identified RNs are not engaging in research within the clinical practice settings and with a continued decline in the number of PhD prepared nurse scientists, the future of nursing research could be left without strong mentorship to support the next generation of nurse researchers (Pintz et al., 2018). Exposing students to research practice and conduct at the undergraduate level can support an increase in research skills to become engaged in research at various levels (Burkhart & Hall, 2015). Identifying the relationship between nurses' interest, experience, confidence, and attitude toward conducting research will assist in identifying a rationale regarding the nurse's selection to engage or not engage in research conduct.

I used the knowledge translation (KT) theory for the framework of this study. The concept of knowledge relates to the phenomenon of interest regarding nurse's knowledge and perceptions of nursing research conduct. KT was defined by the Canadian Institutes of Health Research (CIHR) as the engagement of morally just application of knowledge interactions between research and people to capture the positive advantages of research (2007). The KT supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge. This

researcher has created the conceptual model below titled the Theory, and Research

Knowledge practice model see figure 1 utilizing the five domains of practice of the

clinical research nurse. The conceptual model is the foundation to develop a plan for this

researcher to study the phenomenon of nursing research practice theory. The purpose of

this study was to determine if there is a relationship between educational degree and the

RNs attitude regarding research conduct; where past nursing research studies have

focused on the nurse's utilization of research in practice known as evidence-based

practice skills using attitude and perceptions as core constructs (Eller et al., 2003;

Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014).

Figure 1

Nursing Research Conduct Knowledge Model
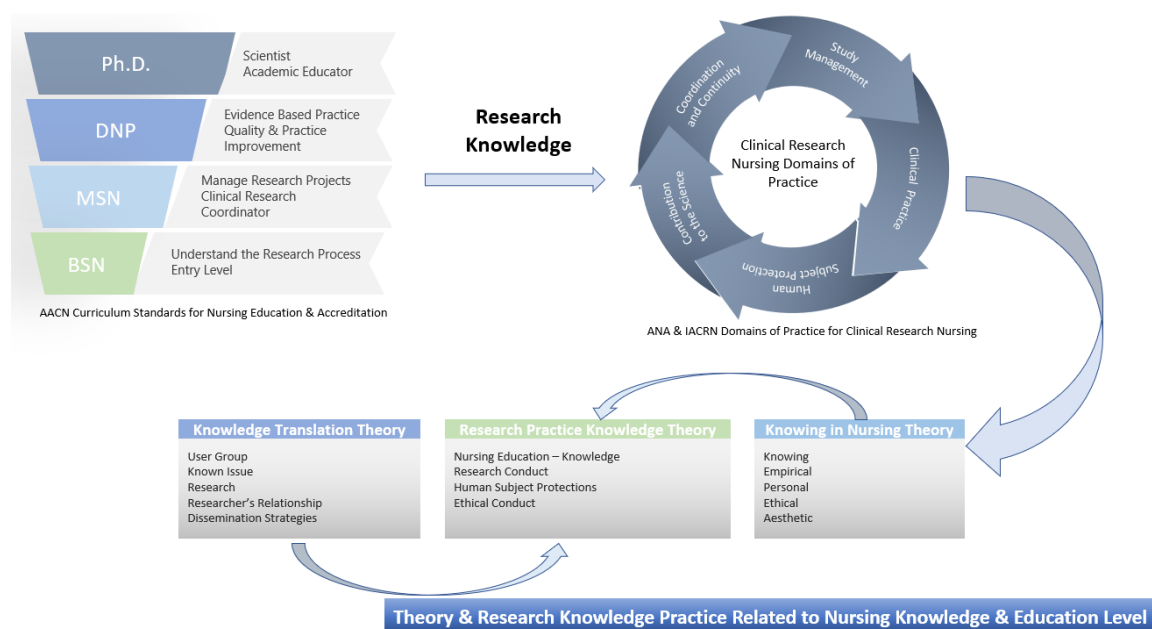
Relevant Scholarship

Clinical Research Practice Areas

The educational pathway for the RN builds in complexity scaffolding in layers of research knowledge from baccalaureate to the PhD prepared level. In collaboration with other healthcare team members, nursing graduates participate in documenting and interpreting evidence for improving patient outcomes in alignment with the nursing process (AACN, 2006). In all healthcare settings, ethical and legal precepts guide research conduct to protect the rights of patients eligible for, or subjects participating in, investigations (ANA & IACRN, 2017). Professional nurses safeguard patient rights, including those of the most vulnerable patients, in situations where an actual or potential conflict of interest, misconduct, or the potential for harm are identified while engaging in research conduct (ANA & IACRN, 2017). The domains of clinical research nursing practice encompass clinical practice, human subject protection, contributing to the science, care coordination and continuity, and study management as the core foundation of research conduct practice (ANA & IACRN, 2017).

Domains of Clinical Research Nursing Practice

The RN in the research setting has a unique role in the conduct of research as the advocate for the human research subjects supporting informed consent and autonomous decisions of the human subject (ANA & IACRN, 2017). The nurse is an advocate for all patients and research subjects engaged under the nurses practice during the initial risk assessment through implementation of research protocols (ANA & IACRN, 2017). The RN's education supports an understanding of research conduct ensuring equitable non-

biased assessments and oversight in alignment with the nursing practice act, state and federal regulations and human subject safety (ANA & IACRN, 2017). The scope and standards of clinical research nursing include five domains of practice (ANA & IACRN, 2017). The five domains are clinical practice, human subject protection, contributing to the science, care coordination and continuity, and study management (ANA & IACRN, 2017, p. 2). The clinical practice domains outline the RN's clinical practice and the nursing process outlining the level of engagement in research conduct based on the RNs educational preparation (ANA & IACRN, 2017). The study management domain framework identifies the RN's responsibilities to uphold the integrity of the research and ensure human subject protection (ANA & IACRN, 2017). The five domains of clinical research nursing practice are rooted in the commission on collegiate nursing education (CCNE) essential that establishes the foundation for nursing practice as outlined in the essentials of a baccalaureate program of nursing advancing to the PhD doctoral education level (AACN, 2021). As an integral member of the research team, the RN engages in research conduct making significant contributions to science and nursing science and clinical practice in alignment with the five domains of practice (ANA & IACRN, 2017)., RNs are in a unique position to serve as a research team member in all phases of the research process based on their educational preparation (ANA & IACRN, 2017).

Research Constraints and Perceptions of Nurses

Many studies have identified diverse research constraints, perceptions, and attitudes of nurses as barriers to engaging in research conduct. Nurses' perceive that research is complex and challenging to conduct which results in nurses not engaging in

research activities (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014).

The term "research utilization" is used interchangeably with "evidenced-based-practice"

(EBP) terminology further adding to confusion regarding research (Eller et al., 2003,

Ross & Burrell, 2019; Vijayalakshmi et al., 2014). The use of the term, research

utilization, is confusing and difficult for nurses to understand which may result in

decreased interest in engaging in research practice (Eller et al., 2003; Ross & Burrell,

2019; Vijayalakshmi et al., 2014,). Nurses have a strong understanding of research

utilization (EBP) as compared to other healthcare professionals; however other healthcare

professionals reported a stronger knowledge and understanding of research as compared

to nurses (Eller et al., 2003; Roxburgh, 2005). Further studies reported while nurses have

a strong understanding of (EBP), nurses reported negative attitudes and low knowledge

translating EBP into practice (Eller et al., 2003; Hafsteinsdottir et al., 2017; Ross &

Burrell, 2019; Roxburgh, 2005; Vijayalakshmi et al., 2014,).

Nurses report a knowledge deficit and engagement barriers regarding nursing

research. Knowledge deficit included lack of educational skills and formal preparation

(Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005). Engagement barriers

related to no access to senior nurse researchers, time for engagement during working

hours, and support from leadership to engage in research activities (Hafsteinsdottir et al.,

2017; Pintz et al., 2018; Roxburgh, 2005). When RNs had access to mentorship programs

with nurse researchers, there was a positive relationship with research engagements

(Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005). Positive associations

were identified as mentorship support, research productivity, improved research

knowledge and skill, career development, publications and presentations, work culture,

collaboration, and income when offering mentorship programs to post-doctoral nurse

researchers (Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005). The research

identified the importance of mentorship and support in the nurses' career pathway

(Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005). However, there were no

studies which identified supporting the trajectory related to nurses' pre-doctoral pathway

for educational development and mentorship support to engage in a research practice

(Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005).

Additional research is needed to understand nurses' constraints to engaging in

research participation and conducting nursing research, as there is a knowledge gap

between nurses using research for practice utilization and nurses conducting research and

advancing research (Hafsteinsdottir et al., 2017; Pintz et al., 2018; Roxburgh, 2005). The

nursing profession has a need to promote and empower nurses in a PhD nursing role;

without quality theoretical frameworks and conceptual models, the nursing profession

cannot advance nursing science (Grady & Gough, 2015).

Research Question and Design Two

The research question for this study was "What effect does educational level of

the RN have on the level of interest, experience, confidence, and attitude toward

conducting research?" Using a quantitative cross-sectional comparative analysis, I

collected quantifiable information regarding nurses' interest, experience, and attitude of

research conduct to analysis the educational relationship of nurses and research conduct.

Methods

Participants

The target population was licensed RNs who work/reside in the United States. An RN is defined as a nurse who holds registered nursing licensure as defined by their state or government agency overseeing RNs (nCSBN Leading Regulatory Excellence [NCSBN], 2022). I posted a recruitment flyer on social media (such as Facebook and LinkedIn) to all individuals that contained an invitation to participate, which described the study. Participants were invited to participate in an online web survey using the SurveyMonkey (https://www.surveymonkey.com) link. Participants' identities were protected using SurveyMonkey through the anonymous web-based survey tool for data collection. Participant criteria included RNs and excluded any participants who were not licensed RNs.

If an individual was interested in participating, they accessed a link to take them to the inclusion criteria question assessing if they were an RN. If they answer "yes," the link took them to the consent form. If the individual agreed to participate, the next screen led to the demographics and survey questions (see Appendices A and B, respectively). After completing the demographic datasheet, the screen advanced to the determinants of behavior questionnaire. After completing the demographic datasheet, the screen led participants to the determinants of behavior questionnaire.

Sample and Power

I determined the sample size using the G*-Power tool to analyze statistical power for the multivariate analysis of covariance (MANCOVA) for analysis (Faul et al., 2007).

With an effect size of 0.25, the alpha error probability of 0.05, power of 0.80, with the numerator degrees of freedom of 10, using four groups with the covariates yielded sample size of 269. The noncentrality parameter A totaled 16.8125000 with a critical F of 1.8666726 with denominator degrees of freedom of 264 for a sample size of 269 with an actual power of 0.8001280.0.

Variables/Sources of Data

The independent variable was the RNs degree level. The groups are the levels of nursing degree baccalaureate (BSN), masters (MSN), doctor of nursing practice (DNP), and the doctor of nursing philosophy (PhD) degree. The dependent variables are level of interest, experience, confidence, and attitude toward conducting research. The covariates are clinical and academic work settings.

Instrumentation or Measures

I used a research survey tool by Stewart et al. (2019), licensed by Elsevier. Permission to use and reproduce the interest, experience and confidence survey tool was granted (see Appendix C). The survey tool contains eight domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest (Stewart et al., 2019). The section for assessment of research interest, experience, and confidence used a 5-point Likert scale rated from *no interest*, *experience*, *confidence* to *very interested*, *experienced*, and *confident*, respectively (Stewart et al., 2019). The remaining sections

used a 5-point Likert scale ranging from *strongly agree* to *strongly disagree* (Stewart et

al., 2019).

The survey by Stewart et al. (2019) was reviewed for validity by individuals in

academia, researchers and practicing pharmacists using contextualization. The framework

used to support validity of the survey tool incorporated the theoretical domains

framework from the Determinants of Implementation Behavior Questionnaire (Stewart et

al., 2019). The researchers' aims were to measure subjective survey results regarding

attitudes and opinions of research (Stewart et al., 2019). The validity of subjective data

can be assessed by correlations with respondents' responses inferred from patterns

identified from the scales assessed (Creswell & Creswell, 2022; Fowler, 2014). The

survey tool's validity is supported based on the respondents' correlation to patterns

reviewed, noting all results ranged from $\alpha = .87$ to $\alpha = .97$, indicating high validity

(Stewart et al., 2019). The survey tool incorporates multiple domains of assessment:

demographics; research activities; research interest, experience, and confidence; research

conduct and dissemination; translating research; readiness to participate in research;

research training; and research plans and areas of interest (Stewart et al., 2019).

The aspects of research consisted of 16 items with a Cronbach's alpha score

indicating the internal consistency identifying close relationship for each grouping,

interest ($\alpha = .96$), experience ($\alpha = .96$) and confidence ($\alpha = .97$) in specific aspects of

research. Attitudinal items consisted of 17 items with a high Cronbach's alpha score ($\alpha =$

.93; Stewart et al., 2019). The motivation for and outcomes of participation research

consisted of seven items with the Cronbach's alpha score indicating a close relationship

(α = .89; Stewart et al., 2019). The individual roles and characteristics around

participating in the research included 10 items (α = .87; Stewart et al., 2019).

Design and Analysis

I analyzed the data using SPSS (Version 27). The descriptive statistics include

age, gender, race, ethnicity, nursing position, and years of practice (see Appendix A). The

descriptive statistics included means, standard deviations, sample size, medians, and

confidence intervals of age, gender, race, ethnicity, nursing position, and years of practice

concerning the RN's interest, experience, confidence, and attitude toward conducting

research. I used a one-way multivariate analysis (MANOVA) to analyze the study

proposal. The MANOVA offers an assessment for the differences between the groups of

the categorical independent variable on the dependent variable, identifying a difference

between the years of practice and number of research-related educational courses of a RN

who practices within a clinical setting compared to an academic setting. The MANOVA

test was selected to assess the differences in the categorical independent variable of the

RN grouped by years of practice while controlling for the covariate practice setting of the

RN in either a clinical or academic setting. The assumptions for the MANOVA included

multivariate normality, homoscedasticity, linearity and independence and randomness. I

tested for the assumptions for MANOVA prior to analyzing the data. If data violated any

assumptions, I consulted with a statistician and my committee to determine how I

analyzed the data.

The multivariate normality is observed in the independent variable nurse's degree

level. The independent variable nurse's degree level provides four correlated categories,

including BSN, MSN, DNP, and PhD, assessing the differences across two or more groups for the four-degree types. An assumption of homogeneity of variance could occur if the group sizes are unequal. To assess for homogeneity, an F-statistic test was used to assess for violations. I conducted a Cronbach's alpha on the participant responses of the research survey by Stewart et al. (2019) to evaluate reliability.

Results

Execution

I received a total of 334 responses from RNs. Upon inspecting the data, I removed 51 incomplete surveys, leaving N = 283. The survey was disseminated using the internet and social media. I used a series of Likert scales from a validated and reliable survey by Stewart et al. (2019) that contained eight domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest (Stewart et al., 2019). The Likert scales assessed the RNs' interest, experience, confidence and attitude regarding research conduct. The interest, experience, and confidence scales were all independent scales each consisting of 16 items, all three scales had a Cronbach's Alpha value of $\alpha = .96$. The final scale measured nurses' attitude regarding research conduct. The attitudinal scales included three sub scales (Support and Opportunities, Motivation, Individual Roles & Characteristics) using a Likert scale to identify nurses' attitude and perception of research. The combined sub-scales consisted of 34 items with a Cronbach Alpha value of

α = .94. All scales indicated each grouping of items have an internal consistence of excellent (α >0.90) (see Table 1).

Table 1

Reliability Statistics

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N
Interest	0.956	0.956	16
Experience	0.96	0.961	15
Confidence	0.964	0.964	16
Attitudinal	0.941	0.94	34

Results

Descriptive Statistics

Respondent demographics are listed in Table 2 - 3. Of the 283 responses analyzed 94% (n=265) were female and 6% (n=18) were male, with 73% of respondents between the ages of 35 to 64 years of age (see Table 2). The racial demographics were self-identified with the largest group identified was White or Caucasian at 83% (n=234), the second largest group identified as American Indian or Alaska Native 7.2% (n=19) and the next group was Hispanic or Latino at 5% (n=14) (see Table 3). Degrees held by the RNs are identified in Table 4 noting the highest number of responses were the baccalaureate degree (BSN) at 54.4% (n=154); the second largest group were master's degree (MSN) prepared nurses at 26.9% (n=76), the DNP was the smallest group at 2.8% (n=8), and the doctorate in nursing philosophy was 7.8% (n=22).

Table 2

Age of Respondents

Source	Age	*N*	%
Valid	18-24	5	1.8
	25-34	49	17.3
	35-44	69	24.4
	45-54	71	25.1
	55-64	66	23.3
	65+	23	8.1
	Total	283	100.0

Table 3

Race and Gender

	Gender					
	Female		Male		Total	
Race	*n*	%	*n*	%	*n*	%
American Indian or Alaska Native	19_a	7.2	0_a	0.0	19	6.7
Another race	2_a	0.8	0_a	0.0	2	0.7
Asian or Asian American	6_a	2.3	0_a	0.0	6	2.1
Black or African American	7_a	2.6	0_a	0.0	7	2.5
Hispanic or Latino	13_a	4.9	1_a	5.6	14	4.9
Native Hawaiian or other Pacific Islander	1_a	0.4	0_a	0.0	1	0.4
White or Caucasian	217_a	81.9	17_a	94.4	234	82.7
Total	265	100.0	18	100.0	283	100.0

Note. Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the *p*= .05 level.

Practice Area Descriptive Statistics

Years of practice as an RN indicated that 45% had more than twenty years of experience, and the mean years of experience averaged 15 years (see Table 4). Of the 283 RNs 48.1% (n=136) reported they did not have experience in research practice (see Table 5). The hospital health system degree make up was identified by all degree levels as the main practice setting (see Table 6). The PhD respondents reported more than half worked in an Academic Medical Center or Academic University (see Table 6). Two hundred thirty-two participants worked in the clinical setting (82%) (n=232) and nurses practicing in the academic setting represented 18% (n=51) of the sample. Of the 283 practicing nurses, there was nearly equal representation between direct care and non-direct care practicing nurses at 55.5% (n=157) and 44.5% (n=126) respectively. Nurses working within a hospital health system represented the largest area of practice at 53.7% (n=152), the clinic setting was second at 19.1% (n=54), and the next largest group were nurses practicing withing academic medical center representing 15.9% (n=45). Additionally, I asked the participants to identify the therapeutic area in which they practiced within their main practice settings and if they identified as direct patient care (n=157) or non-direct patient care (n=126) roles, see the therapeutic area and position tables for results (see Table 7, 8).

Table 4

Years of Nursing Practice

Variable	*N*	%
1 to 5 years	35	12.4
6 to 10 years	45	15.9
11 to 15 years	56	19.8
16 to 20 years	20	7.1
>20 years	127	44.9

Table 5

Years of Research Practice

Variable	*N*	%
none	136	48.1
1 to 5 years	77	27.2
6 to 10 years	29	10.2
11 to 15 years	6	2.1
>15 years	35	12.4

Table 6

Main Practice Setting by Degree Crosstabulation

	ADN		BSN		MSN		DNP		PhD		Total	
Variable	N	%	N	%	N	%	N	%	N	%	N	%
Academic Medical Center or Academic University	1	4.3	13	8.4	15	19.5	2	28.6	14	63.6	45	15.9
Clinic Setting	5	21.7	30	19.5	17	22.1	2	28.6	0	0.0	54	19.1
Hospital Health System	16	69.6	94	61.0	35	45.5	3	42.9	4	18.2	152	53.7
Remote	1	4.3	13	8.4	8	10.4	0	0.0	4	18.2	26	9.2
Urgent Care - Out Patient	0	0.0	4	2.6	2	2.6	0	0.0	0	0.0	6	2.1
Total	23	100.0	154	100.0	77	100.0	7	100.0	22	100.0	283	100.0

Table 7

Main Practice Setting

Variable		Frequency	%
Valid	Academic Medical Center or Academic University	45	15.9
	Clinic Setting	54	19.1
	Hospital Health System	152	53.7
	Remote	26	9.2
	Urgent Care - Out Patient	6	2.1
	Total	283	100.0

Table 8

Theraputic Area

Variable	N	%
Cardiac	28	9.9
Clinical Research	28	9.9
Critical Care	40	14.1
Dialysis	3	1.1
Education	36	12.7
Leadership/Management	45	15.9
Medical Surgical	34	12.0
Nurse Practitioner/Clinical Nurse Specialist	28	9.9
Oncology	28	9.9
Pediatrics	10	3.5
Stroke	1	0.4
Trauma	2	0.7

Nursing Degree Descriptive Statistics

The PhD degree group had the highest scores in all three groups interest (86%), experience (100%), confidence (84%) as compared to the other degree groups (see Table 9). The attitudinal scales overall identified the PhD had the highest scores for a positive attitude toward research conduct (see Table 10). The sub-scales indicated the PhD reported higher levels of support and opportunities, were more motivated and identified with individual roles and characteristics of research conduct as compared to the other degree groups (see Table 11).

Table 9

General Linear Model Descriptive Statistics Interest Experrience Confidence

Variable	Interest			Experience			Confidence		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
ADN	-0.3212	0.86068	23	-0.6080	0.78402	23	-0.2590	0.70208	23
BSN	-0.1617	0.84617	154	-0.1997	0.79714	154	-0.1049	0.66686	154
MSN	0.1590	0.86720	77	0.2399	0.69331	77	0.0369	0.55550	77
DNP	0.5250	0.39332	7	0.4913	0.31271	7	0.3257	0.33833	7
PhD	0.8594	0.62745	22	1.0368	0.62254	22	0.8339	0.58689	22
Total	0.0090	0.88063	283	-0.0001	0.84302	283	0.0048	0.67800	283

Table 10

General Linear Model Descriptive Statistics Attitude

Variable	*M*	*SD*	*N*
ADN	-0.0912	0.34617	23
BSN	-0.0559	0.46145	154
MSN	0.0789	0.41294	77
DNP	-0.0173	0.40252	7
PhD	0.2508	0.31866	22
Total	0.0027	0.43685	283

Table 11

General Linear Model Descriptive Statistics Attitudinal Sub-Scales

Variable	Support & Opportunities			Motivation			Individual Roles & Characteristics		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
ADN	-0.1574	0.69802	23	-0.2053	0.91915	23	-0.0848	0.63324	23
BSN	-0.0850	0.82120	154	-0.0731	0.82016	154	-0.0754	0.74588	154
MSN	0.1183	0.79867	77	0.1566	0.72509	77	0.0837	0.66894	77
DNP	-0.0731	0.68628	7	-0.1551	0.15765	7	0.0420	0.75464	7
PhD	0.4540	0.63694	22	0.2314	0.70079	22	0.3110	0.53932	22
Total	0.0066	0.80124	283	0.0003	0.79214	283	0.0001	0.70759	283

Tests of Assumptions

MANOVA Assumptions. I analyzed the data using a one-way multivariate analysis (MANOVA). The first assumption for MANOVA is to have two or more continuous dependent variables. The assumption is met as the dependent variables are interest, experience, confidence, and attitude, each variable has a Likert scale for analysis. The second and third assumptions for MANOVA are the independent variable is categorical, and the participants were assigned to nursing degree groups (ADN, BSN, MSN, DNP, PhD), meeting the assumption for independences as the RN is counted in one degree group only (see Table 12).

Table 12

Between-Subjects Factors Descriptive Statistics Degree

Variable		Value Label	N
Degree	1	ADN	23
	2	BSN	154
	3	MSN	77
	4	DNP	7
	5	PhD	22

The fourth assumption of MANOVA is there should be no multivariate outliers. A linear regression analysis was used to test for the Mahalanobis' distance using two df and a critical value of 13.82 was used to test for outliers. Prior to removing the outliers, the Mahalanobis was 28.220 (see Table 13) after removing the outliers the Mahalanobis df was 2 and the critical value was 13.605 (see Table 14) indicating no outliers are present meeting the assumption no multivariate outliers.

Table 13

General Linear Model Descriptive Statistics Attitude

Source	Minimum	Maximum	*M*	*SD*	*N*
Predicted Value	1.53	2.07	1.82	.119	283
Std. Predicted Value	-2.414	2.127	.000	1.000	283
Standard Error of Predicted Value	.023	.119	.047	.015	283
Adjusted Predicted Value	1.52	2.08	1.82	.120	283
Residual	-.934	.468	.000	.366	283
Std. Residual	-2.534	1.268	.000	.993	283
Stud. Residual	-2.615	1.284	.000	1.003	283
Deleted Residual	-1.015	.480	.000	.374	283
Stud. Deleted Residual	-2.643	1.286	-.003	1.008	283
Mahal. Distance	.143	28.220	3.986	3.567	283
Cook's Distance	.000	.157	.004	.013	283
Centered Leverage Value	.001	.100	.014	.013	283

a. Dependent Variable: Setting Practice Area

Table 14

Residuals Statistics with Outliers Removed

Source	Minimum	Maximum	*M*	*SD*	*N*
Predicted Value	1.53	2.06	1.82	.121	271
Std. Predicted Value	-2.434	1.923	.000	1.0	271
Standard Error of Predicted Value	.024	.085	.048	.013	271
Adjusted Predicted Value	1.52	2.06	1.82	.122	271
Residual	-.940	.472	.000	.363	271
Std. Residual	-2.572	1.290	.000	.993	271
Stud. Residual	-2.623	1.308	.000	1.002	271
Deleted Residual	-.978	.484	.000	.370	271
Stud. Deleted Residual	-2.653	1.309	-.002	1.007	271
Mahal. Distance	.146	13.605	3.985	2.612	271
Cook's Distance	.000	.055	.004	.007	271
Centered Leverage Value	.001	.050	.015	.010	271

a. Dependent Variable: Setting Practice Area

The fifth assumption of MANOVA is multivariate normality. The descriptives statistical analysis identified the skewness and kurtosis is between -1 and +1 indicating multivariate normality exists (see Table 15).

Table 15

Descriptive Statistics Nursing Degree

Variable	N	M	SD	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Interest	283	.0090	.88063	.163	.145	-.730	.289
Experience	283	-.0001	.84302	.444	.145	-.670	.289
Confidence	283	.0048	.67800	.263	.145	-.535	.289
Attitude	283	.0027	.43685	-.418	.145	.529	.289
Individual Roles & Characteristics	283	.0001	.70759	-.634	.145	.766	.289
Motivation	283	.0003	.79214	-1.052	.145	1.467	.289
Support & Opportunities	283	.0066	.80124	-.024	.145	-.688	.289
Valid N (listwise)	283						

Using a split data file, I analyzed the sixth assumption of no multicollinearity by splitting the data into the nursing degrees. Next, I completed a bivariate correlation analysis indicating the Pearson Correlation was between 0.2 and 1, which means there was no multicollinearity between the dependent variables. A correlation coefficient closer to -1 indicates a strong negative relationship; inversely, closer to +1 indicates a very strong positive relationship (Bhandari, 2022a). The assumption of no multicollinearity is met (see Table 16 thru 21).

Table 16

All Degree Combined Correlations

		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.680**	.543**	.450**	.359**	.420**	.313**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001
	N	283	283	283	283	283	283	283
Experience	Pearson Correlation	.680**	1	.742**	.522**	.473**	.302**	.379**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001
	N	283	283	283	283	283	283	283
Confidence	Pearson Correlation	.543**	.742**	1	.534**	.525**	.263**	.346**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001
	N	283	283	283	283	283	283	283
Attitude	Pearson Correlation	.450**	.522**	.534**	1	.902**	.561**	.747**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001
	N	283	283	283	283	283	283	283
Individual Roles & Characteristics	Pearson Correlation	.359**	.473**	.525**	.902**	1	.343**	.458**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001	<.001
	N	283	283	283	283	283	283	283
Motivation	Pearson Correlation	.420**	.302**	.263**	.561**	.343**	1	.283**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001
	N	283	283	283	283	283	283	283
Support & Opportunities	Pearson Correlation	.313**	.379**	.346**	.747**	.458**	.283**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	
	N	283	283	283	283	283	283	283

**. Correlation is significant at the 0.01 level (2-tailed).

Table 17

ADN Degree Correlations

		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.656**	.485*	.265	.193	.394	-.026
	Sig. (2-tailed)		<.001	.019	.222	.376	.063	.908
	N	23	23	23	23	23	23	23
Experience	Pearson Correlation	.656**	1	.506*	.471*	.400	.118	.323
	Sig. (2-tailed)	<.001		.014	.023	.059	.593	.133
	N	23	23	23	23	23	23	23
Confidence	Pearson Correlation	.485*	.506*	1	.201	.126	.155	.127
	Sig. (2-tailed)	.019	.014		.358	.566	.480	.562
	N	23	23	23	23	23	23	23
Attitude	Pearson Correlation	.265	.471*	.201	1	.838**	.488*	.532**
	Sig. (2-tailed)	.222	.023	.358		<.001	.018	.009
	N	23	23	23	23	23	23	23
Individual Roles & Characteristics	Pearson Correlation	.193	.400	.126	.838**	1	.172	.119
	Sig. (2-tailed)	.376	.059	.566	<.001		.432	.589
	N	23	23	23	23	23	23	23
Motivation	Pearson Correlation	.394	.118	.155	.488*	.172	1	.065
	Sig. (2-tailed)	.063	.593	.480	.018	.432		.769
	N	23	23	23	23	23	23	23
Support & Opportunities	Pearson Correlation	-.026	.323	.127	.532**	.119	.065	1
	Sig. (2-tailed)	.908	.133	.562	.009	.589	.769	
	N	23	23	23	23	23	23	23

**. Correlation is significant at the 0.01 level (2-tailed).

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

a. Degree = ADN

Table 18

BSN Degree Correlations

Variables		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.661**	.485**	.405**	.320**	.403**	.287**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	<.001
	N	154	154	154	154	154	154	154
Experience	Pearson Correlation	.661**	1	.699**	.521**	.490**	.288**	.375**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001	<.001
	N	154	154	154	154	154	154	154
Confidence	Pearson Correlation	.485**	.699**	1	.572**	.567**	.294**	.373**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001	<.001
	N	154	154	154	154	154	154	154
Attitude	Pearson Correlation	.405**	.521**	.572**	1	.913**	.583**	.747**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001
	N	154	154	154	154	154	154	154
Individual Roles & Characteristics	Pearson Correlation	.320**	.490**	.567**	.913**	1	.392**	.480**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001	<.001
	N	154	154	154	154	154	154	154
Motivation	Pearson Correlation	.403**	.288**	.294**	.583**	.392**	1	.280**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001
	N	154	154	154	154	154	154	154
Support & Opportunities	Pearson Correlation	.287**	.375**	.373**	.747**	.480**	.280**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	
	N	154	154	154	154	154	154	154

**. Correlation is significant at the 0.01 level (2-tailed).

a. Degree = BSN

Table 19

MSN Degree Correlations

Variables		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.534**	.471**	.470**	.376**	.427**	.322**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001	.004
	N	77	77	77	77	77	77	77
Experience	Pearson Correlation	.534**	1	.755**	.469**	.438**	.299**	.291*
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	.008	.010
	N	77	77	77	77	77	77	77
Confidence	Pearson Correlation	.471**	.755**	1	.509**	.569**	.192	.239*
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	.095	.036
	N	77	77	77	77	77	77	77
Attitude	Pearson Correlation	.470**	.469**	.509**	1	.879**	.505**	.783**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001	<.001
	N	77	77	77	77	77	77	77
Individual Roles & Characteristics	Pearson Correlation	.376**	.438**	.569**	.879**	1	.210	.457**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		.067	<.001
	N	77	77	77	77	77	77	77
Motivation	Pearson Correlation	.427**	.299**	.192	.505**	.210	1	.361**
	Sig. (2-tailed)	<.001	.008	.095	<.001	.067		.001
	N	77	77	77	77	77	77	77
Support & Opportunities	Pearson Correlation	.322**	.291*	.239*	.783**	.457**	.361**	1
	Sig. (2-tailed)	.004	.010	.036	<.001	<.001	.001	
	N	77	77	77	77	77	77	77

**. Correlation is significant at the 0.01 level (2-tailed).

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

a. Degree = MSN

Table 20

DNP Degree Correlations

Variables		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.703	.681	.610	.565	-.058	.528
	Sig. (2-tailed)		.078	.092	.146	.186	.901	.223
	N	7	7	7	7	7	7	7
Experience	Pearson Correlation	.703	1	.936**	.601	.719	-.409	.235
	Sig. (2-tailed)	.078		.002	.153	.068	.363	.612
	N	7	7	7	7	7	7	7
Confidence	Pearson Correlation	.681	.936**	1	.633	.698	-.406	.368
	Sig. (2-tailed)	.092	.002		.127	.081	.366	.416
	N	7	7	7	7	7	7	7
Attitude	Pearson Correlation	.610	.601	.633	1	.958**	-.040	.797*
	Sig. (2-tailed)	.146	.153	.127		<.001	.932	.032
	N	7	7	7	7	7	7	7
Individual Roles & Characteristics	Pearson Correlation	.565	.719	.698	.958**	1	-.055	.596
	Sig. (2-tailed)	.186	.068	.081	<.001		.907	.158
	N	7	7	7	7	7	7	7
Motivation	Pearson Correlation	-.058	-.409	-.406	-.040	-.055	1	-.143
	Sig. (2-tailed)	.901	.363	.366	.932	.907		.760
	N	7	7	7	7	7	7	7
Support & Opportunities	Pearson Correlation	.528	.235	.368	.797*	.596	-.143	1
	Sig. (2-tailed)	.223	.612	.416	.032	.158	.760	
	N	7	7	7	7	7	7	7

**. Correlation is significant at the 0.01 level (2-tailed).

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

a. Degree = DNP

Table 21

PhD Degree Correlations

Variables		Interest	Experience	Confidence	Attitude	Individual Roles & Characteristics	Motivation	Support & Opportunities
Interest	Pearson Correlation	1	.693**	.450*	.430*	.374	.383	.168
	Sig. (2-tailed)		<.001	.036	.046	.087	.078	.455
	N	22	22	22	22	22	22	22
Experience	Pearson Correlation	.693**	1	.821**	.307	.280	.226	.133
	Sig. (2-tailed)	<.001		<.001	.164	.207	.312	.554
	N	22	22	22	22	22	22	22
Confidence	Pearson Correlation	.450*	.821**	1	.247	.268	.051	.123
	Sig. (2-tailed)	.036	<.001		.268	.227	.821	.585
	N	22	22	22	22	22	22	22
Attitude	Pearson Correlation	.430*	.307	.247	1	.899**	.588**	.547**
	Sig. (2-tailed)	.046	.164	.268		<.001	.004	.008
	N	22	22	22	22	22	22	22
Individual Roles & Characteristics	Pearson Correlation	.374	.280	.268	.899**	1	.492*	.208
	Sig. (2-tailed)	.087	.207	.227	<.001		.020	.353
	N	22	22	22	22	22	22	22
Motivation	Pearson Correlation	.383	.226	.051	.588**	.492*	1	-.046
	Sig. (2-tailed)	.078	.312	.821	.004	.020		.837
	N	22	22	22	22	22	22	22
Support & Opportunities	Pearson Correlation	.168	.133	.123	.547**	.208	-.046	1
	Sig. (2-tailed)	.455	.554	.585	.008	.353	.837	
	N	22	22	22	22	22	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

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

a. Degree = PhD

The seventh assumption indicates there should be a linear relationship between the dependent variables for each group of independent variables. There is a linear relationship between the outcome variable and the independent variables of interest, experience, confidence, and attitude against degree was plotted. Visual inspection indicated a linear relationship between the variables (see Figure 2).

Figure 2

Linear Relationship
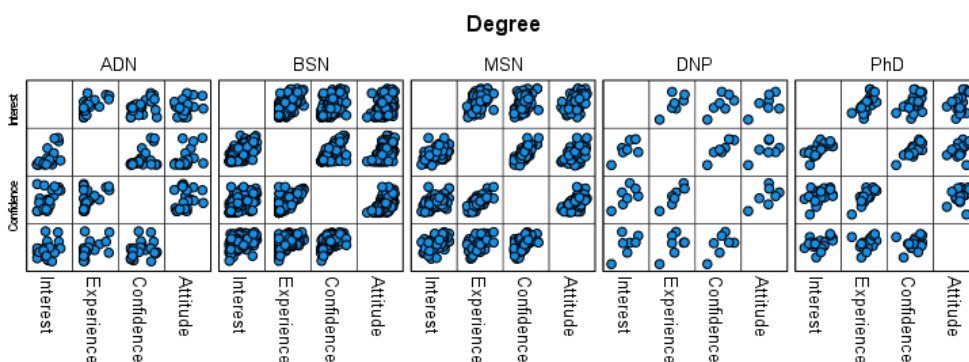
The eight assumptions of MANOVA is the equality of covariance matrices. I used the general linear model multivariate analysis. The Box's test of Equality of Covariance Matrices indicated no statistical significance. Each dependent variable was analyzed; interest, experience, confidence, and attitude ($p = .252$), the assumption for equality of covariances matrices was met (see Table 22). Pillai's Trace, Wilks Lambda, Hotelling's trace and Roy's largest root were analyzed (see Table 23). The four values identify the effect and indicate differences within each of the groups determining an effect size for each test (Field, 2018). The assumption of equality of covariance matrices were met.

Table 22

Box's Test of Equality of Covariance Matrices Includes Attitudinal Sub-Scales

Box's M	101.972
F	1.099
df1	84
df2	15311.262
Sig.	.252

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + Degree

Table 23

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Intercept	Pillai's Trace	.118	5.207[b]	7.000	272.000	<.001	.118	36.449	.998
	Wilks' Lambda	.882	5.207[b]	7.000	272.000	<.001	.118	36.449	.998
	Hotelling's Trace	.134	5.207[b]	7.000	272.000	<.001	.118	36.449	.998
	Roy's Largest Root	.134	5.207[b]	7.000	272.000	<.001	.118	36.449	.998
Degree	Pillai's Trace	.310	3.295	28.000	1100.000	<.001	.077	92.266	1.000
	Wilks' Lambda	.709	3.516	28.000	982.132	<.001	.083	88.320	1.000
	Hotelling's Trace	.386	3.728	28.000	1082.000	<.001	.088	104.379	1.000
	Roy's Largest Root	.308	12.091[c]	7.000	275.000	<.001	.235	84.640	1.000

a. Design: Intercept + Degree

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

d. Computed using alpha = .05

The ninth test of assumptions is for homogeneity of covariances. I ran Leven's test of equality of error variances to test for homogeneity of covariance matrices for interest experience, confidence, and attitude RNs degree. Statistical significance was not met for interest, experience, and attitude, indicating there is no variance in the data (see Table 24). A non-significant result indicates that the matrices between the groups are generally equal, indicating homogeneity of variance, thus meeting assumption for homogeneity of variances (Field, 2018). There was statistical significance for the dependent variable confidence (see Table 24), therefore a variance may exist for

confidence in the degree groups. However, the between-subjects SSCP matrices (see

Table 25) indicates the F-statistics for each outcome variable are also the same or greater

than the corrected model and degrees for the tests of between subject's effects suggesting

the same results if a one-way ANOVA was preformed (Field, 2018). The test of

assumptions for homogeneity of covariances across the groups was met.

Table 24

Levene's Test of Equality of Error Variances

Variables		Levene Statistic	*df1*	*df2*	Sig.
Interest	Based on Mean	1.961	4	278	.101
	Based on Median	1.921	4	278	.107
	Based on Median and with adjusted df	1.921	4	268.394	.107
	Based on trimmed mean	1.948	4	278	.103
Experience	Based on Mean	2.415	4	278	.049
	Based on Median	2.232	4	278	.066
	Based on Median and with adjusted df	2.232	4	233.992	.066
	Based on trimmed mean	2.226	4	278	.066
Confidence	Based on Mean	2.649	4	278	.034
	Based on Median	2.621	4	278	.035
	Based on Median and with adjusted df	2.621	4	274.485	.035
	Based on trimmed mean	2.564	4	278	.039
Attitude	Based on Mean	1.862	4	278	.117
	Based on Median	1.928	4	278	.106
	Based on Median and with adjusted df	1.928	4	273.037	.106
	Based on trimmed mean	1.889	4	278	.113
Support & Opportunities	Based on Mean	1.301	4	278	.270
	Based on Median	1.260	4	278	.286
	Based on Median and with adjusted df	1.260	4	275.074	.286
	Based on trimmed mean	1.306	4	278	.268
Motivation	Based on Mean	2.406	4	278	.050
	Based on Median	1.923	4	278	.107

Variables		Levene Statistic	df1	df2	Sig.
	Based on Median and with adjusted df	1.923	4	271.107	.107
	Based on trimmed mean	2.534	4	278	.041
Individual Roles & Characteristics	Based on Mean	2.349	4	278	.055
	Based on Median	2.200	4	278	.069
	Based on Median and with adjusted df	2.200	4	271.512	.069
	Based on trimmed mean	2.150	4	278	.075

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Degree

Table 25

Between-Subjects SSCP Matrix

Source		Variables	Interest	Experience	Confidence	Attitude	Support & Opportunities	Motivation	Individual Roles & Characteristics
Hypothesis	Intercept	Interest	4.476	4.053	3.514	.698	1.084	-.193	1.167
		Experience	4.053	3.670	3.182	.632	.982	-.174	1.057
		Confidence	3.514	3.182	2.759	.548	.851	-.151	.916
		Attitude	.698	.632	.548	.109	.169	-.030	.182
		Support & Opportunities	1.084	.982	.851	.169	.262	-.047	.283
		Motivation	-.193	-.174	-.151	-.030	-.047	.008	-.050
		Individual Roles & Characteristics	1.167	1.057	.916	.182	.283	-.050	.304
	Degree	Interest	26.499	33.808	21.928	7.703	13.026	9.059	9.561
		Experience	33.808	44.414	27.670	10.113	17.105	12.758	12.287
		Confidence	21.928	27.670	19.376	6.228	10.801	6.741	7.761
		Attitude	7.703	10.113	6.228	2.536	4.289	3.307	3.046
		Support & Opportunities	13.026	17.105	10.801	4.289	7.320	5.518	5.140
		Motivation	9.059	12.758	6.741	3.307	5.518	5.028	3.796
		Individual Roles & Characteristics	9.561	12.287	7.761	3.046	5.140	3.796	3.719
Error		Interest	192.196	108.551	69.543	41.082	49.339	73.599	53.471
		Experience	108.551	156.001	91.994	44.081	55.088	44.047	67.336
		Confidence	69.543	91.994	110.254	38.368	42.191	33.020	63.281
		Attitude	41.082	44.081	38.368	51.280	69.404	51.400	75.591
		Support & Opportunities	49.339	55.088	42.191	69.404	173.721	45.094	68.056
		Motivation	73.599	44.047	33.020	51.400	45.094	171.923	50.497
		Individual Roles & Characteristics	53.471	67.336	63.281	75.591	68.056	50.497	137.476

Based on Type III Sum of Squares

MANOVA Results

I used a multivariate MANOVA to analyze my research question ""What effect does educational level of the RN have on the level of interest, experience, confidence, and attitude toward conducting research?" I used the MANOVA to test the differences between the degree groups and the RNs interest, experience, confidence, and attitudes toward research conduct. The test of between-subject effects main effect identified statistical significance for each of the dependent variables indicating that degree does have an effect on how the RN responds to the variables interest, experience, confidence, and attitude. Assessment of the residual SSCP matrix (see Table 26) and Bartlett's test of sphericity (see Table 27) with statistical significance $p<0.0001$ further supports a relationship exists and there are equal variances across the groups (Field, 2018).

Table 26

Residual SSCP Matrix

Source	Variable	Interest	Experience	Confidence	Attitude	Support & Opportunities	Motivation	Individual Roles & Characteristics
Sum-of-Squares and Cross-Products	Interest	192.196	108.551	69.543	41.082	49.339	73.599	53.471
	Experience	108.551	156.001	91.994	44.081	55.088	44.047	67.336
	Confidence	69.543	91.994	110.254	38.368	42.191	33.020	63.281
	Attitude	41.082	44.081	38.368	51.280	69.404	51.400	75.591
	Support & Opportunities	49.339	55.088	42.191	69.404	173.721	45.094	68.056
	Motivation	73.599	44.047	33.020	51.400	45.094	171.923	50.497
	Individual Roles & Characteristics	53.471	67.336	63.281	75.591	68.056	50.497	137.476
Covariance	Interest	.691	.390	.250	.148	.177	.265	.192
	Experience	.390	.561	.331	.159	.198	.158	.242
	Confidence	.250	.331	.397	.138	.152	.119	.228
	Attitude	.148	.159	.138	.184	.250	.185	.272
	Support & Opportunities	.177	.198	.152	.250	.625	.162	.245
	Motivation	.265	.158	.119	.185	.162	.618	.182
	Individual Roles & Characteristics	.192	.242	.228	.272	.245	.182	.495
Correlation	Interest	1.000	.627	.478	.414	.270	.405	.329
	Experience	.627	1.000	.701	.493	.335	.269	.460
	Confidence	.478	.701	1.000	.510	.305	.240	.514
	Attitude	.414	.493	.510	1.000	.735	.547	.900
	Support & Opportunities	.270	.335	.305	.735	1.000	.261	.440
	Motivation	.405	.269	.240	.547	.261	1.000	.328
	Individual Roles & Characteristics	.329	.460	.514	.900	.440	.328	1.000

Based on Type III Sum of Squares

Table 27

Bartlestt's Test of Sphericity

Likelihood Ratio	.000
Approx. Chi-Square	3548.114
df	27
Sig.	.000

Tests the null hypothesis that the residual covariance matrix is proportional to an identity matrix.

a. Design: Intercept + Degree

The MANOVA was significant indicating a linear combination of the dependent variables interest, experience, confidence, and attitude were validated. The significance means the groups were equal in distribution across the degree groups. Indicating degree does have an impact upon the RNs interest, experience, confidence, and attitude toward research conduct. Of importance a univariate analysis could be completed to assess the differences at the degree level however as the tests of between-subjects effects have the same results, it can be assumed that there is a difference in the RNs interest, experience, confidence, and attitude based on the nursing degree level without conducting one-way ANOVAs on each of the dependent variables (see Table 28) (Field, 2018). The Partial Eta Squared assess the effect size for each dependent variable (see Table 28) (Field, 2018). Degree had a large effect on the RNs interest partial $\eta^2 = 0.12$, experience partial $\eta^2 = .22$, and confidence partial $\eta^2 = 0.15$ in research conduct (see Table 28) (Field, 2018). Also degree had a medium effect on the RNs attitude partial $\eta^2 = 0.05$ toward research conduct (see Table 28) (Field, 2018).

Table 28

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	M^2	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[h]
Corrected Model	Interest	26.499[a]	4	6.625	9.582	<.001	.121	38.329	1.000
	Experience	44.414[b]	4	11.103	19.787	<.001	.222	79.147	1.000
	Confidence	19.376[c]	4	4.844	12.214	<.001	.149	48.856	1.000
	Attitude	2.536[d]	4	.634	3.437	.009	.047	13.747	.853
	Support & Opportunities	7.320[e]	4	1.830	2.929	.021	.040	11.714	.784
	Motivation	5.028[f]	4	1.257	2.033	.090	.028	8.131	.604
	Individual Roles & Characteristics	3.719[g]	4	.930	1.880	.114	.026	7.521	.566
Intercept	Interest	4.476	1	4.476	6.474	.011	.023	6.474	.718
	Experience	3.670	1	3.670	6.541	.011	.023	6.541	.722
	Confidence	2.759	1	2.759	6.956	.009	.024	6.956	.748
	Attitude	.109	1	.109	.590	.443	.002	.590	.119
	Support & Opportunities	.262	1	.262	.420	.517	.002	.420	.099
	Motivation	.008	1	.008	.013	.908	.000	.013	.052
	Individual Roles & Characteristics	.304	1	.304	.615	.434	.002	.615	.122
Degree	Interest	26.499	4	6.625	9.582	<.001	.121	38.329	1.000
	Experience	44.414	4	11.103	19.787	<.001	.222	79.147	1.000
	Confidence	19.376	4	4.844	12.214	<.001	.149	48.856	1.000
	Attitude	2.536	4	.634	3.437	.009	.047	13.747	.853
	Support & Opportunities	7.320	4	1.830	2.929	.021	.040	11.714	.784
	Motivation	5.028	4	1.257	2.033	.090	.028	8.131	.604
	Individual Roles & Characteristics	3.719	4	.930	1.880	.114	.026	7.521	.566
Error	Interest	192.196	278	.691					
	Experience	156.001	278	.561					
	Confidence	110.254	278	.397					

Source	Dependent Variable	Type III Sum of Squares	df	M²	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[h]
	Attitude	51.280	278	.184					
	Support & Opportunities	173.721	278	.625					
	Motivation	171.923	278	.618					
	Individual Roles & Characteristics	137.476	278	.495					
Total	Interest	218.718	283						
	Experience	200.415	283						
	Confidence	129.637	283						
	Attitude	53.818	283						
	Support & Opportunities	181.053	283						
	Motivation	176.952	283						
	Individual Roles & Characteristics	141.195	283						
Corrected Total	Interest	218.695	282						
	Experience	200.415	282						
	Confidence	129.631	282						
	Attitude	53.816	282						
	Support & Opportunities	181.041	282						
	Motivation	176.952	282						
	Individual Roles & Characteristics	141.195	282						

a. R Squared = .121 (Adjusted R Squared = .109)
b. R Squared = .222 (Adjusted R Squared = .210)
c. R Squared = .149 (Adjusted R Squared = .137)
d. R Squared = .047 (Adjusted R Squared = .033)
e. R Squared = .040 (Adjusted R Squared = .027)
f. R Squared = .028 (Adjusted R Squared = .014)
g. R Squared = .026 (Adjusted R Squared = .012)
h. Computed using alpha = .05

To analyze the differences between each degree level the MANOVA was followed up with a discriminant analysis. The discriminant analysis identified the following group statistics (see Table 29). The ADN and BSN degree groups had negative perceptions for interest, experience, confidence, and attitude in research conduct, whereas the MSN and PhD had positive findings for interest in research conduct. The DNP reported negative perceptions for attitude towards research conduct and positive findings for interest, experience, confidence toward research conduct.

Table 29

Group Statistics

		M	*SD*	Valid N (listwise)	
				Unweighted	Weighted
Degree		*M*	*SD*	ed	d
ADN	Interest	-.3212	.86068	23	23.000
	Experience	-.6080	.78402	23	23.000
	Confidence	-.2590	.70208	23	23.000
	Attitude	-.0912	.34617	23	23.000
	Support & Opportunities	-.1574	.69802	23	23.000
	Motivation	-.2053	.91915	23	23.000
	Individual Roles & Characteristics	-.0848	.63324	23	23.000
BSN	Interest	-.1617	.84617	154	154.000
	Experience	-.1997	.79714	154	154.000
	Confidence	-.1049	.66686	154	154.000
	Attitude	-.0559	.46145	154	154.000
	Support & Opportunities	-.0850	.82120	154	154.000
	Motivation	-.0731	.82016	154	154.000
	Individual Roles & Characteristics	-.0754	.74588	154	154.000
MSN	Interest	.1590	.86720	77	77.000
	Experience	.2399	.69331	77	77.000
	Confidence	.0369	.55550	77	77.000
	Attitude	.0789	.41294	77	77.000
	Support & Opportunities	.1183	.79867	77	77.000
	Motivation	.1566	.72509	77	77.000
	Individual Roles & Characteristics	.0837	.66894	77	77.000
DNP	Interest	.5250	.39332	7	7.000
	Experience	.4913	.31271	7	7.000
	Confidence	.3257	.33833	7	7.000

Degree		*M*	*SD*	Valid N (listwise)	
				Unweighted	Weighted
	Attitude	-.0173	.40252	7	7.000
	Support & Opportunities	-.0731	.68628	7	7.000
	Motivation	-.1551	.15765	7	7.000
	Individual Roles & Characteristics	.0420	.75464	7	7.000
PhD	Interest	.8594	.62745	22	22.000
	Experience	1.0368	.62254	22	22.000
	Confidence	.8339	.58689	22	22.000
	Attitude	.2508	.31866	22	22.000
	Support & Opportunities	.4540	.63694	22	22.000
	Motivation	.2314	.70079	22	22.000
	Individual Roles & Characteristics	.3110	.53932	22	22.000
Total	Interest	.0090	.88063	283	283.000
	Experience	-.0001	.84302	283	283.000
	Confidence	.0048	.67800	283	283.000
	Attitude	.0027	.43685	283	283.000
	Support & Opportunities	.0066	.80124	283	283.000
	Motivation	.0003	.79214	283	283.000
	Individual Roles & Characteristics	.0001	.70759	283	283.000

Reliability and Validity: Cronbach's Alpha

I used a series of Likert scales to assess the RNs interest, experience, confidence, and attitude regarding research conduct. The interest, experience, and confidence scales were all independent scales, each comprising 16 items. All three scales had a Cronbach's alpha value of $\alpha = .96$. The final scale measured nurses' attitudes regarding research

conduct. The attitudinal scales included three sub-scales (Support and Opportunities, Motivation, Individual Roles & Characteristics) and used a Likert scale to identify nurses' attitudes and perceptions of research. The combined sub-scales consisted of 34 items with a Cronbach Alpha value of $\alpha = .94$. All scales indicated each grouping of items has an excellent internal consistency ($\alpha > 0.90$). When the attitudinal scales were assessed individually according to the three subscales 1) support and opportunities, 2) motivation, and 3) individual roles and characteristics the Cronbach's Alpha values remain strong to high respectively $\alpha = .95$, $\alpha = .92$, $\alpha = .73$ (Laerd, 2023).

Discussion

Interpretation

Interpretation of Results to Literature

Educational Pathway. The RNs educational pathway prepares the RN to progress in nursing practice while advancing in knowledge through the nursing degree pathway from baccalaureate to doctoral prepared nurse (AACN, 2021). My research survey instrument assesses the perception and attitude of the RNs interest, experience, confidence, and attitude toward research conduct. There was a direct association in my research for the interest, experience, confidence scales and the degree level whereas the attitudinal scales identified variations in the degree levels. It is well documented that RNs identify research conduct as essential to improve patient outcomes; however, RNs universally indicate they are not interested in research conduct and that there is no infrastructure to support mentorship from a nurse scientist (Pintz et al., 2018). My research found that as the RN advances in educational degree a positive perception

toward research conduct increases (see Figures 3 to 6). My research results further support the lack of interest by the RN as there is a negative relationship between interest in research conduct at the undergraduate level. RNs with an MSN reported positive interest in research conduct at 15%, whereas the DNP was 52% and the PhD was 85%. Furthermore, when assessing experience and confidence, the undergraduate nurse continued to report negative perceptions (see Figures 3 to 6). The graduate degree responses varied between the MSN, DNP, PhD. The MSN reported positive experience (24%) and confidence was low at 4% regarding research conduct. The DNP reported negative attitudes when asked about their perceptions to engage in research conduct in my research (see Figures 3 to 6). The DNP finding aligns with the purpose of the DNP program to translate research outcomes into practice, not to generate new knowledge but to translate outcomes into practice (AACN, 2020). My research found that the PhD had higher positive scores in all categories as compared to the other nursing degrees and had statistical significance regarding interest, experience, confidence, and attitude of research conduct. The positive findings for the PhD support the importance of having a qualified nurse scientist to lead and mentor other RNs in research conduct.

Figure 3

Interest & Degree

Estimated Marginal Means of Interest
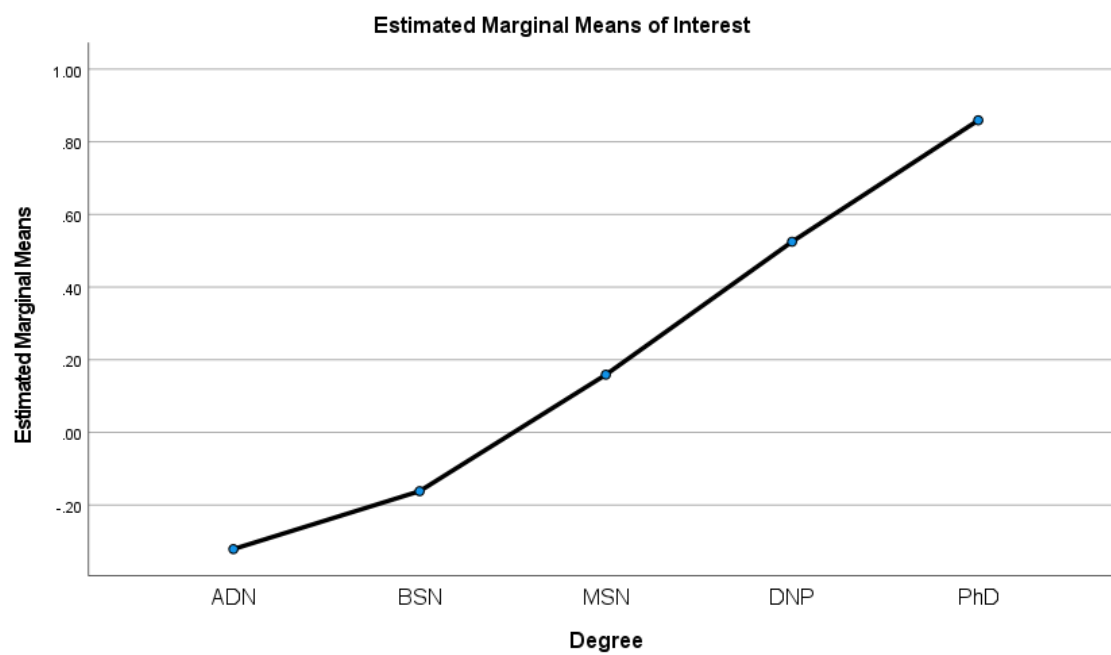
Figure 4

Experience & Degree

Estimated Marginal Means of Experience
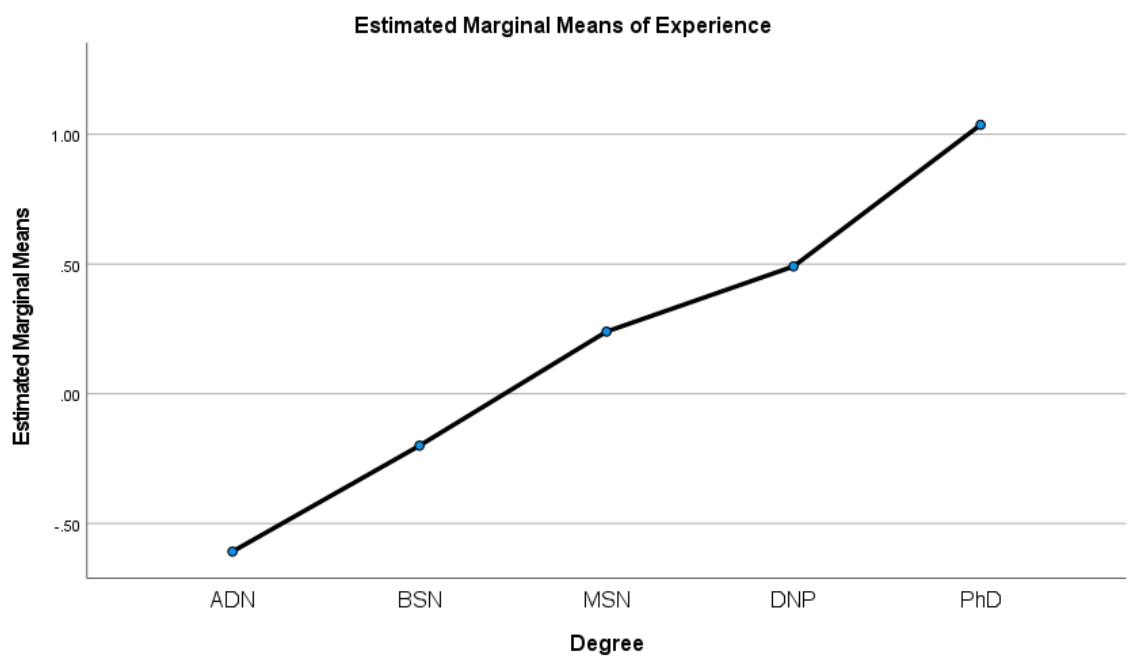
Figure 5

Confidence & Degree

Estimated Marginal Means of Confidence
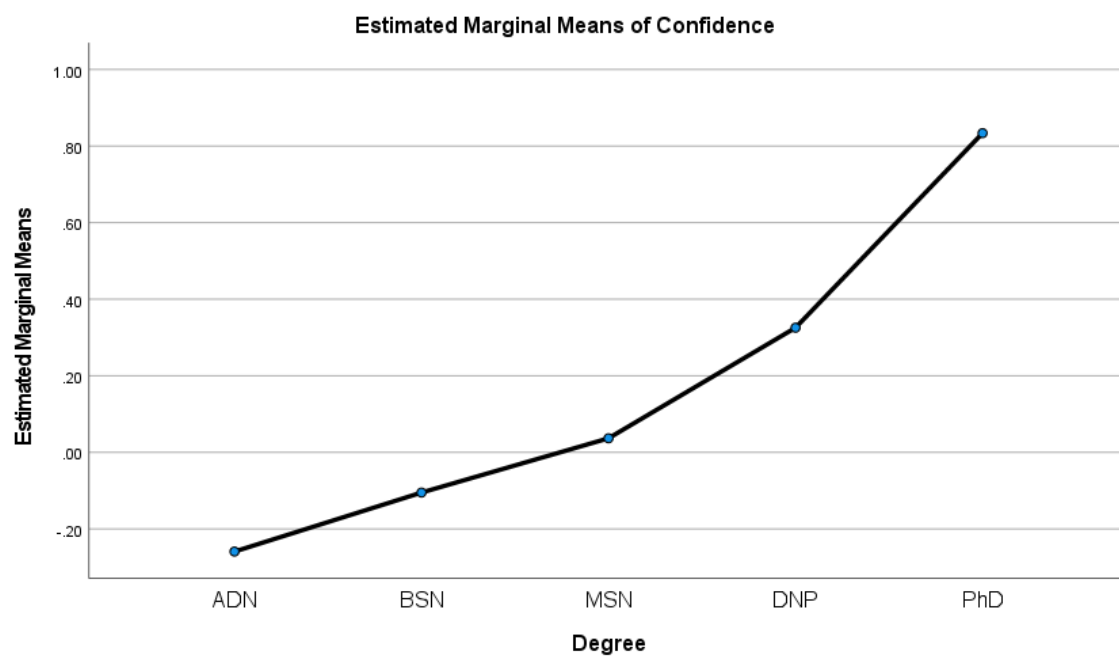
Figure 6

Attitude & Degree

Estimated Marginal Means of Attitude
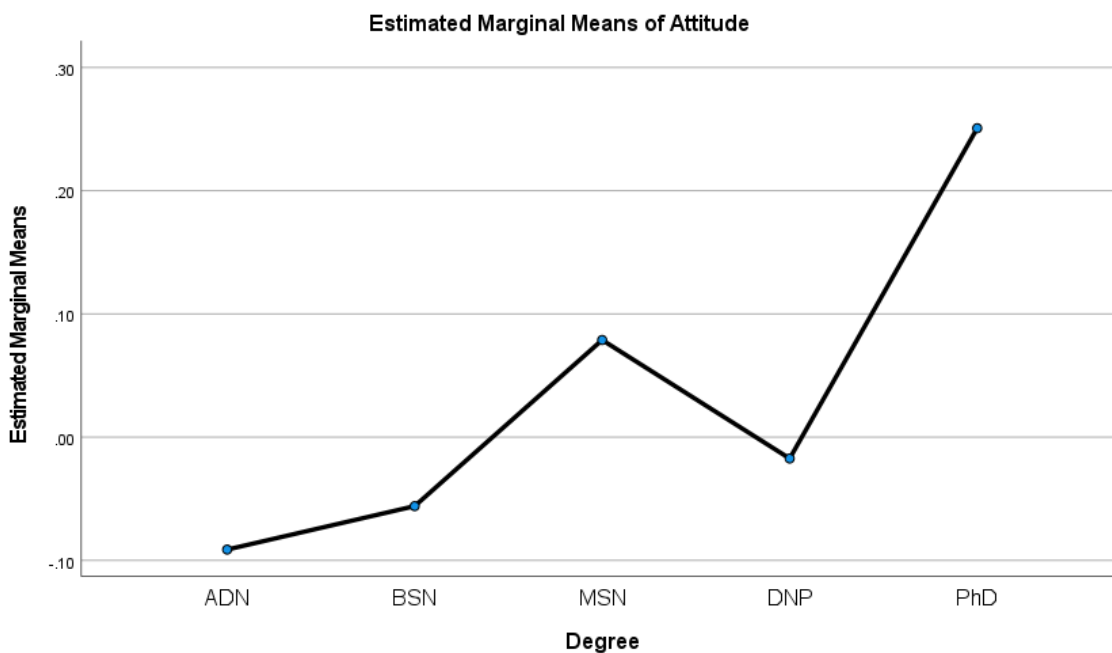
Relevant Scholarship

Clinical Research Practice Areas. As the entry level for clinical research nursing practice often begins at the BSN level it is important to understand the RNs perceptions and attitudes toward research conduct (ANA & IACRN, 2017). Of importance there are no set standards for entry level education or competencies for clinical research nursing, currently the NIH Nursing Clinical Center recommends the BSN as the entry level (nIH Clinical Center, 2020). At the time of this study there were over 30,000 open clinical research nursing jobs in the United States identified during a LinkedIn job search, many of which requiring an RN licensure and no specification of degree level (LinkedIn, 2023).

Within the clinical research practice area RNs support multidisciplinary teams while conducting clinical research providing documentation, facilitating ethical and legal precepts with respect to human subject protections (ANA & IACRN, 2017). The role the RN provides while conducting clinical research to the human research subject is vital to supporting patient rights while monitoring for potential harm during a research protocol (ANA & IACRN, 2017). My research found there was a strong positive correlation between attitude and the RNs perceived support and opportunities regarding research conduct. The perceptions and attitudes of the RNs directly impact whether the RN will engage in research conduct fulfilling the clinical research nurse role and protecting the most vulnerable patient population, human research subjects.

Domains of Clinical Research Nursing Practice. The ANA and IACRN established the domains of clinical research nursing practice in 2017. The domains of practice include clinical practice, human subject protections, contributing to the science, care coordination and continuity, and study management for clinical research practice (ANA & IACRN, 2017). The survey tool assessed eight domains of research demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest. My research found that regardless of degree RNs reported they worked in a research-supportive environment in their clinical practice however the ADN and DNP groups indicated they were not aware of support available to conduct research. My research did identify that the BSN, MSN, and PhD groups indicated they either agreed or strongly agreed they were aware of the

research support available to them within their institution. Interestingly my research found that while RNs expressed, they work in research supportive environments and were aware of resources nearly half reported not knowing what the research priority was for the organization and an absence of a research-active environment.

A component to the domains of clinical research nursing practice is care coordination and management of a patient during a clinical research study (ANA & IACRN, 2017). Care coordination is critical to quality results and outcomes for clinical research and requires the support from leadership for successful outcomes (Karlberg et al., 2019).

My study findings support past studies that RNs have a strong understanding of research utilization, however other health care professionals reported a stronger knowledge and understanding of research conduct (Eller et al., 2003; Roxburgh, 2005). My study further supported that RNs reported negative attitudes and low experience in conducting research (Eller et al., 2003; Hafsteinsdottir et al., 2017; Ross & Burrell, 2019; Roxburgh, 2005; Vijayalakshmi et al., 2014,). RNs negative interest, little to no experience and low confidence levels regarding research conduct identify gaps in the RNs research conduct clinical practice, human subject protections, contributing to the science, care coordination and continuity, and study management.

My study found that RNs of all degree levels indicated little to no experience in research involvement, at least half had not presented at national or international conferences and more than half of the RNs had not published research in a peer-reviewed journal. In contrast, while more than half of the RNs had no experience in research, three

fourths indicated they agreed or strongly agree to have sufficient knowledge and skill to participate in research conduct. Understanding the RNs' perceptions in alignment with the domains of practice for clinical research nursing may offer additional pathways for new educational programs in clinical research for the RN to engage in research conduct.

Magnet Recognition Program. In 1983 the American Academy of Nursing (AAN) conducted a study to assess work environments of nurses and the impact to quality patient outcomes (American Nurses Credentialing Center [ANCC], 2023). Of the 163 institutions, the AAN identified 41 institutions that modeled the "Forces of Magnetism" (ANCC, 2023). The mission of the Magnet program is to "elevate patient care around the world in an environment where nurses, in collaboration with interprofessional team flourish by setting the standard for excellence through leadership, scientific discovery and dissemination and implementation of new knowledge," thereby modeling the Forces of Magnetism (ANCC, 2023). One of the core pillars of Magnet designation is to engage in nursing research studies contributing to new knowledge (Erickson & Pappas, 2020). Although several studies have identified positive outcomes for nursing practice and improved quality and safety for patient care, the Magnet designation is not adopted by the majority of the 6,129 hospitals in the United States (ANCC, 2023). The 6,129 hospitals include community hospitals, federally funded hospitals, and nonfederal psychiatric hospitals (ANCC, 2023). With less than 7% of hospitals engaging in a formal measurable accreditation process that offers RNs the ability to participate in research, the opportunity for RNs to engage with a mentor, conduct research, and grow in research knowledge are limited. My results showed that

over half of the RNs reported no to little experience in generating research ideas, developing research questions, aims, hypotheses and objectives, writing a research proposal, conducting a systematic review, using quantitative and qualitative methods, analyzing and interpreting methods, and three quarters of the RNs stated they had no to little experience writing and publishing research in academic journals. My results supported these statistics which showed that 90% of the RNs agreed that engaging in research conduct would be of benefit to their organizations. The Magnet infrastructure provides an important avenue for RNs to conduct research generating new knowledge for practice and care A rich research environment is key to developing nursing research and having a well-developed professional practice model (Erickson & Pappas, 2020; ANCC, 2023).

Mentorship. A component to sustaining a successful engagement in nursing research is to have a PhD nurse scientist as a mentor to facilitate research development and mentorship (Erickson & Pappas, 2020; Oster et al., 2020). Supporting RNs in a clinical nurse specialist role for clinical research directly supports the institutions efforts for clinical research nursing and offers direct engagement to support RNs to contribute to nursing science (Oster et al., 2020). My research assessed RNs' perceptions of support by fellow peers to participate in research and awareness of training and educational opportunities. The majority of responses, except for the PhD, reported they were unsure or disagreed that they were aware of support, education and training. Furthermore, my research found that RNs were not aware of funding opportunities available to conduct research. My findings further support the need for mentorship programs engaging PhD

prepared nurses to support research conduct at the practice level. While there is variation in the awareness and support, my study identified RNs perceive their direct line managers do not support clinical research, over half reported they were unsure or disagreed that they were supported.

A nurse scientist as a mentor to support RNs to engage in research conduct increases the RNs experience and confidences to engage in research conduct (Hafsteinsdottir et al., 2017; Spiva et al., 2017). My results support previous studies that mentorship is key to RNs engaging in research conduct a formal infrastructure is absent from the United States hospital health systems (Hafsteinsdottir et al., 2017; Spiva et al., 2017). A gap in the workforce exists within United States hospitals to engage and employ a nurse scientist to support, educate, mentor and impact quality care outcomes. An Indeed job search in August of 2023 found there were 18 jobs posted with the language "nurse scientists" in the job title in the United States. Of the 18 open positions for a nurse scientist, three were hospitals systems, and the remaining 15 were split equally between universities and children's hospitals (Indeed, 2023). To continue to grow the evidence base of nursing practice through research there must be opportunities for RNs to engage in research conduct and for nurse scientist to be employed to mentor and train the future generation of nurse scientists (McLaughlin et al., 2013; Patterson et al., 2013; Spiva et al., 2017.

Research Constraints and Perceptions of Nurses.

My findings support previous studies which showed that RNs r perceived constraints to practice research is due to complex and challenging concepts related to

research conduct (Eller et al., 2003; Ross & Burrell, 2019; Vijayalakshmi et al., 2014).

Adding to RNs' confusion about research, are two terms used interchangeably, which are

"research utilization" and "evidenced-based-practice", (Eller et al., 2003, Ross & Burrell,

2019; Vijayalakshmi et al., 2014) which makes research difficult to understand and may

result in decreased interest in research conduct (Eller et al., 2003; Ross & Burrell, 2019;

Vijayalakshmi et al., 2014,).

The degree groups were mostly in agreement for responses to the support and

Interpretation of Theoretical Framework

The survey questions I used in the study align with the NIH and KT frameworks,

assessing the RNs' interest, experience, confidence, and attitude to develop and

implement research and dissemination. The KT supports five domains of practice

assessing user groups, known issues, research, the researcher's relationship, and

disseminating new knowledge.

My survey assessed the RNs perceived role, confidence, skill, knowledge,

competence, and training needs. Most RNs respondents agreed they possessed the

necessary skills to conduct research identifying the user group. The known issues related

to the RNs low level of interest and experience in research conduct are skill and

knowledge. The confidence scales further identified research and the researcher's

relationship, outlining RNs low confidence in the engagement of research conduct as "a

systematic investigation, including research development, testing and evaluation,

designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of

Human Subjects*, 2021). While nurses' educational curriculum layers in advancing

research knowledge, the results of my study and other research indicated additional

training, education, knowledge, and opportunities are needed based on the RNs interest,

experience, confidence, and attitude toward research conduct (Cetinkaya et al., 2020;

Coke, 2021; Patterson et al., 2013; Silka et al., 2012).

The phenomenon of interest, the nurse's knowledge, and perceptions of research

are significant in my findings interrelating theoretical interest, experience, confidence,

and attitude. My research supports the nursing research conduct knowledge model as a

conceptual model for research knowledge and conduct. My exploratory theory nursing

research conduct knowledge model identifies relationships between the practice setting

and the RNs knowledge of research conduct. The phenomenon of KT theory

interconnects the user group of the RN, known negative perceptions of research by the

user group, outlines negative and unknown relationships of the researcher by conducting

correlational research on the RNs interest, experience, confidence, and attitude of

research conduct. Using the self-reported survey tool to understand the RNs perception of

research offers conceptual and propositional methods to engage and understand the RNs

research practice knowledge regarding nursing knowledge thru education, research

conduct, human subject protection knowledge and ethical conduct of the RNs knowledge.

Limitations

My research design for the MANOVA created limitations due to my sample size

within the degree groups. The violation of normality violated the homogeneity of

variances matrices due to sample size within groups, as the degree groups were not

evenly distributed (Bhandari, 2022a; Laerd, 2023). The recruitment process used a

convenience sample, and I was not able to target RNs in specific areas where higher degree levels would potentially be found.

Implications

Although there are no studies to date that have investigated the constructs, perceptions and attitudes of nurses based on nursing degree, there are studies that identified that RNs have negative perceptions of research utilization, known as evidence-based practice. My results revealed that RNs practicing with graduate degrees have higher positive responses for interest, experience, confidence, and attitude toward research, which can be a starting point to understanding the RNs' perceptions of conducting research.

Implications for the nursing profession could have both negative and positive outcomes. The negative outcomes for the nursing profession are that RNs reported negative perceptions and attitudes toward increasing the body of knowledge within the nursing profession by conducting research and contributing to the literature. The negative responses toward research conduct experience in writing and publishing in academic research journals and reading and interpreting research results signal a concern for developing new research to disseminate into clinical practice as evidence-based practice from the nursing profession. The positive outcome is identifying new knowledge to contribute to the body of knowledge within nursing practice. RNs engaging in research concepts and research conduct can contribute to the nursing process by developing theory, vision, and social directives (Gray et al., 2017). Increasing the RNs engagement in research conduct can have a positive social impact at the organizational and national

level by adding to the national body of nursing knowledge. The potential to impact the nursing profession by identifying methodologies to increase the awareness and need for the PhD prepared nurse to support research conduct within the nursing profession can impact the nursing profession as a whole and impact social change at the national level.

Recommendations

Recommendations to further this research would be to repeat the study with a larger sample size within the degree groups to increase the power and effect. Increase the sample size by providing equal distributions between independent groups to explore the survey questions associations between interest, experience, confidence and attitude, and perceived support and opportunities in research conduct, motivation for and outcomes of patriating in research conduct, and individual roles and characteristics around participation in research conduct.

Using a larger population with equal degree distributions would increase the power and effect analysis of the MANOVA to allow for understanding of differences between interest, experience, confidence and attitude, and nursing degree. The outcomes of my research using the interest, experience, confidence and attitude scales and the scaffolding approach of laying in knowledge with degree progression, the RN may increase knowledge in research conduct. My research outcomes could be an opportunity to reassess content for research curriculum in nursing programs to increase the potential to grow interest in RNs conducting research and possibility to enlarge the number of RNs to earn a PhD Additional research is needed on RNs' interest, experience, confidence and attitude of conducting research using a large sample sizes and diverse target populations

in a variety of clinical settings to offer further recommendations regarding research education in nursing programs.

Conclusion

I conducted my study to respond to the call from the AACN and NINR to understand national trends and nursing perceptions regarding nursing research and the RN degree pathway. RNs of all educational levels have identified the importance of research to their practice while also indicating they find research difficult to engage in and understand as identified in various research utilization studies (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). My research findings add to the body of knowledge to further understand the RNs' interest, experience, confidence, and attitude of research conduct. A fundamental limitation to previous studies is the focus on evidence-based practice adoption, research utilization, perceptions, and attitudes toward research, not the conduct of research.

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Effect of RN's Years of Experience on Research Conduct

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Abstract

Research utilization studies (evidence-based practice) have been studied extensively though out nursing education. Currently little is known regarding the impact on research utilization or research conduct and the RN interest, experience, confidence, and attitude about research based on years of experience or practice setting. This study was a quantitative, cross-sectional, nonexperimental, correlational study to understand the difference in level of interest, experience, confidence, and attitude of the RN looking at years of practice, and work setting. The Walden University Institutional Review Board oversaw a full board review for this study

The keywords searched were, *nursing, nurse scientist, nurse(s), interest, experience, confidence, attitudes, attitude, beliefs, perceptions, values, education, research conduct, research, clinical research clinical research nursing, clinical research trials, mentorship, mentor, research knowledge, nursing degree, BSN, MSN, DNP, Ph.D, American Colleges of Nursing, nursing curriculum, essentials of nursing, scope and standards of practice, domains of practice, ethics, ethical conduct, nursing professional practice, new knowledge, evidence based practice, research utilization, nursing position statements, National Institute of Nursing Research, and future of nursing.*

Introduction

The Commission on Collegiate Nursing Education (CCNE) creates the guidelines for the RN educational curriculum (AACN, 2021). The nursing educational curriculum developed by the CCNE influences safety in healthcare and public health by establishing the standards for nursing curricula related to education, research, and nursing practice (AACN, 2021). Each level of the RN's education incorporates advancing levels of knowledge about research from "nursing, the art's, humanities, and other sciences" (AACN, 2021, p. 27). Education informs nursing knowledge, practice, and research to make ethical decisions, empower socially responsible leadership, and translate theories of practice from nursing to other healthcare disciplines (AACN, 2021). The foundation for nursing curriculum is found in the practice of evidence-based practice (EBP) thus synthesizing information to inform educational structure (Rudman et al., 2020). The concept of EBP often referred to as research utilization has been a part of clinical practice since the nineties however, the adoption of EBP by the RN remains minimal to date (Rudman et al., 2020; Melnyk et al., 2017).

RNs acknowledge the importance of research utilization however RN's continue to not engage in research utilization (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014). Research studies indicate that nurses who have graduate degrees and engage in more than one research course are more likely to engage in research utilization than undergraduate nurses (Saunders & Vehviläinen-Julkunen, 2016). There is a gap in knowledge indicating if years of experience impact RNs perceptions, attitudes, or knowledge as the majority of studies focus on nursing students

and not practicing RNs (Saunders & Vehviläinen-Julkunen, 2016). Further research is essential to assess the RNs years of practice, practice setting and knowledge in research development and conduct as the foundation to generate new knowledge for EBP engagement (Rudman et al., 2020; Melnyk et al., 2017; Saunders & Vehviläinen-Julkunen, 2016).

Significance

The CCNE has established standards for research course work within nursing curriculum from baccalaureate to doctoral-prepared level however a gap in research engagement remains throughout the nursing profession (AACN, 2021). Research has identified that nurse's express frustration related to skill set and low level of support from administration to engage in research within the clinical setting (Ax & Kincade, 2001; Brooke et al., 2015). Moreover, study results identified that nurses did not feel they had sufficient knowledge to develop or understand scientific methodologies or the complexities of research (Brooke et al., 2015). Nurses identified the following variables negatively impacted their comprehension of research classroom sizes, complex terminology, and insufficient practical application (Brooke et al., 2015; Menzies et al., 2021; Ross et al., 2020). Nurses in administrative roles reported favorable results related to research utilization when they had research experience or had lighter workloads than their clinical bedside counterparts (Rudman et al., 2020; Melnyk et al., 2017).

The knowledge translation (KT) theory was used to develop the framework of this study. The concept of knowledge relates to the phenomenon of interest regarding nurse's knowledge and perceptions of nursing research conduct. KT was defined by the Canadian

Institutes of Health Research (CIHR) as the engagement of morally just application of knowledge interactions between research and people to capture the positive advantages of research (2007). The KT supports five domains of practice assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge. This researcher has created the conceptual model (see Figure 1) titled the Theory and Research Knowledge practice model utilizing the five domains of practice of the clinical research nurse. The conceptual model is the foundation to develop a plan for this researcher to study the phenomenon of nursing research practice theory.

I conducted this study to understand the difference in interest, experience, confidence, and attitude toward conducting research among RNs who practice in a clinical and academic setting. The purpose of this study was to inform new knowledge regarding the nurse's interest, experience, and attitude toward conducting research where past nursing research studies have focused on the nurse's utilization of research in practice known as evidence-based practice skills using attitude and perceptions as core constructs (Eller et al., 2003; Roxburgh, 2005; Spilsbury et al., 2007; Vijayalakshmi et al., 2014).

Figure 1

Nursing Research Conduct Knowledge Model
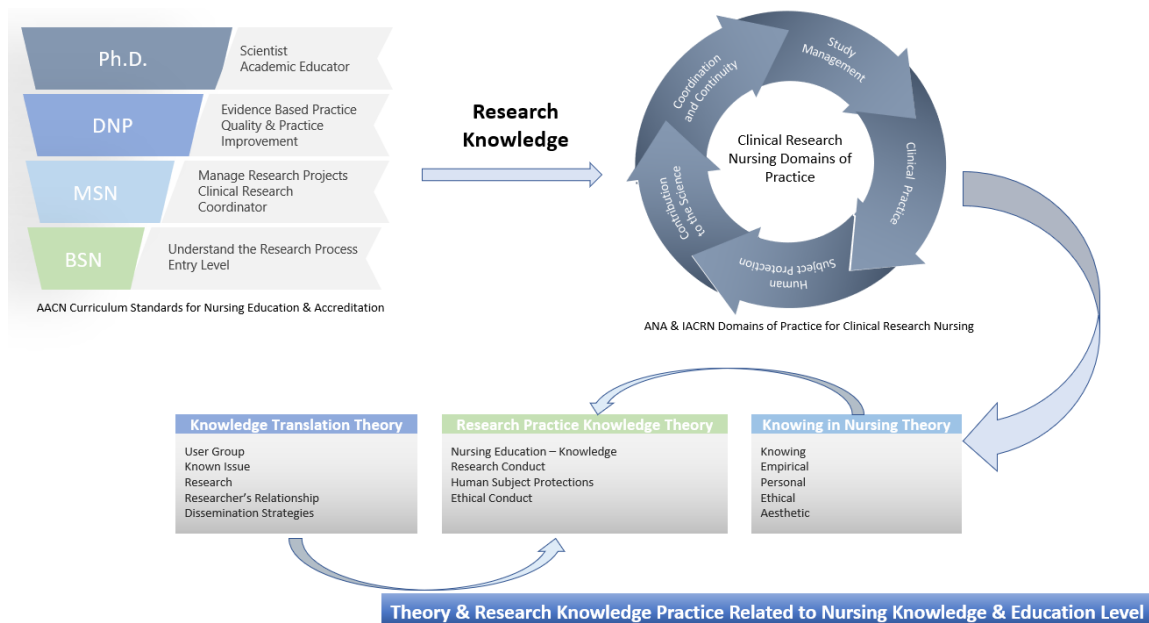
Relevant Scholarship

Research Constraints

Nursing educators have researched students to understand students' attitudes, knowledge, and engagement in research and evidence-based practice (Ross et al., 2020). Research has identified that nurses with increased years of education or multiple years of clinical practice have a positive attitude toward research utilization (Ross et al., 2020; Rudman et al., 2020). A study of 436 nursing students was conducted to understand students' perceptions concerning clinical research, education research, and pedagogy research utilizing the National Student Nurses Association (nSNA) (Ross et al., 2020). Students who engaged in research before nursing school as a research assistant participated in past research or completed research courses were more likely to have

positive attitudes toward clinical research, educational research, and pedagogy research (Ross et al., 2020).

Nurses' perceptions and attitudes regarding research are complicated and difficult to understand, resulting in nurses not engaging in research activities (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014). RNs, compared to other healthcare professionals, scored lower in the knowledge of research and attitudes (Eller et al., 2003, Ross & Burrell, 2019, Vijayalakshmi et al., 2014). However, nurses scored higher in translating research outcomes (research utilization) into practice than their healthcare professional colleagues (Eller et al., 2003, Ross & Burrell, 2019; Vijayalakshmi et al., 2014). Positive attitudes toward research utilization are reported more often by nurses with increased experience as compared to less experienced nurses (Rudman et al., 2020; Al-Busaidi et al., 2019). However, nurses with more experience also continue to report perceived barriers related to research support from nursing leadership at the same rate as non-experienced nurses, (Al-Busaidi et al., 2019; Rudman et al., 2020Al). Although research identifies nursing leadership supports nursing research and evidence-based practice, barriers remain for practicing nurses within the clinical setting at the bedside to engage in nursing research, as reported by experienced bedside nurses (Al-Busaidi et al., 2019; Pintz et al., 2018; Rudman et al., 2020).

The importance of mentorship and support from experienced research nurses during the post-doctoral phase in the nurses' career pathway is shown in studies (Hafsteinsdottir et al., 2017; Roxburgh, 2005). There was a positive relationship between mentorship and research productivity, knowledge and skill, career development,

publications and presentations, work culture, collaboration, and income when offering

mentorship programs with experienced post-doctoral nurse researchers (Hafsteinsdottir et

al., 2017). However, there were no studies identified supporting experience and

knowledge or the trajectory related to the nurse's pre-doctoral pathway for experience,

educational development, and mentorship support to engage in research practice

(Hafsteinsdottir et al., 2017; Roxburgh, 2005). A knowledge deficit regarding research

knowledge and experience was also reported during the individual nursing interviews

concerning educational skills to undertake research and levels of educational preparation

pre-doctoral (Hafsteinsdottir et al., 2017; Roxburgh, 2005).

A study conducted in the UK by Menzies, Emms, and Valler (2021) assessed

pairing nursing students with experienced research nurses and found a positive

relationship between education and attitudes toward research utilization. The study

assesses the knowledge and capability of nursing students engaging in a four-week

placement with experienced research nurses to actively engage in a research project

(Menzies et al., 2021). Study findings indicated that 100% of all students reported

positive attitudes, gained research knowledge and critical thinking and would consider

engaging in post-graduate studies (Menzies et al., 2021).

Additional research is needed to understand how years of experience affect an

RN's level of interest, experience, confidence, and attitude towards engaging in and

conducting nursing research, as most research conducted is on research utilization is

conducted on nursing students (Eller et al., 2003; Roxburgh, 2005). The nursing

profession needs to promote and empower nurses in a PhD nursing role; without quality

theoretical frameworks and conceptual models, the nursing profession cannot advance nursing science (Grady & Gough, 2015).

Research Question and Design

The research question for this study was "What is the difference in attitudes toward conducting research and years of practice in RNs who work in a clinical setting compared to RNs who work in an academic setting controlling for years of practice in nursing?" Understanding the difference between years of practice in nursing and the number of research-related educational courses regarding research conduct could provide information to determine the interest, confidence, and attitude toward conducting research involvement or participation in research among RNs who work in a clinical setting compared to RNs who work in an academic setting. Using a quantitative cross-sectional comparative analysis, I collected quantifiable information regarding nurses' interest, experience, and attitude of research conduct to analysis the years of practice and research-related educational courses of nurses and research conduct.

Methods

Participants

The target population was licensed RNs who work/reside in the United States. An RN is defined as a nurse who holds registered nursing licensure as defined by their state or government agency overseeing RNs (nCSBN Leading Regulatory Excellence [NCSBN], 2022). I posted a recruitment flyer on social media (such as Facebook and LinkedIn) to all individuals that contained an invitation to participate, which described the study. Participants were invited to participate in an online web survey using the

SurveyMonkey (https://www.surveymonkey.com) link. Participants' identities were protected using SurveyMonkey through the anonymous web-based survey tool for data collection. Participant criteria included RNs and excluded any participants who were not licensed RNs.

If an individual was interested in participating, they accessed a link to take them to the inclusion criteria question assessing if they were an RN. If they answer "yes," the link took them to the consent form. If the individual agreed to participate, the next screen led to the demographics and survey questions (see Appendices A and B, respectively). After completing the demographic datasheet, the screen advanced to the determinants of behavior questionnaire.

Sample and Power

I calculated the sample size using the G*-Power tool to analyze statistical power for the multivariate analysis of covariance (MANCOVA) for analysis (Faul et al., 2007). With an effect size of 0.25, the alpha error probability of 0.05, power of 0.80, with the numerator degrees of freedom of 10, using four groups with the covariates yielded sample size of 269. The noncentrality parameter A totaled 16.8125000 with a critical F of 1.8666726 with denominator degrees of freedom of 264 for a sample size of 269 with an actual power of 0.8001280.0.

Variables/Sources of Data

The independent variable was the RNs degree level. The groups are the levels of nursing degree baccalaureate (BSN), masters (MSN), doctor of nursing practice (DNP), and the doctor of nursing philosophy (PhD) degree. The dependent variables are level of

interest, experience, confidence, and attitude toward conducting research. The covariates are clinical and academic work settings.

Instrumentation or Measures

I used a research survey tool by Stewart et al. (2019), licensed by Elsevier. Permission to use and reproduce the interest, experience and confidence survey tool was granted (see Appendix C). The survey tool contains eight domains of assessment: demographics; research activities; research interest, experience, and confidence; research conduct and dissemination; translating research; readiness to participate in research; research training; and research plans and areas of interest (Stewart et al., 2019). The section for assessment of research interest, experience, and confidence used a 5-point Likert scale rated from *no interest*, *experience*, *confidence* to *very interested*, *experienced*, and *confident*, respectively (Stewart et al., 2019). The remaining sections used a 5-point Likert scale ranging from *strongly agree* to *strongly disagree* (Stewart et al., 2019).

The survey by Stewart et al. (2019) was reviewed for validity by individuals in academia, researchers and practicing pharmacists using contextualization. The framework used to support validity of the survey tool incorporated the theoretical domains framework from the Determinants of Implementation Behavior Questionnaire (Stewart et al., 2019). The researchers' aims were to measure subjective survey results regarding attitudes and opinions of research (Stewart et al., 2019). The validity of subjective data can be assessed by correlations with respondents' responses inferred from patterns identified from the scales assessed (Creswell & Creswell, 2022; Fowler, 2014). The

survey tool's validity is supported based on the respondents' correlation to patterns

reviewed, noting all results ranged from $\alpha = .87$ to $\alpha = .97$, indicating high validity

(Stewart et al., 2019). The survey tool incorporates multiple domains of assessment:

demographics; research activities; research interest, experience, and confidence; research

conduct and dissemination; translating research; readiness to participate in research;

research training; and research plans and areas of interest (Stewart et al., 2019).

The aspects of research consisted of 16 items with a Cronbach's alpha score

indicating the internal consistency identifying close relationship for each grouping,

interest ($\alpha = .96$), experience ($\alpha = .96$) and confidence ($\alpha = .97$) in specific aspects of

research. Attitudinal items consisted of 17 items with a high Cronbach's alpha score ($\alpha =$

.93; Stewart et al., 2019). The motivation for and outcomes of participation research

consisted of seven items with the Cronbach's alpha score indicating a close relationship

($\alpha = .89$; Stewart et al., 2019). The individual roles and characteristics around

participating in the research included 10 items ($\alpha = .87$; Stewart et al., 2019).

Design and Analysis

I conducted a data analysis using SPSS (Version 27). The descriptive statistics

consisted of age, gender, race, ethnicity, nursing position, and years of practice (see

Appendix A). The descriptive statistics included means, standard deviations, sample size,

medians, and confidence intervals identifying any relationship between the variables of

age, gender, race, ethnicity, nursing position, and years of practice concerning the RN's

interest, experience, confidence, and attitude toward conducting research. I used a one-

way multivariate analysis of covariance (MANCOVA) to analyze the study proposal. The

MANCOVA provided an assessment of the differences between the groups of the

categorical independent variable on the dependent variable, identifying a difference

between the years of practice and number of research-related educational courses of a RN

who practices within a clinical setting compared to an academic setting. I selected the

MANCOVA test to assess the differences in the categorical independent variable of the

RN grouped by years of practice and number of research-related educational courses

while controlling for the covariate years of practice of the RN in either a clinical or

academic setting. The assumptions for the MANOVA include multivariate normality,

homoscedasticity, linearity and independence and randomness. I tested for the

assumptions for MANOVA prior to analyzing the data. If the data violated any

assumptions, I consulted with a statistician and my committee I conducted a Cronbach's

alpha on the results of the research survey by Stewart et al. (2019) to evaluate reliability

of the instrument with the sample used in my study.

Results

Execution

I received a total of 334 responses from RNs. Upon inspection of the data, I

removed 51 incomplete surveys, leaving N = 283. I disseminated the survey via the

internet and social media. I used a series of Likert scales from a validated and reliable

survey by Stewart et al (2019), that contained eight domains of assessment:

demographics; research activities; research interest, experience, and confidence; research

conduct and dissemination; translating research; readiness to participate in research;

research training; and research plans and areas of interest (Stewart et al., 2019). The

Likert scale assessed the RNs' interest, experience, confidence, and attitude regarding

research conduct. The interest, experience, and confidence scales were all independent

scales, each consisting of 16 items; all three scales had a Cronbach's Alpha value of $\alpha =$

.96. The final scale measured nurses' attitudes regarding research conduct. The attitudinal

scales included three sub-scales (Support and Opportunities, Motivation, Individual Roles

& Characteristics) using a Likert scale to identify nurses' attitudes and perceptions of

research. The combined sub-scales consisted of 34 items with a Cronbach Alpha value of

$\alpha = .94$. All scales indicated that each grouping of items has an internal consistency of

excellent ($\alpha > 0.90$) (see Table 1).

Table 1

Reliability Statistics

Reliability Statistics

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N
Interest	0.956	0.956	16
Experience	0.96	0.961	15
Confidence	0.964	0.964	16
Attitudinal	0.941	0.94	34

Results

Descriptive Statistics

Respondent demographics are listed in Table 2 - 3. Of the 283 responses

analyzed, 94% (n=265) were female, and 6% (n=18) were male, with 73% of respondents

between the ages of 35 to 64 years of age (see Table 2). The racial demographics were

self-identified, with the largest group identified as White or Caucasian at 83% (n=234),

the second largest group identified as American Indian or Alaska Native at 7.2% (n=19),

and the next group was Hispanic or Latino at 5% (n=14) (see Table 3). Degrees held by

the RNs are identified in Table 4, noting the highest number of responses were the

baccalaureate degree (BSN) at 54.4% (n=154); the second largest group were master's

degree (MSN) prepared nurses at 26.9% (n=76), the DNP was the smallest group at 2.8%

(n=8), and the doctorate in nursing philosophy was 7.8% (n=22).

Table 2

Age of Respondents

Age	n	%
18–24	5	1.8
25–34	49	17.3
35–44	69	24.4
45–54	71	25.1
55–64	66	23.3
65+	23	8.1
Total	283	100.0

Table 3

*Race * Gender Crosstabulation*

	Gender					
	Female		Male		Total	
Race	n	%	n	%	n	%
American Indian or Alaska Native	19_a	7.2	0_a	0.0	19	6.7
Another race	2_a	0.8	0_a	0.0	2	0.7
Asian or Asian American	6_a	2.3	0_a	0.0	6	2.1
Black or African American	7_a	2.6	0_a	0.0	7	2.5
Hispanic or Latino	13_a	4.9	1_a	5.6	14	4.9
Native Hawaiian or other Pacific Islander	1_a	0.4	0_a	0.0	1	0.4
White or Caucasian	217_a	81.9	17_a	94.4	234	82.7
Total	265	100.0	18	100.0	283	100.0

Note. Each subscript letter denotes a subset of Gender categories whose column

proportions do not differ significantly from each other at the *p*= .05 level.

Table 4

RN Degree Level

Variable	*N*	%
ADN	23	8.1
BSN	154	54.4
MSN	76	26.9
DNP	8	2.8
PhD	22	7.8
Total	283	100.0

Practice Area Descriptive Statistics

Years of practice as an RN indicated that 45% had more than twenty years of experience, and the mean years of experience averaged 15 years (see Table 5). Of the 283 RNs 48.1% (n=136) reported they did not have experience in research practice (see Table 6). The hospital health system was identified by ADN 70%; BNS 61%, MSN 45%, DNP 50%, as the main practice setting (see Table 7). The PhD respondents reported that 64% worked in an Academic Medical Center or Academic University (see Table 7). Two hundred thirty-two participants worked in the clinical setting (82%) (n=232), and nurses practicing in the academic setting represented 18% (n=51) of the sample (see Table 8). Of the 283 practicing nurses, there was nearly equal representation between direct care and non-direct care practicing nurses at 55.5% (n=157) and 44.5% (n=126), respectively (see Table 9). Nurses working within a hospital health system represented the largest area of practice at 53.7% (n=152), the clinic setting was second at 19.1% (n=54), and the next largest group were nurses practicing withing academic medical center representing 15.9% (n=45) (see Table 10). Additionally, I asked the participants to identify the therapeutic

area in which they practiced within their main practice settings and if they identified as

direct patient care (n=157) or non-direct patient care (n=126) roles, see the therapeutic

area and position tables for results (see Table 11).

Table 5

Years of Nursing Practice

Variable	N	%
1 to 5 years	35	12.4
6 to 10 years	45	15.9
11 to 15 years	56	19.8
16 to 20 years	20	7.1
>20 years	127	44.9

Table 6

Years of Research Practice

Variable	N	%
none	136	48.1
1 to 5 years	77	27.2
6 to 10 years	29	10.2
11 to 15 years	6	2.1
>15 years	35	12.4

Table 7

Main Practice Setting Degree Crosstabulation

	ADN		BSN		MSN		DNP		PhD		Total	
Variable	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Academic Medical Center or Academic University	1	4.3	13	8.4	15	19.5	2	28.6	14	63.6	45	15.9
Clinic Setting	5	21.7	30	19.5	17	22.1	2	28.6	0	0.0	54	19.1
Hospital Health System	16	69.6	94	61.0	35	45.5	3	42.9	4	18.2	152	53.7
Remote	1	4.3	13	8.4	8	10.4	0	0.0	4	18.2	26	9.2
Urgent Care - Out Patient	0	0.0	4	2.6	2	2.6	0	0.0	0	0.0	6	2.1
Total	23	100.0	154	100.0	77	100.0	7	100.0	22	100.0	283	100.0

Note: "Degree" is the overall spanning header above ADN, BSN, MSN, DNP, PhD, Total.

Table 8

Setting Practice Area

Source	Practice Setting	*N*	%
Valid	Academic Setting	51	18.0
	Clinical Setting	232	82.0
	Total	283	100.0

Table 9

Position Direct or Non-Direct Care

Source	Nursing Position	*N*	%
Valid	Direct patient care	157	55.5
	Non-direct patient care	126	44.5
	Total	283	100.0

Table 10

Main Practice Setting

Source	Main Practice Setting	*N*	%
Valid	Academic Medical Center or Academic University	45	15.9
	Clinic Setting	54	19.1
	Hospital Health System	152	53.7
	Remote	26	9.2
	Urgent Care - Out Patient	6	2.1
	Total	283	100.0

Table 11

Theraputic Area

Theraputic Area of Practice	N	%
Cardiac	28	9.9
Clinical Research	28	9.9
Critical Care	40	14.1
Dialysis	3	1.1
Education	36	12.7
Leadership/Management	45	15.9
Medical Surgical	34	12.0
Nurse Practitioner/Clinical Nurse Specialist	28	9.9
Oncology	28	9.9
Pediatrics	10	3.5
Stroke	1	0.4
Trauma	2	0.7

The overall univariate analysis of variance descriptive statistics for the RN in the academic practice setting for interest, experience, confidence, support, motivation, and individual roles and characteristics for research conduct had a positive mean score for each category as compared to negative mean scores in the clinical setting (see Table 12). The RN's interest in research conduct was higher in the academic setting with a mean of 0.4844 compared to mean of -0.0956 in the clinical setting. The mean value for academic nurses reported experience in research conduct was 0.5299, whereas in the clinical setting, the mean value was -0.1166. The descriptive statistics indicated that academic RNs expressed more experience in research conduct, with a mean value 64.59% higher than the RNs in the clinical setting. RNs in the academic setting had a 43.79% higher confidence level in research conduct than RNs in the clinical setting. RNs in the

academic setting indicated positive attitudinal mean scores for support (M = 0.3613),

motivation (M = 0.2345), and individual roles and characteristics (M = 0.2206) when

analyzed by practice setting without the degree (see Table 12). The descriptive statistics

for interest, experience and the additional scales and sub-scales are listed below in Tables

12 to 19. The individual questions for each scale: assessment, interest experience,

confidence, support and opportunities, motivation, and individual roles and

characteristics scales are listed in Appendix B.

Table 12

Descriptive Statistic Univariate Analysis of Variance

	Practice Areas					
	Academic Setting			Clinical Setting		
Variable	*M*	*SD*	*N*	*M*	*SD*	*N*
Interest	.4845	.75204	51	-.0956	.87373	232
Experience	.5300	.77343	51	-.1166	.81391	232
Confidence	.3637	.62741	51	-.0741	.66428	232
Support & Opportunities	.3613	.66176	51	-.0713	.80936	232
Motivation	.2345	.63143	51	-.0512	.81544	232
Individual Roles & Characteristics	.2206	.79491	51	-.0484	.67924	232

Table 13

Descriptive Statistics DV Interest

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.1527	1.23000	3
	Clinical Setting	-.1269	.83973	32
	Total	-.1029	.85920	35
6 to 10 years	Academic Setting	.1940	1.06490	2
	Clinical Setting	-.0921	.75904	43
	Total	-.0794	.76111	45
11 to 15 years	Academic Setting	.4132	.81330	6
	Clinical Setting	-.1027	.81284	50
	Total	-.0475	.82140	56
16 to 20 years	Academic Setting	.2458	.64155	5
	Clinical Setting	-.1965	.85445	15
	Total	-.0859	.81438	20
>20 years	Academic Setting	.5759	.72877	35
	Clinical Setting	-.0660	.98017	92
	Total	.1109	.95921	127
Total	Academic Setting	.4845	.75204	51
	Clinical Setting	-.0956	.87373	232
	Total	.0090	.88063	283

Table 14

Descriptive Statistics DV Experience

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.4537	1.25773	3
	Clinical Setting	-.1436	.84806	32
	Total	-.0924	.88181	35
6 to 10 years	Academic Setting	.0295	1.36118	2
	Clinical Setting	-.0922	.75164	43
	Total	-.0868	.76292	45
11 to 15 years	Academic Setting	.3080	.72926	6
	Clinical Setting	-.1198	.76499	50
	Total	-.0740	.76651	56
16 to 20 years	Academic Setting	.4864	.33220	5
	Clinical Setting	-.2371	.73481	15
	Total	-.0563	.72416	20
>20 years	Academic Setting	.6095	.78118	35
	Clinical Setting	-.0972	.87996	92
	Total	.0976	.90796	127
Total	Academic Setting	.5300	.77343	51
	Clinical Setting	-.1166	.81391	232
	Total	-.0001	.84302	283

Table 15

Descriptive Statistics DV Confidence

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.0527	.88355	3
	Clinical Setting	-.1677	.66680	32
	Total	-.1488	.67470	35
6 to 10 years	Academic Setting	.3505	1.24097	2
	Clinical Setting	-.0267	.62610	43
	Total	-.0099	.64449	45
11 to 15 years	Academic Setting	.0377	.49321	6
	Clinical Setting	-.0774	.66531	50
	Total	-.0651	.64634	56
16 to 20 years	Academic Setting	.0226	.59750	5
	Clinical Setting	-.0422	.75743	15
	Total	-.0260	.70620	20
>20 years	Academic Setting	.4958	.58951	35
	Clinical Setting	-.0672	.67585	92
	Total	.0880	.69818	127
Total	Academic Setting	.3637	.62741	51
	Clinical Setting	-.0741	.66428	232
	Total	.0048	.67800	283

Table 16

Descriptive Statistics DV Attitude

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.3387	.48116	3
	Clinical Setting	-.0655	.37566	32
	Total	-.0308	.39429	35
6 to 10 years	Academic Setting	-.0910	.26587	2
	Clinical Setting	-.0186	.35227	43
	Total	-.0218	.34682	45
11 to 15 years	Academic Setting	.2220	.27015	6
	Clinical Setting	-.0875	.39704	50
	Total	-.0544	.39549	56
16 to 20 years	Academic Setting	-.0204	.18789	5
	Clinical Setting	-.0068	.39533	15
	Total	-.0102	.35018	20
>20 years	Academic Setting	.2246	.49732	35
	Clinical Setting	-.0195	.49029	92
	Total	.0478	.50233	127
Total	Academic Setting	.1946	.44591	51
	Clinical Setting	-.0395	.42428	232
	Total	.0027	.43685	283

Table 17

Descriptive Statistics DV Support and Opportunities

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.4427	.99552	3
	Clinical Setting	-.0184	.73929	32
	Total	.0211	.75748	35
6 to 10 years	Academic Setting	.5440	.39174	2
	Clinical Setting	-.1150	.87303	43
	Total	-.0857	.86596	45
11 to 15 years	Academic Setting	.2930	.75971	6
	Clinical Setting	-.0831	.75451	50
	Total	-.0428	.75725	56
16 to 20 years	Academic Setting	-.1204	.47093	5
	Clinical Setting	-.0411	.62430	15
	Total	-.0609	.57889	20
>20 years	Academic Setting	.4244	.65471	35
	Clinical Setting	-.0679	.86964	92
	Total	.0678	.84298	127
Total	Academic Setting	.3613	.66176	51
	Clinical Setting	-.0713	.80936	232
	Total	.0066	.80124	283

Table 18

Descriptive Statistics DV Motivation

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.4650	.58197	3
	Clinical Setting	-.0164	.91921	32
	Total	.0249	.89945	35
6 to 10 years	Academic Setting	-.9560	1.05925	2
	Clinical Setting	.0526	.63465	43
	Total	.0078	.67391	45
11 to 15 years	Academic Setting	.3272	.62871	6
	Clinical Setting	-.1358	.77233	50
	Total	-.0862	.76697	56
16 to 20 years	Academic Setting	.0984	.74036	5
	Clinical Setting	.2285	.64137	15
	Total	.1960	.64949	20
>20 years	Academic Setting	.2863	.56190	35
	Clinical Setting	-.1115	.89650	92
	Total	-.0019	.83517	127
Total	Academic Setting	.2345	.63143	51
	Clinical Setting	-.0512	.81544	232
	Total	.0003	.79214	283

Table 19

Descriptive Statistics DV Individual Roles and Characteristics

Years Practice	Setting Practice Area	*M*	*SD*	*N*
1 to 5 years	Academic Setting	.4700	.57115	3
	Clinical Setting	-.1507	.54918	32
	Total	-.0975	.57032	35
6 to 10 years	Academic Setting	-.2170	.54447	2
	Clinical Setting	-.0047	.59525	43
	Total	-.0141	.58900	45
11 to 15 years	Academic Setting	.2990	.41207	6
	Clinical Setting	-.1375	.64593	50
	Total	-.0907	.63695	56
16 to 20 years	Academic Setting	-.0226	.52858	5
	Clinical Setting	-.0709	.68228	15
	Total	-.0588	.63426	20
>20 years	Academic Setting	.2455	.90351	35
	Clinical Setting	.0188	.77137	92
	Total	.0813	.81262	127
Total	Academic Setting	.2206	.79491	51
	Clinical Setting	-.0484	.67924	232
	Total	.0001	.70759	283

Tests of Assumptions

MANCOVA Assumptions. I intended to analyze the data using a one-way multivariate analysis of covariance (MANCOVA). The first assumption for MANCOVA is (a) there is a linear relationship between the outcome variable and the independent variables assuming a scatter plot of interest, experience, confidence, and attitude against years of practice in nursing (1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, >20 years) was plotted. Visual inspection indicated a linear relationship between the variables (see Figure 2).

Figure 2

Setting Practice Area
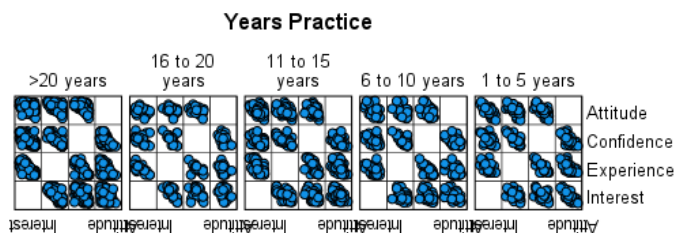
Using a split data file, I analyzed the second assumption of no multicollinearity by splitting the data into the years of practice in nursing (1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, >20 years). A correlation coefficient closer to -1 indicates a strong negative relationship; inversely, closer to +1 indicates a very strong positive one (Bhandari, 2022a). Next, I completed a bivariate correlation analysis indicating the Pearson Correlation was between 0.5 and 1, which means there was no multicollinearity between the dependent variables. The correlations for the dependent variables interest, experience, confidence, and attitude between years of practice in nursing (1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, >20 years) indicated there is a linear relationship indicating the independence and multicollinearity were met (see Table 20 to 25).

Table 20

Correlations Between Dependent Variables

Variable	Source	Confidence	Experience	Interest	Attitude
Confidence	Pearson Correlation	1	.742**	.543**	.534**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	283	283	283	283
Experience	Pearson Correlation	.742**	1	.680**	.522**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	283	283	283	283
Interest	Pearson Correlation	.543**	.680**	1	.450**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	283	283	283	283
Attitude	Pearson Correlation	.534**	.522**	.450**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	283	283	283	283

**. Correlation is significant at the 0.01 level (2-tailed).

Table 21

Years Practice = 1 to 5 years *Correlations*[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.594**	.620**	.691**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	35	35	35	35
Experience	Pearson Correlation	.594**	1	.811**	.615**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	35	35	35	35
Confidence	Pearson Correlation	.620**	.811**	1	.614**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	35	35	35	35
Attitude	Pearson Correlation	.691**	.615**	.614**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	35	35	35	35

**. Correlation is significant at the 0.01 level (2-tailed).
a. Years Practice = 1 to 5 years

Table 22

Years Practice = 6 to 10 years Correlations[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.459[**]	.399[**]	.382[**]
	Sig. (2-tailed)		.002	.007	.010
	N	45	45	45	45
Experience	Pearson Correlation	.459[**]	1	.716[**]	.396[**]
	Sig. (2-tailed)	.002		<.001	.007
	N	45	45	45	45
Confidence	Pearson Correlation	.399[**]	.716[**]	1	.486[**]
	Sig. (2-tailed)	.007	<.001		<.001
	N	45	45	45	45
Attitude	Pearson Correlation	.382[**]	.396[**]	.486[**]	1
	Sig. (2-tailed)	.010	.007	<.001	
	N	45	45	45	45

**. Correlation is significant at the 0.01 level (2-tailed).

a. Years Practice = 6 to 10 years

Table 23

Years Practice = 11 to 15 years Correlations[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.614[**]	.470[**]	.433[**]
	Sig. (2-tailed)		<.001	<.001	<.001
	N	56	56	56	56
Experience	Pearson Correlation	.614[**]	1	.676[**]	.491[**]
	Sig. (2-tailed)	<.001		<.001	<.001
	N	56	56	56	56
Confidence	Pearson Correlation	.470[**]	.676[**]	1	.426[**]
	Sig. (2-tailed)	<.001	<.001		.001
	N	56	56	56	56
Attitude	Pearson Correlation	.433[**]	.491[**]	.426[**]	1
	Sig. (2-tailed)	<.001	<.001	.001	
	N	56	56	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

a. Years Practice = 11 to 15 years

Table 24

Years Practice = 16 to 20 years Correlations[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.695[**]	.282	.299
	Sig. (2-tailed)		<.001	.228	.201
	N	20	20	20	20
Experience	Pearson Correlation	.695[**]	1	.480[*]	.348
	Sig. (2-tailed)	<.001		.032	.133
	N	20	20	20	20
Confidence	Pearson Correlation	.282	.480[*]	1	.469[*]
	Sig. (2-tailed)	.228	.032		.037
	N	20	20	20	20
Attitude	Pearson Correlation	.299	.348	.469[*]	1
	Sig. (2-tailed)	.201	.133	.037	
	N	20	20	20	20

**. Correlation is significant at the 0.01 level (2-tailed).

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

a. Years Practice = 16 to 20 years

Table 25

Years Practice = >20 years Correlations[a]

Variable	Source	Interest	Experience	Confidence	Attitude
Interest	Pearson Correlation	1	.765**	.614**	.428**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	127	127	127	127
Experience	Pearson Correlation	.765**	1	.786**	.547**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	127	127	127	127
Confidence	Pearson Correlation	.614**	.786**	1	.570**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	127	127	127	127
Attitude	Pearson Correlation	.428**	.547**	.570**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	127	127	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

a. Years Practice = >20 years

The third assumption of MANCOVA is the independence of groups. The participants were assigned to the years of nursing practice (1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, >20 years) during the study design process. The fourth assumption of MANCOVA is that there should be no multivariate outliers. A linear regression analysis was used to test for the Mahalanobis' distance using two df, and a critical value of 13.82 was used to test for outliers (see Figures 3, 4, 5, 6). Before removing the outliers, the Mahalanobis was 28.220 after removing the outliers, the

Mahalanobis df was 2, and the critical value was 13.605 indicating no outliers are

present, indicating the assumption of independence of observations was met.

Figure 3

Years of Practice Interest
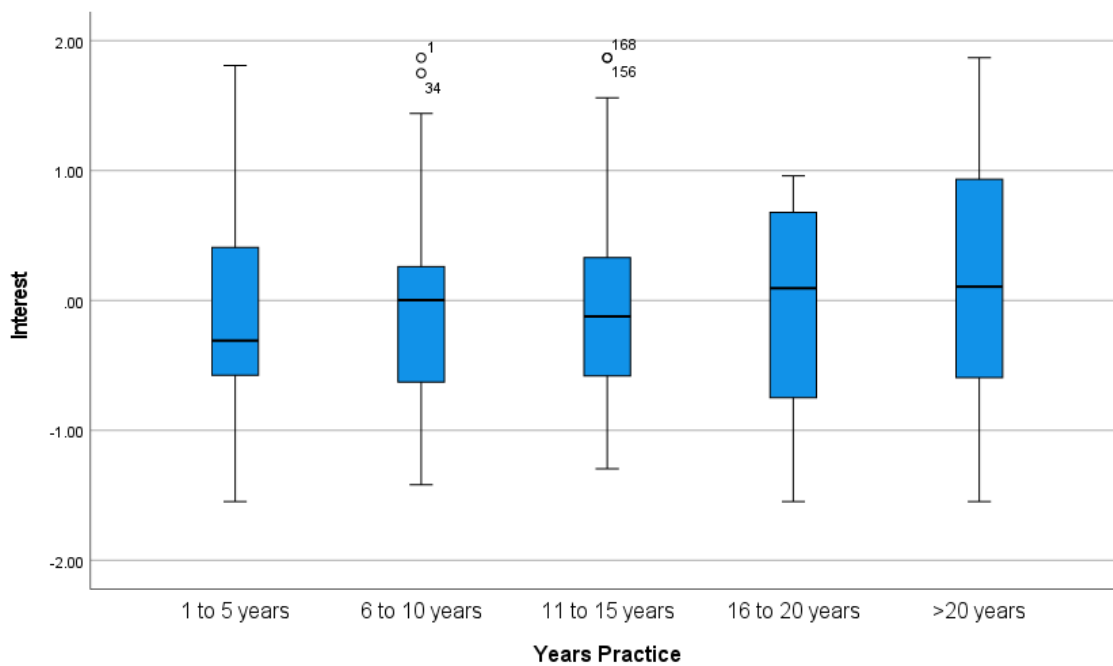
Figure 4

Years of Practice Experience
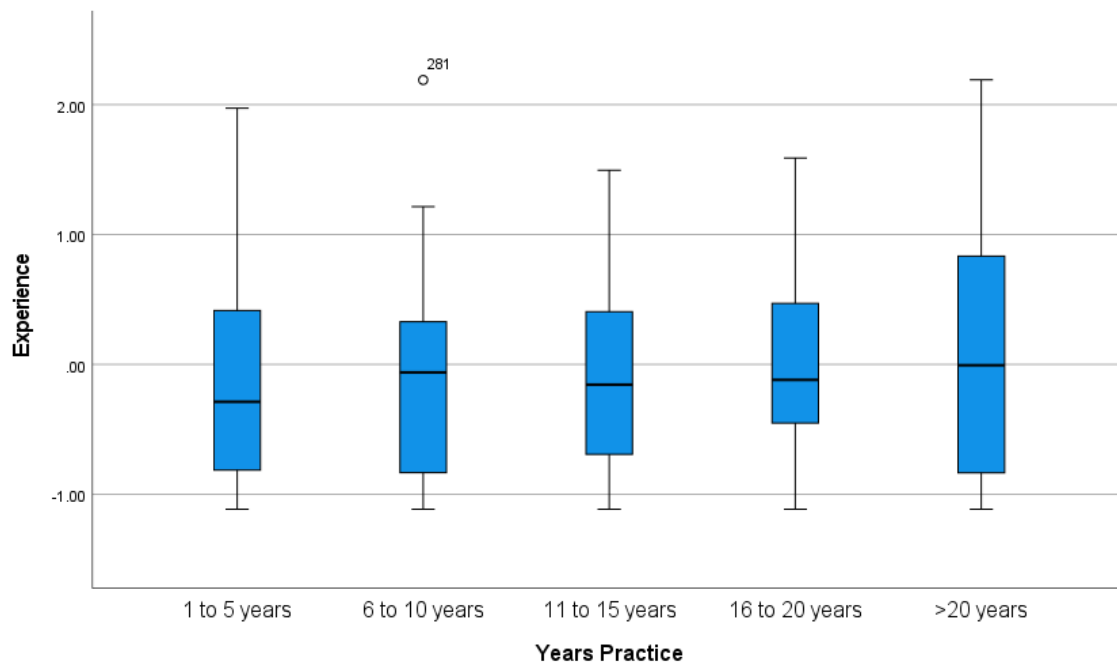
Figure 5

Years of Practice Confidence
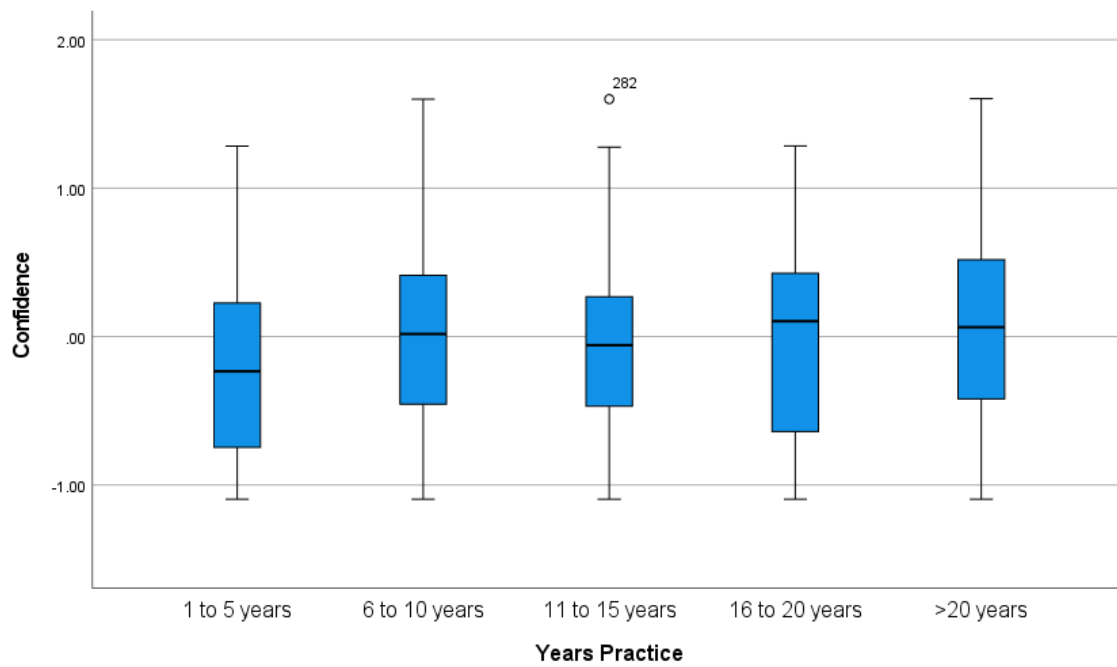
Figure 6

Years of Practice Attitude
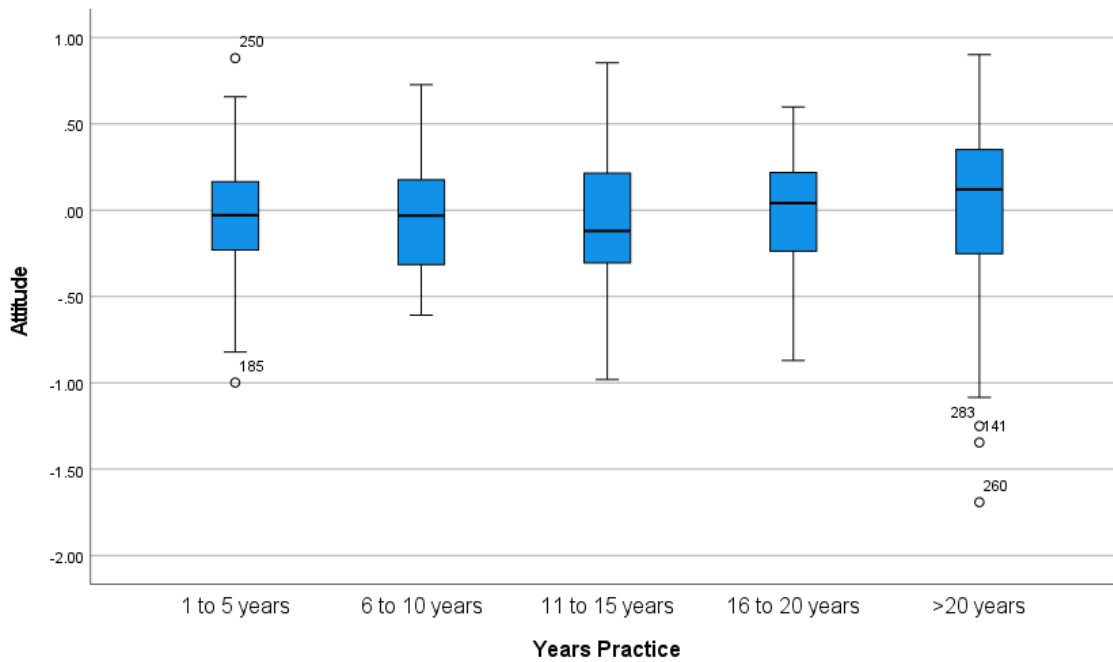
The fifth assumption of MANCOVA is multivariate normality. The descriptives statistical analysis identified the skewness and kurtosis is between -1 and +1, indicating multivariate normality exists (see Table 26) also see *Figures* 7 to 10.

Table 26

Tests of Normality

	Years Practice	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Interest	1 to 5 years	.145	35	.062	.940	35	.054
	6 to 10 years	.083	45	.200*	.966	45	.198
	11 to 15 years	.087	56	.200*	.960	56	.061
	16 to 20 years	.174	20	.115	.909	20	.061
	>20 years	.073	127	.092	.966	127	.003
Experience	1 to 5 years	.166	35	.016	.912	35	.008
	6 to 10 years	.105	45	.200*	.943	45	.029
	11 to 15 years	.099	56	.200*	.933	56	.004
	16 to 20 years	.117	20	.200*	.949	20	.352
	>20 years	.105	127	.002	.944	127	<.001
Confidence	1 to 5 years	.109	35	.200*	.950	35	.112
	6 to 10 years	.077	45	.200*	.976	45	.460
	11 to 15 years	.075	56	.200*	.970	56	.172
	16 to 20 years	.126	20	.200*	.949	20	.356
	>20 years	.053	127	.200*	.972	127	.009
Attitude	1 to 5 years	.078	35	.200*	.981	35	.785
	6 to 10 years	.073	45	.200*	.966	45	.208
	11 to 15 years	.087	56	.200*	.988	56	.867
	16 to 20 years	.162	20	.182	.961	20	.570
	>20 years	.086	127	.022	.960	127	<.001

Years	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Practice	Statistic	df	Sig.	Statistic	df	Sig.

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Figure 7

P-Plot of Interest
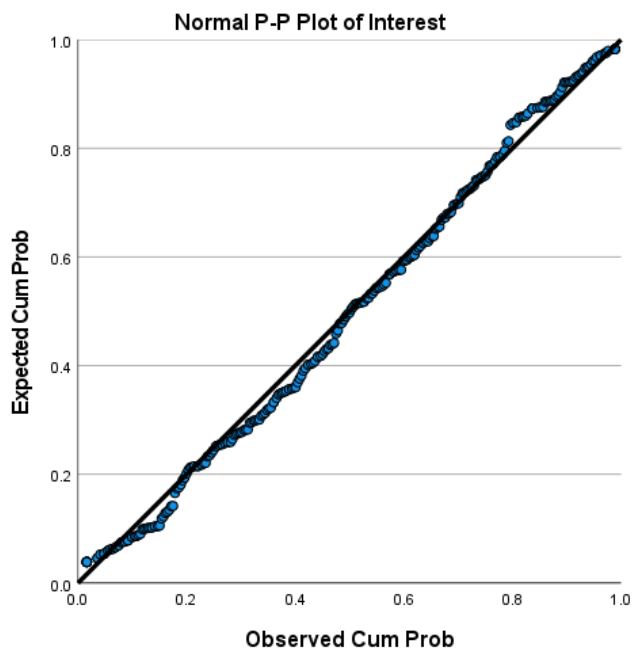
Figure 8

P-Plot of Experience

Normal P-P Plot of Experience
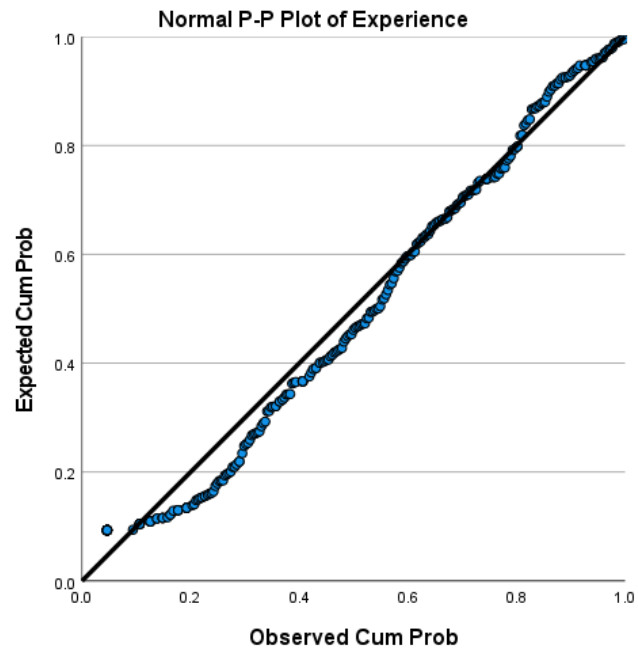
Figure 9

P-Plot of Confidence
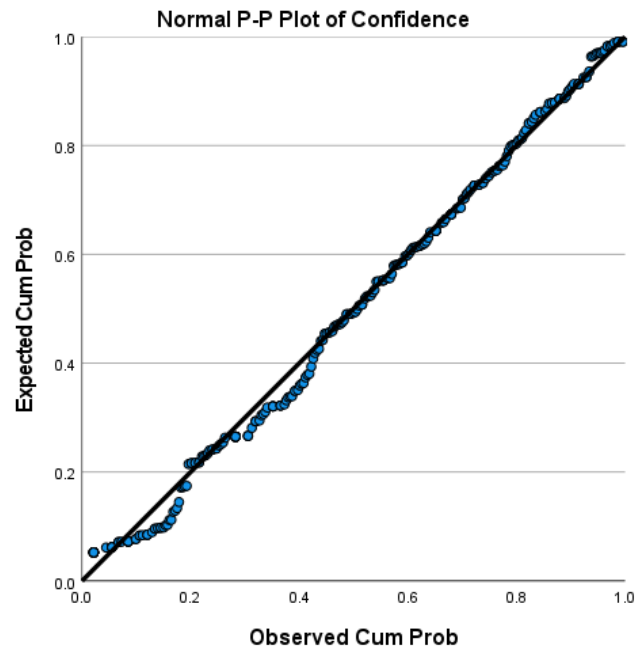
Figure 10

P-Plot of Attitude
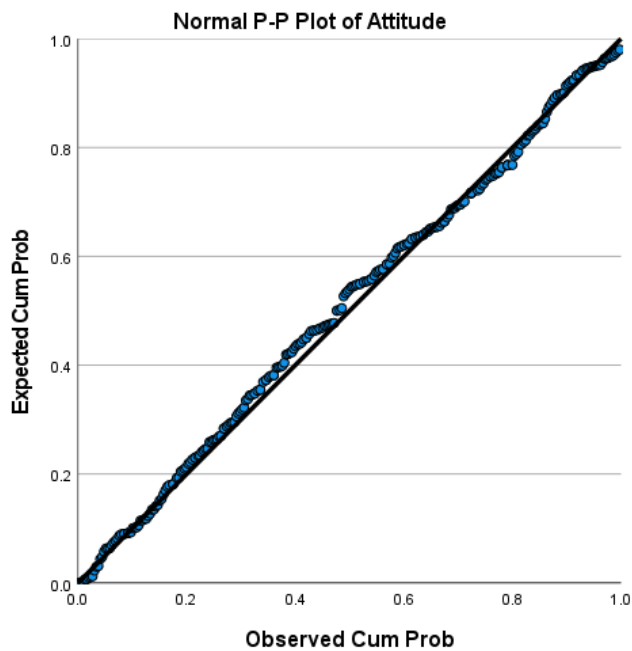
The sixth assumption of MANCOVA is the equality of covariance matrices, which I tested using the general linear model multivariate analysis, examining the Box's test of Equality of Covariance Matrices test. Each dependent variable was analyzed; interest, experience, confidence, and attitude ($p = .093$), indicating no statistical significance thus, the assumption for equality of covariances matrices was met (see Table 27).

Table 27

Box's Test of Equality of Covariance Matrices[a]

Box's M	102.848
F	1.235
df1	70
df2	2359.556
Sig.	.093

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + YRP + Setting

The seventh test of assumptions is for homogeneity of covariances using the Levene's test. I ran the test for homogeneity of covariance matrices for interest experience confidence, and attitude with the independent variable degree and covariance of years of practice statistical significance was not met (see Table 28, 29) indicating there is no variance in the groups between the intercept, years of practice and degree of the RN. A nonsignificant result indicates that the matrices between the groups are generally equal indicating homogeneity of variance thus meeting the seventh assumption for homogeneity of covariances (Field, 2018).

Table 28

Levene's Test of Equality of Error Variances[a]

Variable	F	*df1*	*df2*	Sig.
Confidence	.575	9	273	.817
Experience	1.263	9	273	.257
Interest	1.393	9	273	.191
Attitude	.824	9	273	.595

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + YRP + Setting

Table 29

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.096	4.762[b]	6.000	269.000	<.001	.096
	Wilks' Lambda	.904	4.762[b]	6.000	269.000	<.001	.096
	Hotelling's Trace	.106	4.762[b]	6.000	269.000	<.001	.096
	Roy's Largest Root	.106	4.762[b]	6.000	269.000	<.001	.096
Setting	Pillai's Trace	.106	5.309[b]	6.000	269.000	**<.001**	.106
	Wilks' Lambda	.894	5.309[b]	6.000	269.000	<.001	.106
	Hotelling's Trace	.118	5.309[b]	6.000	269.000	<.001	.106
	Roy's Largest Root	.118	5.309[b]	6.000	269.000	<.001	.106
YRP	Pillai's Trace	.038	.431	24.000	1088.000	.993	.009
	Wilks' Lambda	.963	.429	24.000	939.639	.993	.009
	Hotelling's Trace	.038	.427	24.000	1070.000	.993	.009
	Roy's Largest Root	.021	.958[c]	6.000	272.000	.454	.021

a. Design: Intercept + Setting + YRP
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.

ANCOVA Assumptions. The assumptions for ANCOVA are (a) normality, (b) independence, (c) linearity, and (d) homogeneity of regression slopes. I assessed the first assumption of normality and independence using descriptive statistics. The skewness and kurtosis were between -1 and +1, indicating the data were normally distributed (see Table

30). There is one deviation from the standard for the interest group in the 16 to 20 years of practice group the Kurtosis is -1.123. The deviation could be due to a small sample size (n = 20). A small e sample size could skew the results as there was not a enough data to offer a robust distribution assessment of the responses for the group 16 to 20 years of practice (Field, 2018).

Table 30

Tests of Independence

	Years Practice	N Valid	N Missing	*M*	Median	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Interest	1 to 5 years	35	0	-0.1029	-0.3080	0.539	0.398	-0.401	0.778
	6 to 10 years	45	0	-0.0794	0.0030	0.564	0.354	0.318	0.695
	11 to 15 years	56	0	-0.0475	-0.1225	0.402	0.319	-0.259	0.628
	16 to 20 years	20	0	-0.0859	0.0955	-0.454	0.512	-1.123	0.992
	>20 years	127	0	0.1109	0.1070	-0.075	0.215	-0.978	0.427
Experience	1 to 5 years	35	0	-0.0924	-0.2870	0.662	0.398	-0.455	0.778
	6 to 10 years	45	0	-0.0868	-0.0610	0.562	0.354	0.270	0.695
	11 to 15 years	56	0	-0.0740	-0.1550	0.557	0.319	-0.550	0.628
	16 to 20 years	20	0	-0.0563	-0.1190	0.247	0.512	-0.096	0.992
	>20 years	127	0	0.0976	-0.0060	0.289	0.215	-0.983	0.427
Confidence	1 to 5 years	35	0	-0.1488	-0.2340	0.370	0.398	-0.745	0.778
	6 to 10 years	45	0	-0.0099	0.0180	0.279	0.354	-0.402	0.695
	11 to 15 years	56	0	-0.0651	-0.0580	0.440	0.319	-0.217	0.628

Years Practice	N		M	Median	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
	Valid	Missing						
16 to 20 years	20	0	-0.0260	0.1040	-0.066	0.512	-0.813	0.992
>20 years	127	0	0.0880	0.0640	0.205	0.215	-0.515	0.427
Attitude 1 to 5 years	35	0	-0.0308	-0.0280	-0.154	0.398	0.702	0.778
6 to 10 years	45	0	-0.0218	-0.0310	0.421	0.354	-0.314	0.695
11 to 15 years	56	0	-0.0544	-0.1200	0.113	0.319	-0.419	0.628
16 to 20 years	20	0	-0.0102	0.0420	-0.711	0.512	0.666	0.992
>20 years	127	0	0.0478	0.1210	-0.754	0.215	0.701	0.427

I ran the Shapiro-Wilks test for each of the dependent variables controlling for *years* of nursing practice. RNs' interest in research conduct was normally distributed in all the years of nursing practice groups except for the >20 years group (see Table 31). The RNs' experience in research conduct was not normally distributed in all the years of nursing practice groups except for the 16 to 20 years group (see Table 31). The RNs confidence in research conduct was only normally distributed in all the years of nursing practice groups. (see Table 31). The RNs' attitude in research conduct was normally distributed in all the nursing practice groups except for the >20 years of nursing practice group (see Table 31). The assumptions for normality were partially met. However ANCOVAs are robust with respect to the normality of group data (Laerd Statistics, 2023) The significance level was set at $p = .05$, indicating that if the null hypothesis is true then there would be a 5% chance or less of the results not seeing an effect on the RNs interest

experience confidence, support and opportunities, motivation, and individual roles and characteristics in the conduct of research (Laerd Statistics, 2023). ANCOVA can tolerate skewed distributions of groups with minimal effect of causing a Type 1 error (Bhandari, 2022b).

Table 31

Tests of Normality

Variable	Years Practice	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Interest	1 to 5 years	.145	35	.062	.940	35	.054
	6 to 10 years	.083	45	.200[*]	.966	45	.198
	11 to 15 years	.087	56	.200[*]	.960	56	.061
	16 to 20 years	.174	20	.115	.909	20	.061
	>20 years	.073	127	.092	.966	127	.003
Experience	1 to 5 years	.166	35	.016	.912	35	.008
	6 to 10 years	.105	45	.200[*]	.943	45	.029
	11 to 15 years	.099	56	.200[*]	.933	56	.004
	16 to 20 years	.117	20	.200[*]	.949	20	.352
	>20 years	.105	127	.002	.944	127	<.001
Confidence	1 to 5 years	.109	35	.200[*]	.950	35	.112
	6 to 10 years	.077	45	.200[*]	.976	45	.460
	11 to 15 years	.075	56	.200[*]	.970	56	.172
	16 to 20 years	.126	20	.200[*]	.949	20	.356
	>20 years	.053	127	.200[*]	.972	127	.009
Attitude	1 to 5 years	.078	35	.200[*]	.981	35	.785
	6 to 10 years	.073	45	.200[*]	.966	45	.208
	11 to 15 years	.087	56	.200[*]	.988	56	.867
	16 to 20 years	.162	20	.182	.961	20	.570
	>20 years	.086	127	.022	.960	127	<.001

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The Box's test of equality of covariance matrices test indicated that the observed covariances matrices of the dependent variables were equal across the RNs groups (Bhandari, 2022a; Laerd Statistics, 2023). Therefore, the homogeneity of variance was not violated, and the RN groups had independence, normality, and linearity (Bhandari, 2022a; Laerd Statistics, 2023). Levene's test indicated that the assumption of homogeneity of variance was not violated for each dependent variable, as the variables were not statistically significant for the following: years of practice box's test of equality (see Table 32), Levene's test years of practice alone (see Table 33), Levene's test setting and years of practice independent (see Table 34), and Levene's test setting and years of practice interaction (see Table 35).

Table 32

Years of Practice Alone Box's Tests of Equality of Covariance Matrices[a]

Box's M	45.433
F	1.083
df1	40
df2	31849.992
Sig.	.332

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + YRP

Table 33

Years of Practice Alone Levene's Test of Equality of Error Variances[a]

Variable	F	df1	df2	Sig.
Interest	1.883	4	278	.114
Experience	2.410	4	278	.050
Confidence	.275	4	278	.894
Attitude	2.395	4	278	.051

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + YRP

Table 34

Setting & Years of Practice Independent Levene's Test of Equality of Error Variances[a]

Variable	F	df1	df2	Sig.
Interest	.953	4	278	.434
Experience	1.746	4	278	.140
Confidence	.086	4	278	.987
Attitude	1.459	4	278	.215

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Setting + YRP

Table 35

Interaction Years of Practice & Setting Levene's Test of Equality of Error Variances[a]

Variable	F	df1	df2	Sig.
Interest	.941	4	278	.440
Experience	1.744	4	278	.140
Confidence	.118	4	278	.976
Attitude	1.654	4	278	.161

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + YRP + Setting + YRP * Setting

ANCOVA Results

I used a univariate ANCOVA to analyze my research question "What is the difference in attitudes toward conducting research and years of practice in RNs who work in a clinical setting compared to RNs who work in an academic setting controlling for years of practice in nursing?" The test between the means was used to analyze each dependent variable interest, experience, confidence, and attitudinal scales: support and opportunities, motivation, and individual roles and characteristics, the analysis by a dependent variable.

Interest. I analyzed the RNs level of interest toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANCOVA for years of practice for each of the years. The test of between-subject effects main effect indicated years of practice in nursing was not statistically significant for the RNs interest in research conduct (see Table 36). The tests of between-subjects effects main effects for years of practice in nursing and practice settings revealed there was no

significance interest in research conduct based on years of practice in nursing; however, there is statistical significance based on practice setting (see Table 37).

Table 36

Tests of Between-Subjects Effects Years of Practice DV Interest

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	2.468[a]	4	.617	.793	.530
Intercept	.331	1	.331	.426	.515
YRP	2.468	4	.617	.793	.530
Error	216.227	278	.778		
Total	218.718	283			
Corrected Total	218.695	282			

a. R Squared = .011 (Adjusted R Squared = -.003)

Table 37

Tests of Between-Subjects Effects Years of Practice and Setting DV Interest

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	14.852[a]	5	2.970	4.036	.001
Intercept	2.932	1	2.932	3.984	.047
YRP	.783	4	.196	.266	.900
Setting	12.384	1	12.384	16.829	<.001
Error	203.843	277	.736		
Total	218.718	283			
Corrected Total	218.695	282			

a. R Squared = .068 (Adjusted R Squared = .051)

Next, I ran a univariate ANCOVA to determine where the difference was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects interaction identifying the years of practice in nursing compared to practice setting did not impact the RNs interest in research conduct (see Table 38). There

was no significant interaction between years of practice in nursing and the practice

setting.

Table 38

Tests of Between-Subjects Effects Years of Practice and Setting Interaction DV Interest

Source	Type III Sum of Squares	df	M^2	F	Sig.
Corrected Model	15.443[a]	9	1.716	2.305	.016
Intercept	.721	1	.721	.968	.326
YRP	1.355	4	.339	.455	.769
Setting	3.397	1	3.397	4.563	.034
YRP * Setting	.591	4	.148	.198	.939
Error	203.252	273	.745		
Total	218.718	283			
Corrected Total	218.695	282			

a. R Squared = .071 (Adjusted R Squared = .040)

The estimates of marginal means indicated that RNs with increased practice years

had more interest than RNs with less practice experience (see Table 39). The RNs in the

one to five years of practice group expressed 1% interest. RNs with 11 to 15 years of

practice experience represented 16% interest in research. RNs with >20 years of practice

experience were 26% more likely to express an interest in research conduct as compared

RNs with less experience in nursing.

Table 39

Estimates Dependant Variable Interest

Years Practice	Setting Practice Area	*M*	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.153	.498	-.828	1.133
	Clinical Setting	-.127	.153	-.427	.173
6 to 10 years	Academic Setting	.194	.610	-1.007	1.395
	Clinical Setting	-.092	.132	-.351	.167
11 to 15 years	Academic Setting	.413	.352	-.280	1.107
	Clinical Setting	-.103	.122	-.343	.137
16 to 20 years	Academic Setting	.246	.386	-.514	1.005
	Clinical Setting	-.196	.223	-.635	.242
>20 years	Academic Setting	.576	.146	.289	.863
	Clinical Setting	-.066	.090	-.243	.111

The ANCOVA identified there is no difference in interest in research conduct and years of practice in nursing and nurses working in the academic and clinical practice setting, without the effects of the practice setting in nursing does not have statistical significance ($p = .900$). The years of practice in nursing alone, regardless of the RN's practice setting, does not influence how the RN responds to the level of interest in research conduct. RNs practicing in the academic setting compared to the clinical setting were more likely to be interested in research conduct; however, there was no statistical significance with years of practice in nursing and practice setting. The null hypothesis is retained as there is no difference in interest toward conducting research and years of practice in RNs who work in a clinical setting compared to RNs who work in an academic setting controlling for years of practice in nursing.

Experience. I analyzed the RNs level of experience toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANOVA. A test of between-subject effects main effects with years of practice in nursing was not statistically significant for the RNs experience in research conduct (see Table 40). The tests of between-subjects effects main effects for years of practice in nursing was not statistically significant and practice setting was statistically significant when assessing no interaction (see Table 41).

Table 40

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	2.216ᵃ	4	.554	.777	.541
Intercept	.355	1	.355	.497	.481
YRP	2.216	4	.554	.777	.541
Error	198.199	278	.713		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .011 (Adjusted R Squared = -.003)

Table 41

Tests of Between-Subjects Effects DV Experience

Source	Type III Sum of Squares	*df*	*M²*	F	Sig.
Corrected Model	17.930[a]	5	3.586	5.443	<.001
Intercept	3.882	1	3.882	5.893	.016
YRP	.450	4	.112	.171	.953
Setting	15.714	1	15.714	23.853	<.001
Error	182.485	277	.659		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .089 (Adjusted R Squared = .073)

Next, I ran a univariate ANCOVA to determine where the difference was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects with years of practice in nursing, M=.269 $F(4,273) = .405, p =.805$) and practice setting, M=4.810 $F(1,273) = 7.231, p =.008$) identifying the years of practice in nursing as compared to practice setting did not have an impact on the RNs experience in research conduct. There was no significant interaction between years of practice in nursing and practice setting, M= .224 $F(4,273) = .337, p= .853$) for the dependent variable interest (see Table 42). Therefore, the null hypothesis was retained.

Table 42

Tests of Between Subjects Effects DV Experience

Source	Type III Sum of Squares	*df*	*M²*	F	Sig.
Corrected Model	18.827[a]	9	2.092	3.145	.001
Intercept	1.038	1	1.038	1.561	.213
YRP	1.076	4	.269	.405	.805
Setting	4.810	1	4.810	7.231	.008
YRP * Setting	.897	4	.224	.337	.853
Error	181.588	273	.665		
Total	200.415	283			
Corrected Total	200.415	282			

a. R Squared = .094 (Adjusted R Squared = .064)

The years of practice in nursing versus the academic and clinical practice setting, without the effects of the practice setting in nursing, does not have statical significance (*p* = .541), which indicates that years of practice in nursing alone, regardless of the RN's practice setting, does not influence how the RN responds to the level of experience in research conduct. RNs practicing in the academic setting, as compared to the clinical setting, were more likely to have experience in research conduct (see Table 43), However, there was a statistical significance in the practice setting (*p <.001)*. The interaction between years of practice and practice setting was not statistically significant (*p* = .853). The null hypothesis was retained.

Table 43

Estimates Dependent Variable Experiecen

Years Practice	Setting Practice Area	*M*	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.454	.471	-.473	1.381
	Clinical Setting	-.144	.144	-.427	.140
6 to 10 years	Academic Setting	.029	.577	-1.106	1.165
	Clinical Setting	-.092	.124	-.337	.153
11 to 15 years	Academic Setting	.308	.333	-.347	.963
	Clinical Setting	-.120	.115	-.347	.107
16 to 20 years	Academic Setting	.486	.365	-.232	1.204
	Clinical Setting	-.237	.211	-.652	.177
>20 years	Academic Setting	.609	.138	.338	.881
	Clinical Setting	-.097	.085	-.265	.070

Confidence. I analyzed the RNs level of confidence toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANOVA. A test of between-subject effects main effects with years of practice in nursing indicated years of practice in nursing was not statistically significant for the RNs confidence in research conduct (see Table 44). The tests of between-subjects effects main effects for years of practice in nursing and practice setting without interaction between years of practice in nursing and practice setting revealed there was no significance for years of practice in nursing and there was statistical significance for the practice setting with no interaction from the practice area and no statistical significance for the interaction (see Table 45).

Table 44

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	2.006ª	4	.502	1.093	.360
Intercept	.207	1	.207	.451	.502
YRP	2.006	4	.502	1.093	.360
Error	127.624	278	.459		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .015 (Adjusted R Squared = .001)

Table 45

Tests of Between-Subjects Effects DV Confidence

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	8.932ª	5	1.786	4.100	.001
Intercept	1.590	1	1.590	3.650	.057
Years of Practice	.916	4	.229	.525	.717
Setting	6.926	1	6.926	15.895	<.001
Error	120.698	277	.436		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .069 (Adjusted R Squared = .052)

The years of practice in nursing ($p = .369$) versus the academic and clinical

practice setting ($p = .085$), without the effects of the practice setting in nursing, does not

have statical significance, which indicates that years of practice in nursing alone,

regardless of the RN's practice setting, does not influence how the RN responds to the

level of confidence in research conduct. RNs practicing in the academic setting, as

compared to the clinical setting, were more likely to have confidence in research conduct

(see Table 38), However, there was a statistical significance in the practice setting (*p* <*.001)*. The interaction between years of practice and practice setting was not statistically significant (*p* = .853). The null hypothesis is retained.Next, I ran a univariate ANCOVA to determine where the difference was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects with years of practice in nursing and practice setting did not have an impact on the RNs confidence in research conduct. There was no significant interaction between years of practice in nursing and practice setting for the dependent variable interest (see Table 46). Therefore, the null hypothesis was retained.

Table 46

Tests of Between Subjects Effects DV Confidence

Source	Type III Sum of Squares	*df*	*M²*	F	Sig.
Corrected Model	10.535ᵃ	9	1.171	2.683	.005
Intercept	.242	1	.242	.555	.457
YRP	1.876	4	.469	1.075	.369
Setting	1.301	1	1.301	2.983	.085
YRP * Setting	1.603	4	.401	.918	.454
Error	119.096	273	.436		
Total	129.637	283			
Corrected Total	129.631	282			

a. R Squared = .081 (Adjusted R Squared = .051)

The years of practice in nursing versus the academic and clinical practice setting, with interaction does not have statistical significance (*p* =.454), which indicates that years of practice in nursing, regardless of the RN's practice setting, does not influence how the

RN responds to the level of confidence in research conduct. RNs practicing in the clinical setting, as compared to the academic setting, were more likely to have confidence in research conduct (see Table 47). The null hypothesis was retained.

Table 47

Estimates Dependent Variable Confidence

				95% Confidence Interval	
Years Practice	Setting Practice Area	*M*	Std. Error	Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.053	.381	-.698	.803
	Clinical Setting	-.168	.117	-.398	.062
6 to 10 years	Academic Setting	.351	.467	-.569	1.270
	Clinical Setting	-.027	.101	-.225	.172
11 to 15 years	Academic Setting	.038	.270	-.493	.569
	Clinical Setting	-.077	.093	-.261	.106
16 to 20 years	Academic Setting	.023	.295	-.559	.604
	Clinical Setting	-.042	.171	-.378	.294
>20 years	Academic Setting	.496	.112	.276	.716
	Clinical Setting	-.067	.069	-.203	.068

Attitude. I analyzed the RNs level of attitude toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANCOVA. A test of between-subject effects main effects with years of practice in nursing was not statistically significant for the RNs confidence in research conduct (see Table 48). The tests of between-subjects effects main effects for years of practice in nursing and practice setting with no interaction was not statistically significant (see Table 49). Therefore, the null hypothesis was retained.

Table 48

Tests of Between Subjects Effects DV Attitude

Source	Type III Sum of Squares	*df*	*M²*	F	Sig.
Corrected Model	.510ª	4	.128	.665	.617
Intercept	.038	1	.038	.198	.656
Years of Practice	.510	4	.128	.665	.617
Error	53.306	278	.192		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .009 (Adjusted R Squared = -.005)

Table 49

Tests of Between Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	2.475ª	5	.495	2.671	.022
Intercept	.503	1	.503	2.712	.101
Years of Practice	.183	4	.046	.247	.911
Setting	1.965	1	1.965	10.600	.001
Error	51.341	277	.185		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .046 (Adjusted R Squared = .029)

Next, I ran a univariate ANOVA to determine where the difference was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects with years of practice in nursing and practice setting did not have an impact on the RNs attitude toward research conduct (see Table 50). There was no significant interaction between years of practice in nursing and practice setting for the dependent variable attitude (see Table 50). Therefore, the null hypothesis was retained.

Table 50

Tests of Between Subjects Effects DV Attitude

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	2.993ᵃ	9	.333	1.786	.071
Intercept	.164	1	.164	.882	.349
YRP	.360	4	.090	.484	.748
Setting	.550	1	.550	2.957	.087
YRP * Setting	.518	4	.130	.696	.595
Error	50.823	273	.186		
Total	53.818	283			
Corrected Total	53.816	282			

a. R Squared = .056 (Adjusted R Squared = .024)

The years of practice in nursing and the academic and clinical practice setting, with the effects of the practice setting in nursing, do not have statical significance (*p* = .595), which indicates that years of practice in nursing alone, regardless of the RN's practice setting, does not influence how the RN responds towards attitude in research conduct. RNs practicing in the academic setting, as compared to the clinical setting, were more likely to have positive attitudinal scores toward research conduct (see Table 51). However, there was no statistical significance with years of practice in nursing and practice settings. The null hypothesis was retained.

Table 51

Estimates Dependent Variable Attitude

Years Practice	Setting Practice Area	M	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.339	.249	-.152	.829
	Clinical Setting	-.065	.076	-.216	.085
6 to 10 years	Academic Setting	-.091	.305	-.692	.510
	Clinical Setting	-.019	.066	-.148	.111
11 to 15 years	Academic Setting	.222	.176	-.125	.569
	Clinical Setting	-.088	.061	-.208	.033
16 to 20 years	Academic Setting	-.020	.193	-.400	.359
	Clinical Setting	-.007	.111	-.226	.213
>20 years	Academic Setting	.225	.073	.081	.368
	Clinical Setting	-.019	.045	-.108	.069

Attitude Sub-Scales: Support and Opportunities. I analyzed the RNs level of support and opportunities toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANCOVA. A test of between-subject effects main effect with years of practice in nursing was not statistically significant for the dependent variable support and opportunities in research conduct (see Table 52). The tests of between-subjects effects for years of practice in nursing and practice setting with no interaction was not statistically significant for years of practice in nursing and practice setting (see Table 53).

Table 52

Tests of Between Subjects Effects DV Support and Opportunities

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	1.094[a]	4	.274	.423	.792
Intercept	.080	1	.080	.123	.726
YRP	1.094	4	.274	.423	.792
Error	179.946	278	.647		
Total	181.053	283			
Corrected Total	181.041	282			

a. R Squared = .006 (Adjusted R Squared = -.008)

Table 53

Tests of Between Subjects Effects DV Support and Opportunities

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	8.243[a]	5	1.649	2.643	.024
Intercept	2.024	1	2.024	3.245	.073
YRP	.419	4	.105	.168	.955
Setting	7.148	1	7.148	11.459	<.001
Error	172.798	277	.624		
Total	181.053	283			
Corrected Total	181.041	282			

a. R Squared = .046 (Adjusted R Squared = .028)

Next, I ran a univariate ANCOVA to determine where the difference in support and opportunities was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects with years of practice in nursing and practice setting identifying the years of practice in nursing as compared to practice setting did not have an impact on the RNs support and opportunities in research conduct (see Table 54).

There was no significant interaction between years of practice in nursing and practice setting for the dependent variable support and opportunities (see Table 54).

Table 54

Tests of Between Subjects Effects DV Support and Opportunities

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	9.432ᵃ	9	1.048	1.667	.097
Intercept	1.147	1	1.147	1.824	.178
YRP	.996	4	.249	.396	.811
Setting	2.640	1	2.640	4.200	.041
YRP * Setting	1.189	4	.297	.473	.756
Error	171.609	273	.629		
Total	181.053	283			
Corrected Total	181.041	282			

a. R Squared = .052 (Adjusted R Squared = .021)

The years of practice in nursing and the academic and clinical practice setting, with the effects of the practice setting in nursing, do not have statical significance (p = .756), which indicates that years of practice in nursing alone, regardless of the RN's practice setting, does not influence how the RN perceives support and opportunities towards research conduct (see Table 55). There was no statistical significance with years of practice in nursing and practice setting. The null hypothesis was retained.

Table 55

Estimates Dependent Variable Support and Opportunities

Years Practice	Setting Practice Area	*M*	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.443	.458	-.459	1.344
	Clinical Setting	-.018	.140	-.294	.258
6 to 10 years	Academic Setting	.544	.561	-.560	1.648
	Clinical Setting	-.115	.121	-.353	.123
11 to 15 years	Academic Setting	.293	.324	-.344	.930
	Clinical Setting	-.083	.112	-.304	.138
16 to 20 years	Academic Setting	-.120	.355	-.818	.578
	Clinical Setting	-.041	.205	-.444	.362
>20 years	Academic Setting	.424	.134	.161	.688
	Clinical Setting	-.068	.083	-.231	.095

Attitude Sub-Scales: Motivation. I analyzed the RNs level of motivation toward conducting research by years of practice in nursing controlling for practice setting in nursing using a univariate ANCOVA. A test of between-subject effects main effect with years of practice in nursing was not statistically significant for the RNs motivation in research conduct (see Table 56). The tests of between-subjects effects main effects for years of practice in nursing and practice setting without interaction revealed no significance for years of practice in nursing (see Table 57).

Table 56

Tests of Between-Subjects Effects Motivation

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	1.209[a]	4	.302	.478	.752
Intercept	.156	1	.156	.247	.620
YRP	1.209	4	.302	.478	.752
Error	175.743	278	.632		
Total	176.952	283			
Corrected Total	176.952	282			

a. R Squared = .007 (Adjusted R Squared = -.007)

Table 57

Tests of Between-Subjects Effects Motivation

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	4.574[a]	5	.915	1.470	.200
Intercept	2.074	1	2.074	3.333	.069
YRP	1.160	4	.290	.466	.761
Setting	3.365	1	3.365	5.407	.021
Error	172.378	277	.622		
Total	176.952	283			
Corrected Total	176.952	282			

a. R Squared = .026 (Adjusted R Squared = .008)

Next, I ran a univariate ANCOVA to determine where the difference in motivation was in the years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects with years of practice in nursing and practice setting did not have an impact on the RNs support and opportunities in research conduct (see Table 58). There was no significant interaction between years of practice in nursing and practice setting for the dependent variable motivation (see Table 58).

Table 58

Tests of Between-Subjects Effects Motivation

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	9.014[a]	9	1.002	1.628	.107
Intercept	.041	1	.041	.067	.796
YRP	2.505	4	.626	1.018	.398
Setting	.030	1	.030	.049	.825
YRP * Setting	4.440	4	1.110	1.804	.128
Error	167.938	273	.615		
Total	176.952	283			
Corrected Total	176.952	282			

a. R Squared = .051 (Adjusted R Squared = .020)

The years of practice in nursing and the academic and clinical practice setting, with the effects of the practice setting in nursing, do not have statical significance ($p =$ .128), indicating the RN's years of practice and practice setting does not influence the RNs motivation towards research conduct. RNs practicing in the academic setting, compared to the clinical setting, were more likely to be motivated to conduct research (see Table 59); however, there was no statistical significance with years of practice in nursing and practice settings. Therefore, the null hypothesis was retained.

Table 59

Tests of Between-Subjects Effects Motivation

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	9.014[a]	9	1.002	1.628	.107
Intercept	.041	1	.041	.067	.796
YRP	2.505	4	.626	1.018	.398
Setting	.030	1	.030	.049	.825
YRP * Setting	4.440	4	1.110	1.804	.128
Error	167.938	273	.615		
Total	176.952	283			
Corrected Total	176.952	282			

a. R Squared = .051 (Adjusted R Squared = .020)

The years of practice in nursing and the academic and clinical practice setting, with the effects of the practice setting in nursing, do not have statical significance ($p =$ .129), which indicates that years of practice in nursing alone, regardless of the RN's practice setting, does not influence how the RNs motivation towards research conduct (see Table 60). RNs practicing in the academic setting were more likely to be motivated to engage in research conduct than the RNs in the clinical practice setting (see Table 60). There was no statistical significance with years of practice in nursing and practice setting for the dependent variable motivation. The null hypothesis was retained.

Table 60

Estimates Dependent Variable Motivation

				95% Confidence Interval	
Years Practice	Setting Practice Area	*M*	Std. Error	Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.465	.453	-.426	1.356
	Clinical Setting	-.016	.139	-.289	.257
6 to 10 years	Academic Setting	-.956	.555	-2.048	.136
	Clinical Setting	.053	.120	-.183	.288
11 to 15 years	Academic Setting	.327	.320	-.303	.958
	Clinical Setting	-.136	.111	-.354	.083
16 to 20 years	Academic Setting	.098	.351	-.592	.789
	Clinical Setting	.228	.203	-.170	.627
>20 years	Academic Setting	.286	.133	.025	.547
	Clinical Setting	-.111	.082	-.272	.049

Attitude Sub-Sclaes Individual Roles and Characteristics. I analyzed the RNs

perception of individual roles and characteristics toward conducting research by years of

practice in nursing controlling for practice setting in nursing using a univariate

ANCOVA. A test of between-subject effects main effects with years of practice in

nursing was not statistically significant for the RNs individual roles and characteristics

during research conduct (see Table 61). The tests of between-subjects effects for years of

practice in nursing and practice setting without interaction revealed no significance for

years of practice in nursing and practice setting with no interaction from the practice area

(see Table 62).

Table 61

Tests of Between-Subjects Effects DV Individual Roles and Characteristics

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	1.711[a]	4	.428	.853	.493
Intercept	.255	1	.255	.509	.476
YRP	1.711	4	.428	.853	.493
Error	139.483	278	.502		
Total	141.195	283			
Corrected Total	141.195	282			

a. R Squared = .012 (Adjusted R Squared = -.002)

Table 62

Tests of Between-Subjects Effects DV Individual Roles and Characteristics

Source	Type III Sum of Squares	df	M²	F	Sig.
Corrected Model	4.049[a]	5	.810	1.635	.151
Intercept	.294	1	.294	.595	.441
YRP	1.024	4	.256	.517	.723
Setting	2.338	1	2.338	4.721	.031
Error	137.146	277	.495		
Total	141.195	283			
Corrected Total	141.195	282			

a. R Squared = .029 (Adjusted R Squared = .011)

Next, I ran a univariate ANCOVA to determine where the difference in individual roles and characteristics was for the RNs years of practice in nursing as compared to the RNs practice area. The test of between-subjects effects interaction with years of practice in nursing and practice setting identifying the years of practice in nursing as compared to practice setting did not impact the RNs individual roles and characteristics in research conduct. There was no significant interaction between years of practice in nursing and

practice setting for the dependent variable individual roles and characteristics (see Table

63).

Table 63

Tests of Between-Subjects Effects DV Individual Roles and Characteristics

Source	Type III Sum of Squares	*df*	*M²*	F	Sig.
Corrected Model	5.186ᵃ	9	.576	1.157	.323
Intercept	.134	1	.134	.269	.605
YRP	.814	4	.204	.408	.802
Setting	.908	1	.908	1.823	.178
YRP * Setting	1.137	4	.284	.571	.684
Error	136.009	273	.498		
Total	141.195	283			
Corrected Total	141.195	282			

a. R Squared = .037 (Adjusted R Squared = .005)

The years of practice in nursing and the academic and clinical practice setting,

with the effects of the practice setting in nursing, do not have statical significance (p =

.684), which indicates that years of practice in nursing alone, regardless of the RN's

practice setting, does not influence how the RNs motivation towards research conduct

(see Table 64). RNs practicing in the academic setting were more likely to be motivated

to engage in research conduct than the RNs in the clinical practice setting (see Table 64).

There was no statistical significance with years of practice in nursing and practice setting

for the dependent variable motivation. The null hypothesis was retained.

Table 64

Estimates DV Individual Roles and Characteristics

				95% Confidence Interval	
Years Practice	Setting Practice Area	*M*	Std. Error	Lower Bound	Upper Bound
1 to 5 years	Academic Setting	.470	.408	-.332	1.272
	Clinical Setting	-.151	.125	-.396	.095
6 to 10 years	Academic Setting	-.217	.499	-1.200	.766
	Clinical Setting	-.005	.108	-.217	.207
11 to 15 years	Academic Setting	.299	.288	-.268	.866
	Clinical Setting	-.137	.100	-.334	.059
16 to 20 years	Academic Setting	-.023	.316	-.644	.599
	Clinical Setting	-.071	.182	-.430	.288
>20 years	Academic Setting	.245	.119	.011	.480
	Clinical Setting	.019	.074	-.126	.164

Reliability and Validity: Cronbach's Alpha

I used a series of Likert scales to assess the RNs interest, experience, confidence and attitude regarding research conduct. The interest, experience, and confidence scales were all independent scales, each comprising 16 items. All three scales had a Cronbach's alpha value of $\alpha = .96$. The final scale measured nurses' attitudes regarding research conduct. The attitudinal scales included three sub-scales (Support and Opportunities, Motivation, Individual Roles & Characteristics) and used a Likert scale to identify nurses' attitudes and perceptions of research. The combined sub-scales consisted of 34 items with a Cronbach Alpha value of $\alpha = .94$. All scales indicated each grouping of items has an excellent internal consistency ($\alpha > 0.90$). When the attitudinal scales were assessed individually according to the three subscales 1) support and opportunities, 2)

motivation, and 3) individual roles and characteristics the Cronbach's Alpha values remain strong to high respectively $\alpha = .95$, $\alpha = .92$, $\alpha = .73$ (Laerd, 2023).

Discussion

Interpretation

Interpretation of Results to Literature

The findings indicated no difference in interest, experience, confidence, and attitude toward conducting research and the RN's years of practice in nursing related to the RNs practice setting (academic/clinical). There was a statistical significance in RNs' interest, experience, confidence, and attitude based on where the RN is practicing (academic/clinical). RNs practicing in the academic setting scored higher in interest, experience, confidence, and attitude toward research conduct than RNs practicing in the clinical practice setting with negative scores. In 2021, Nowlin studied the RNs' knowledge, attitudes, and practice of research by recruiting active nurses within the research email list in an academic healthcare system. Nowlin results indicated that most respondents had practiced nursing for over fifteen years and approximately two-thirds held a master's or doctorate. In my study population (n=283), most respondents were BSN (54%) practicing nurses within a clinical practice setting, 8% held a PhD, and 3% held a DNP. My study had more respondents with entry-level nursing degrees than Nowlin's, which received more responses from nurses with advanced degrees in nursing.

My research found that RNs expressed positive findings toward research advancing nursing practice, additionally my research found that as the RN advanced in degree pathway RNs respond with positive interest, experience, confidence and attitude

toward research conduct. My study found that RNs did not report sufficient knowledge regarding the complexities of research such as study development, methodology, analyzing data, other studies noted that RNs reported perceived difficulties in understanding research methods and development (Brooke et al., 2015; Nowlin et al., 2021). Past studies identified that RNs lack comprehension of research, classroom sizes are too large, and insufficient hands-on engagement supported negative perceptions of research conduct (Brooke et al., 2015; Ross et al., 2020; Menzies et al., 2021). My findings support that the RN views research as complicated and challenging to navigate, resulting in nurses not engaging in research activities (Eller et al., 2003, Vijayalakshmi et al., 2014, Ross & Burrell, 2019).

My results supported previous studies which showed that RNs express frustration with their research skill set and lack of support from the leadership (Ax & Kincade, 2001; Brooke et al., 2015). However, RNs in leadership roles indicated favor in support of RNs conducting research within the clinical setting, even though RNs consistently report feeling unsupported in research (Rudman et al., 2020; Melnyk et al., 2017). My study found that RNs, regardless of practice setting, perceived no funding support, allocated research time, or had access to RNs conducting research for support. Past research found that RNs in academic settings have increased awareness and resources to conduct research (Hickman et al., 2018, Nowlin et al., 2021, Patterson et al., 2013). Past research identified that RNs in the academic setting with advanced degrees or multiple years of nursing practice have positive attitudes toward research utilization (Ross et al., 2020; Rudman et al., 2020).

Nursing educators in academic settings have conducted research using nursing students to understand students' attitudes, knowledge, and engagement in research and evidence-based practice (Hickman et al., 2018, Ross et al., 2020). The study by Ross and Rudman (2020) found that students engaged in nursing school research activities had positive attitudes concerning clinical research, educational research, and pedagogy research (Ross et al., 2020). Research has identified the need for mentorship programs between doctoral prepared RNs and clinical practice RNs (Hickman et al., 2018; Nowlin et al., 2021; Ross et al., 2020; Rudman et al., 2020; Silka, 2012). Partnering the academic and clinical practice RNs together for research mentorship supports real-world needs encountered in the clinical practice setting as clinical practice RNs are poised to identify daily practice needs and gaps in patient care (Carter et al., 2020; Cetinkaya et al., 2020; Patterson et al., 2013). My study showed that RNs with a PhD reported higher interest, experience, confidence, and attitude than nurses with a DNP. However, RNs with more experience also continue to report perceived barriers related to research support from nursing leadership at the same rate as non-experienced RNs (Rudman et al., 2020; Al-Busaidi et al., 2019). Of my study population, 5% were confident in generating research ideas, further identifying a lack of engagement in research conduct. Regardless of experience, my study identified that RNs perceive continued barriers with funding, opportunities, support from leadership, insufficient, time, and resources, and most have no goals to engage in research. Interestingly the literature identifies that RNs in direct patient care are primed to generate and identify needed areas of research due to their engagement "on the ground" (Cetinkaya et al., 2020; Coke, 2021; Patterson et al., 2013;

Silka et al., 2012). My study found that 45% of the RNs reported greater than twenty

years of nursing practice. Additionally, Nowlin's study found that 42% of respondents

had more than 20 years of nursing practice, identifying that practicing RNs have more

than twenty years of practice (2021).

Although multiple research studies find that nursing leadership supports research

engagement, there are still barriers for RNs to engaging in research (Al-Busaidi et al.,

2019; Nowlin et al., 2021; Pintz et al., 2018; Rudman et al., 2020). Roxburgh and

Hafsteinsdottir's research support mentorship from experienced RNs during the post-

doctoral phase to optimize the RNs research career pathway (Roxburgh, 2005;

Hafsteinsdottir et al., 2017). Similarly, my results showed that RNs perceived attitudinal

roles and characteristics for research conduct for confidence, skill, knowledge, and

engagement and that research was "already part of their practice" as positive, even

though the RNs responded negatively to the interest, experience, and confidence scales

for confidence, skill, knowledge, and support from leadership. My findings identify that

there may be a more profound gap in knowledge due to the mixed findings and that

perhaps having a mentor to support and guide RNs could facilitate a foundation

understanding of research conduct. In reviewing the literature, no other studies have

reported this finding.

Interpretation of Theoretical Framework

The survey questions I used in the study align with the NIH and KT frameworks,

assessing the RNs' interest, experience, confidence, and attitude to develop and

implement research and dissemination. The KT supports five domains of practice

assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge.
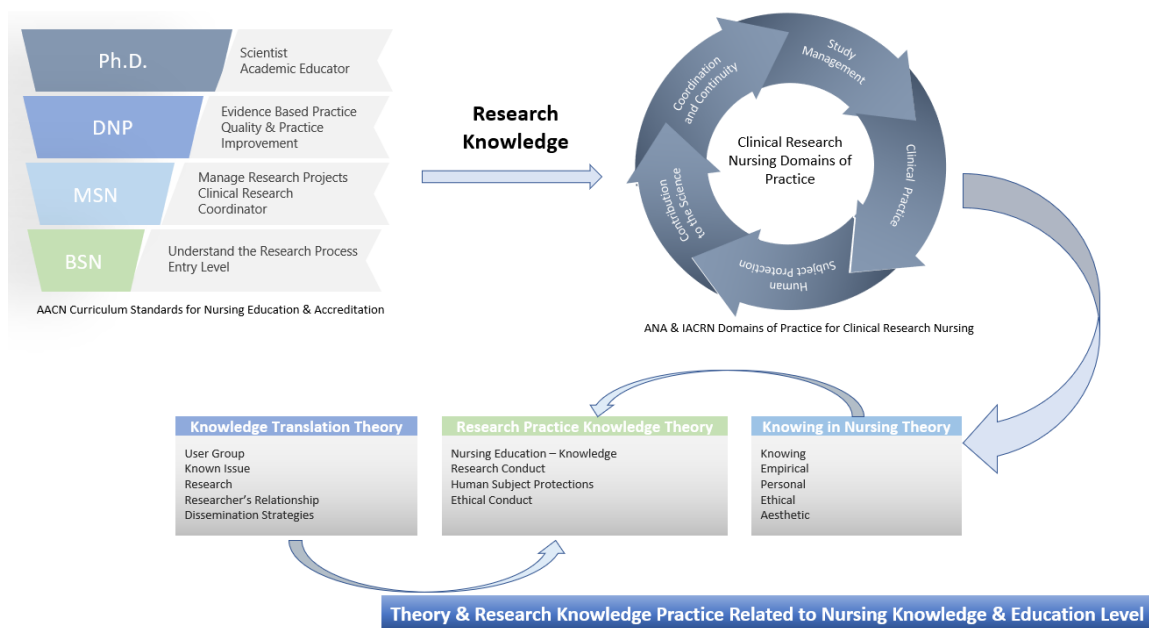
My survey assessed the RNs perceived role, confidence, skill, knowledge, competence, and training needs. Most RNs respondents agreed they possessed the necessary skills to conduct research identifying the user group. The known issues related to the RNs low level of interest and experience in research conduct are skill and knowledge. The confidence scales further identified research and the researcher's relationship, outlining RNs low confidence in the engagement of research conduct as "a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge" (*Part 46 - Protection of Human Subjects*, 2021). While nurses' educational curriculum layers in advancing research knowledge, the results of my study and other research indicated additional training, education, knowledge, and opportunities are needed based on the RNs interest, experience, confidence, and attitude toward research conduct (Cetinkaya et al., 2020; Coke, 2021; Patterson et al., 2013; Silka et al., 2012).

The phenomenon of interest, the nurse's knowledge, and perceptions of research are significant in my findings interrelating theoretical interest, experience, confidence, and attitude. My research supports the nursing research conduct knowledge model as a conceptual model for research knowledge and conduct. My exploratory theory nursing research conduct knowledge model identifies relationships between the practice setting and the RNs knowledge of research conduct. The phenomenon of KT theory interconnects the user group of the RN, known negative perceptions of research by the

user group, outlines negative and unknown relationships of the researcher by conducting

correlational research on the RNs interest, experience, confidence, and attitude of

research conduct. Using the self-reported survey tool to understand the RNs perception of

research offers conceptual and propositional methods to engage and understand the RNs

research practice knowledge regarding nursing knowledge thru education, research

conduct, human subject protection knowledge, and ethical conduct of the RNs

knowledge.

Figure 1

Nursing Research Conduct Knowledge Model

Limitations

My research design for the MANOVA created limitations due to my sample size

within the degree groups. The violation of normality violated the homogeneity of

variances matrices due to sample size within groups, as the degree groups were not

evenly distributed (Bhandari, 2022a; Laerd, 2023). The recruitment process used a convenience sample, and I was not able to target RNs in specific areas where higher degree levels would potentially be found.

Implications

Although there are no studies to date that have investigated the constructs, perceptions and attitudes of nurses based on nursing degree, there are studies that identified that RNs have negative perceptions of research utilization, known as evidence-based practice. My results revealed that RNs practicing with graduate degrees have higher positive responses for interest, experience, confidence, and attitude toward research, which can be a starting point to understanding the RNs' perceptions of conducting research.

Implications for the nursing profession could have both negative and positive outcomes. The negative outcomes for the nursing profession are that RNs reported negative perceptions and attitudes toward increasing the body of knowledge within the nursing profession by conducting research and contributing to the literature. The negative responses toward research conduct experience in writing and publishing in academic research journals and reading and interpreting research results signal a concern for developing new research to disseminate into clinical practice as evidence-based practice from the nursing profession. The positive outcome is identifying new knowledge to contribute to the body of knowledge within nursing practice. RNs engaging in research concepts and research conduct can contribute to the nursing process by developing theory, vision, and social directives (Gray et al., 2017). Increasing the RNs engagement

in research conduct can have a positive social impact at the organizational and national level by adding to the national body of nursing knowledge. The potential to impact the nursing profession by identifying methodologies to increase the awareness and need for the PhD prepared nurse to support research conduct within the nursing profession can impact the nursing profession as a whole and impact social change at the national level.

Recommendations

Recommendations to further this research would be to repeat the study with a larger sample size within the degree groups to increase the power and effect. Increase the sample size by providing equal distributions between independent groups to explore the survey questions associations between interest, experience, confidence and attitude, and perceived support and opportunities in research conduct, motivation for and outcomes of patriating in research conduct, and individual roles and characteristics around participation in research conduct.

Using a larger population with equal degree distributions would increase the power and effect analysis of the MANOVA to allow for understanding of differences between interest, experience, confidence and attitude, and nursing degree. The outcomes of my research using the interest, experience, confidence and attitude scales and the scaffolding approach of laying in knowledge with degree progression, the RN may increase knowledge in research conduct. My research outcomes could be an opportunity to reassess content for research curriculum in nursing programs to increase the potential to grow interest in RNs conducting research and possibility to enlarge the number of RNs to earn a PhD. Additional research is needed on RNs' interest, experience, confidence

and attitude of conducting research using a large sample sizes and diverse target populations in a variety of clinical settings to offer further recommendations regarding research education in nursing programs.

Conclusion

Past research and my research indicate that RNs with increased years of practice and advanced degrees in nursing have a favorable interest, experience, confidence, and attitudes towards research conduct even though there was no direct interaction between years of practice and the RN's practice setting conduct (Cetinkaya et al., 2020; Coke, 2021; Patterson et al., 2013; Silka et al., 2012). My research identified that RNs continue to perceive barriers to engaging in research conduct and identify a lack of support from leadership, skills, and knowledge to develop research as the main barriers. The perceived barriers can potentially be supported by senior nurse researchers providing mentorship programs between the academic and clinical practice setting (Carter et al., 2020; Hickman et al., 2018; Nolin et al, 2020). As the clinical practice RN is on the front lines of identifying research needs, a collaboration between the advanced skilled nurse scientist and clinical practice nurses could offer improved clinical outcomes for patient care (Carter et al., 2020; Cetinkaya et al., 2020; Patterson et al., 2013).

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Part 3: Summary

Integration of the Studies

I conducted my study to understand the RNs' interest, experience, confidence, and attitude toward research conduct as a unified epistemology to study the theory of the RNs research conduct knowledge. My three studies aligned using the core constructs of interest, experience, confidence, and attitude while individually assessing independent variables regarding the RN. The three studies integrated using the RNs' empirical knowledge to understand how they perceive research conduct. The independent variables were the degree level of the RN, the practice setting, and the years of experience of an RN. This research focuses on research conduct and how the RN perceives research through the RNs esthetic knowledge to understand the subjective attitudes and interactions regarding research conduct (McEwen & Wills, 2014).

Theoretical Framework

I used the KT theory to guide my study. The development of nursing science strengthens the RNs empirical knowledge and credibility for the art of nursing by describing and exploring nursing science. Nursing science generates conceptual structures and theoretical models in alignment with KT theory, assessing user groups, known issues, research, the researcher's relationship, and disseminating new knowledge (CIHR, 2007). A knowledge progression of the research process during each degree level advances the RNs research knowledge (AACN, 2020). The research knowledge practice theory explains the phenomena of KT, research practice knowledge, and knowing in nursing theory as it relates to the RNs empirical knowledge of research conduct (see

Figure 1). The domains of knowledge for clinical research nursing practice are study

management, clinical practice, and human subject protections, contributing to the science,

care coordination, and continuity of research conduct (AACN, 2008b, 2011, 2017). I

combined the application of knowledge interactions between research and people, the

positive advantages of research, and the empirical, personal, ethical, and aesthetics of

"the art of knowing" to create the research knowledge practice theory (see Figure 1;

CIHR, 2007, Carper, 1978). The theoretical concept of "research knowledge practice

theory" was used in the framework of this research to explore possible pathways to assess

the RNs knowledge, perception, and attitude toward research conduct.

Utilizing the KT and knowing theories to develop the nursing research knowledge

theory studies the knowledge, perceptions, and attitudes of the RNs perceptions of

research conduct. My research supports the nursing model-metaparadigm, the person,

environment, health, and nursing, and the construct of research conduct, creating the

middle-range nursing theory research conduct knowledge theory (McEwen & Wills,

2014). The RNs' knowledge and engagement in research conduct is applicable across all

domains of nursing practice and populations and utilized with patients to improve health

outcomes to advance the RNs' nursing knowledge and practice. Describing nurses'

knowledge and why they choose to engage in research is critical and urgent to continue

advancing the professional practice of nursing (ANA & IACRN, 2016; NINR & Zenk,

2020).

My research tested the KT of the RN as the user group, the known issue of RNs'

negative perceptions and negative relationships, the RNs' work environment and years of

practice related to research conduct. With a large effect size, my research validated my hypothesis, indicating that RNs have positive responses for interest, experience, confidence, and attitude toward research as they advance in educational degrees. My results also showed RNs practicing in the academic setting, offering a culture and mission of research, provided higher positive response as compared to RNs practicing in the clinical practice settings. RNs are interested in and identify research's positive advantages, indicating that research advances the nursing profession and supports the application of knowledge interactions between research and people (RNs). The RNs' empirical responses were positive regarding skill sets for evidence-based practice, such as literature review and applying research outcomes to practice. The RNs indicated little to no experience in research conduct skills, while a small subset indicated they had some experience with no results in the moderate to very experienced categories. The RNs' confidence in the research conduct was little to some confidence. Writing a research proposal, giving an oral presentation, and writing and publishing in journals, RNs reported no confidence.

My research studied the RNs' knowledge of research conduct, human subject protections, and ethical conduct utilizing the clinical research nursing domains of practice model and the sub-scales for the attitudinal scales. Understanding the RNs' perception of their roles and characteristics of research skills provides a framework to develop a core curriculum for research conduct. Furthermore, assessing RNs' motivation to engage in research conduct could offer methodologies to engage RNs in research conduct during educational engagements. Based on my study findings, most RNs indicated they do not

engage in research as part of their daily nursing practice and feel anxious about participating. A possible strategy could be to engage RNs at all degree levels, creating a research practicum by engaging with a research team for clinical hours (see Figure 1).

Unanticipated Insights

An unanticipated finding was related to the constructs' knowledge, experience, and confidence. The RNs reported a high level of skill and knowledge regarding research conduct, and in contrast, the RNs indicated they had no experience or confidence in conducting research. According to Benner's novice to expert theory, RNs build on knowledge as they progress throughout the developmental phase of nursing practice and engage in direct experience, thereby becoming an expert using the Dreyfus model of skill acquisition (Benner 2001). The attitudinal subscales support and opportunities indicated RNs were sufficiently skilled, knowledgeable, and competent in conducting research. However, the confidence scales identified that the RNs reported little to no confidence in generating research questions, aims, hypotheses, and objectives, writing research proposals, conducting systematic reviews, using research methods, analyzing and interpreting data, and writing and publishing results in academic journals. Utilizing Benner's theory, novice to an expert would be valuable to conduct an additional study to understand the RNs' perception of having strong confidence, skills, and knowledge compared to the RNs expressing little to no confidence regarding the research process while conducting research.

Implications for Positive Social Change

My study offers new knowledge that contributes to the body of science in nursing. Studying an overarching concept that can impact all areas of nursing offers the greatest good toward positive social change while also impacting the future care of patients. Studying the overarching concept of research conduct to understand the RN's interest, experience, confidence, and attitude toward research conduct offers possible options to increase the RN's engagement in research, thereby impacting patients' quality of care with research.

My meta-theory "research knowledge practice theory" could address factors that contribute to the slow growth of research centric knoweldge and theory development in the nursing profession. The impact of the nursing profession on social change is directly related to it's maturity as a profession. Increasing knoweldge and understanidng about the relationahiop between nurses and research competencies is essential to growth and the influence of these factors. The "research knowledge practice theory" has the potential to inform new pathway options to create a research curriculum for the RN across all degree levels, impacting nursing development and positive social change on a grand scale.

Summary of Future Research

Future areas of research based on the constructs of interest, experience, confidence, and attitude would be to disseminate the survey tool to a more prominent subject population across different geographical areas for equal distribution in the degree groups. Future research could also assess methodology to impact research curricula in nursing programs at all levels, from the baccalaureate to the doctoral level for nursing

degrees. Using various educational teaching methods between two cohort groups to assess pre- and post-perceptions and attitudes of research conduct could be another opportunity to understand the student nurses' perceptions of research conduct using an interventional study design. Additionally, a secondary review of the current data set could assess trends between the degrees, practice locations, and therapeutic practice areas and compare responses from RNs with experience in research conduct compared to those with no research experience. Secondary data analysis could offer additional insight into the RNs' perceptions and attitudes toward research conduct, thereby offering new insight into academic curriculum to promote the development of future PhD nurse scientists.

Mentorship and support-engaging nurse residency programs have successfully been developed to assist new RNs confidence and skill set (Erickson & Pappas, 2020; Hafsteinsdottir et al., 2017; Oster et al., 2020; Pintz et al., 2018; Roxburgh, 2005). Future research could be conducted to apply the mentorship methodology to learning during the development period of the RN engaging in research. Future research could be conducted to develop protocols to identify potential areas of development that would support positive perceptions of research conduct. Future research is also needed to fully understand the RNs' perceptions and attitudes regarding research conduct as opposed to evidence-based/research utilization practices.

Lessons Learned

Lessons learned during my research process relate to organizational structure, creating a plan for documentation, literature review, file structure, and data collection and analysis. I believe a better understanding of organizing my research would have saved

time and effort. I would recommend writing out a plan with clear objectives around each construct for how files and data points would be stored logically. My file folder structure evolved and became a source of strength and support during my research process. My tasks would have been more manageable had the structure been in place from the beginning of my research.

I would have saved my articles differently regarding the literature review organizational structure. I saved all my articles in a master folder with the year of the article first for sorting purposes and quick reference. What I would have done differently would have been to group the articles into folders related to the topic or theme of the article to facilitate making the articles more accessible. Additionally, I would have generated greater detail within the Zotero program for additional organization and themed support. I utilized the export feature for the literature review Excel table for my research work, and it would have been helpful to have greater detail in the tables.

Regarding my dataset, I would have created my variables with more logic to use within the models. I constantly rearranged the data into specific orders to make my output logical, with interest, experience, confidence, and attitude as a standard order for output. I would also recommend assessing and cleaning the data as the data are received rather than waiting till all subjects have completed the study, as waiting till the end created difficulty in organizing and analyzing the results in SPSS. It would have been more manageable to work with the data as it was received for analysis, as this was my first time analyzing data on my own, and it was a lot of practice and knowledge to interpret the data. As I worked with the data and began to understand the models in SPSS, my

knowledge and understanding of statistical analysis became clearer. However, I do believe that if I had started the process as initial data were received, the process would have been more straightforward.

Conclusion

The history of nursing research was founded almost two centuries ago by Florence Nightingale, an educated and competent statistician and practicing nurse. The nursing profession did not formally establish the first PhD-prepared nursing program until 1979 (Gray et al., 2017). The Campaign for Action was established in 2010 by the then IOM and the Robert Woods Johnson Foundation to obtain more nurses at a doctoral level, thereby expanding faculty and nurse scientists to conduct research. As of 2023, the call remains unanswered by the nursing profession as there is a continued decline in PhD-prepared nurse scientists (AACN, 2020; Campaign for Action, 2020). My study offers multiple constructs to assess the RNs' perceptions and attitudes of research conduct to understand the nurse scientist's decline better. My final study results offer a glimpse into the RNs' perceptions, support and opportunities, motivation, and perceived roles and characteristics of the RN engaging in research conduct. The next step is to engage the theory of my research knowledge practice theory to assess knowledge and dissemination strategies to improve perceptions and attitudes toward research conduct of the RN. As there is a national shortage of RNs and a more significant shortage of PhD-prepared RNs, it will be essential to create future studies on research conduct and the pathway the RN takes before becoming a nurse scientist. It is fundamental to understand RNs' perceptions

of research conduct to generate theoretical concepts to add new knowledge to the body of

nursing science by creating additional studies on research conduct.

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Appendix A: Demographic Questions

Demographic Questions:

Age
18 to 20
21 to 29
30 to 39
40 to 49
50 to 59
60 to 69
70 or older

Gender
Male
Female
Other

Race
American Indian or Alaska Native
Asian
African American
Native Hawaiian
Caucasian

Ethnicity
Hispanic or Latino
Not Hispanic or Latino

Highest Degree completion:
BSN
MSN
DNP
PhD

Practice Area:
Clinical (takes you to the clinical section)
Academia (takes you to the Academia section)

Clinical Specialty in Nursing:
Cardiac
Critical Care
Clinical Research
Dialysis
Leadership

Education
Management
Medical Surgical
Oncology
Stroke
Trauma
Pediatrics
Nurse practitioner

Academia Specialty in Nursing:
Leadership
Researcher
Professor
Assistant Professor
Adjunct

Nursing Position
Bedside Nursing
Not at Bedside

Years of practice
1 to 5
6 to 10
11 to 15
16 to 20
>20 years

Years of practice in research:
None
1 to 5
6 to 10
11 to 15
>15 years

Number of completed research courses during college *not credit hours – total completed courses
1
2
3
4
>5

Main practice setting
       Clinic Setting
       Hospital Health System
       Academic Medical Center – University
       Urgent Care – Out Patient
       Remote

Working Schedule
       Full Time
       Part Time
       PRN

Appendix B: The Research Survey

Research Involvement:
(Likert scale sum of allocating 1 (no interest, experience, confidence) to 5 (very interested, experienced, confident)
  Research advances within my field and in related areas
  Generating research ideas
  Developing research questions, aims, hypotheses and objectives
  Finding relevant literature
  Reviewing literature
  Writing a research proposal
  Conducting a systematic review
  Using quantitative research methods (e.g. RCTs, cohort studies, surveys, questionnaires)
  Using qualitative research methods (e.g. focus groups, interviews)
  Analyzing and interpreting quantitative results
  Analyzing and interpreting qualitative results
  Giving an oral presentation locally
  Giving an oral presentation at a national or international conference
  Writing and publishing research in academic journals
  Reading and interpreting research
  Applying the outcomes of research to your practice

Participation in Research:
Component 1 – Support and Opportunities to Participate in Research
(Likert scale sum of allocating 1 (strongly disagree) to 5 (strongly agree)
  I work within a research-supportive environment
  I am aware of the support available for research
  I am aware of the research priorities for my organization
  I work within a research-active environment
  Participating in research is supported by my organization
  There are opportunities for me to attend research talks and seminars
  Participation in research is supported by my peers
  I am aware of training opportunities related to research
  I am aware of funding opportunities relating to research
  I am aware of opportunities to participate in research
  Participating in research is supported by my line manager
  I have sufficient time to participate in research
  There are opportunities for me to attend national and international research conferences
  I already have access to all the resources I need to participate in research
  I have clear goals for participating in research
  Other nurses I know participate in research
  Other health professionals participate in research

Component 2 – Motivation for and outcomes of participation in research
(Likert scale sum of allocating 1 (strongly disagree) to 5 (strongly agree)

    Participating in research will be of benefit to my profession
    Participating in research will be of benefit to my career
    Participating in research will be of benefit to patients
    Participating in research will be of benefit to my organization
    Participating in research will be of benefit to me
    I get/would get professional satisfaction from participating in research
    I am motivated to participate in research

Component 3 – Individual roles and characteristics around participation in research
(Likert scale sum of allocating 1 (strongly disagree) to 5 (strongly agree)

    I feel/would feel anxious about participating in research
    Only academics should participate in research
    I am confident in my ability to participate in research
    I am sufficiently skilled to participate in research
    I have sufficient knowledge to participate in research
    I am competent to participate in research
    I am able to determine my own research related training needs
    Participating in research is already part of my practice
    It is part of my role to participate in research
    I support others to participate in research

(Stewart et al., 2019)

Appendix C: Elsevier License

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Appendix D: Survey Question Responses

RNs Interest Scales

		No interest	Little interest	Some interest	Moderate interest	Very interested	Total
Research advances within my field and in related areas	N	11	12	70	65	125	283
	%	3.9	4.2	24.7	23.0	44.2	100.0
Generating research ideas	N	22	52	88	64	57	283
	%	7.8	18.4	31.1	22.6	20.1	100.0
Developing research questions, aims, hypotheses and objectives	N	45	68	74	50	46	283
	%	15.9	24.0	26.1	17.7	16.3	100.0
Finding relevant literature	N	18	39	68	83	75	283
	%	6.4	13.8	24.0	29.3	26.5	100.0
Reviewing literature	N	22	40	55	93	73	283
	%	7.8	14.1	19.4	32.9	25.8	100.0
Writing a research proposal	N	86	82	52	44	19	283
	%	30.4	29.0	18.4	15.5	6.7	100.0
Conducting a systematic review	N	65	64	74	56	24	283
	%	23.0	22.6	26.1	19.8	8.5	100.0
Using quantitative research methods	N	45	66	77	49	46	283
	%	15.9	23.3	27.2	17.3	16.3	100.0
Using qualitative research methods	N	48	62	90	51	32	283
	%	17.0	21.9	31.8	18.0	11.3	100.0
Analyzing and interpreting quantitative results	N	56	65	81	50	31	283
	%	19.8	23.0	28.6	17.7	11.0	100.0
Analyzing and interpreting qualitative results	N	58	68	89	39	29	283
	%	20.5	24.0	31.4	13.8	10.2	100.0
Giving an oral presentation locally	N	70	49	63	54	47	283
	%	24.7	17.3	22.3	19.1	16.6	100.0
Giving an oral presentation at a national or international conference	N	92	51	52	44	44	283
	%	32.5	18.0	18.4	15.5	15.5	100.0
Writing and publishing research in academic journals	N	82	61	50	51	39	283
	%	29.0	21.6	17.7	18.0	13.8	100.0
Reading and interpreting research	N	35	57	70	73	48	283
	%	12.4	20.1	24.7	25.8	17.0	100.0
Applying the outcomes of research to your practice	N	15	19	42	83	124	283
	%	5.3	6.7	14.8	29.3	43.8	100.0

RNs Experience Scales

		No experience	Little experience	Some experience	Moderate experience	Very experienced	Total
Research advances within my field and in related areas	N	62	57	77	58	29	283
	%	21.9	20.1	27.2	20.5	10.2	100.0
Generating research ideas	N	83	83	67	39	11	283
	%	29.3	29.3	23.7	13.8	3.9	100.0
Developing research questions, aims, hypotheses and objectives	N	86	84	73	30	10	283
	%	30.4	29.7	25.8	10.6	3.5	100.0
Finding relevant literature	N	41	49	82	78	33	283
	%	14.5	17.3	29.0	27.6	11.7	100.0
Reviewing literature	N	38	49	74	80	42	283
	%	13.4	17.3	26.1	28.3	14.8	100.0
Writing a research proposal	N	117	65	56	35	10	283
	%	41.3	23.0	19.8	12.4	3.5	100.0
Conducting a systematic review	N	96	69	68	37	13	283
	%	33.9	24.4	24.0	13.1	4.6	100.0
Using quantitative research methods	N	88	66	77	32	20	283
	%	31.1	23.3	27.2	11.3	7.1	100.0
Using qualitative research methods	N	101	70	73	30	9	283
	%	35.7	24.7	25.8	10.6	3.2	100.0
Analyzing and interpreting quantitative results	N	92	73	76	31	11	283
	%	32.5	25.8	26.9	11.0	3.9	100.0
Analyzing and interpreting qualitative results	N	100	81	63	29	10	283
	%	35.3	28.6	22.3	10.2	3.5	100.0
Giving an oral presentation locally	N	85	62	51	45	40	283
	%	30.0	21.9	18.0	15.9	14.1	100.0
Giving an oral presentation at a national or international conference	N	173	41	25	26	18	283
	%	61.1	14.5	8.8	9.2	6.4	100.0
Writing and publishing research in academic journals	N	184	45	25	18	11	283
	%	65.0	15.9	8.8	6.4	3.9	100.0
Reading and interpreting research	N	65	54	73	63	28	283
	%	23.0	19.1	25.8	22.3	9.9	100.0
Applying the outcomes of research to your practice	N	47	51	66	70	49	283
	%	16.6	18.0	23.3	24.7	17.3	100.0

RNs Confidence Scales

		No confidence	Little confidence	Some confidence	Moderate confidence	Very confident	Total
Research advances within my field and in related areas	N	20	49	83	91	40	283
	%	7.1	17.3	29.3	32.2	14.1	100.0
Generating research ideas	N	45	79	89	54	16	283
	%	15.9	27.9	31.4	19.1	5.7	100.0
Developing research questions, aims, hypotheses and objectives	N	53	90	80	45	15	283
	%	18.7	31.8	28.3	15.9	5.3	100.0
Finding relevant literature	N	22	45	78	93	45	283
	%	7.8	15.9	27.6	32.9	15.9	100.0
Reviewing literature	N	19	41	81	98	44	283
	%	6.7	14.5	28.6	34.6	15.5	100.0
Writing a research proposal	N	78	88	60	43	14	283
	%	27.6	31.1	21.2	15.2	4.9	100.0
Conducting a systematic review	N	65	75	71	53	19	283
	%	23.0	26.5	25.1	18.7	6.7	100.0
Using quantitative research methods	N	55	73	82	49	24	283
	%	19.4	25.8	29.0	17.3	8.5	100.0
Using qualitative research methods	N	58	87	75	45	18	283
	%	20.5	30.7	26.5	15.9	6.4	100.0
Analyzing and interpreting quantitative results	N	54	77	89	40	23	283
	%	19.1	27.2	31.4	14.1	8.1	100.0
Analyzing and interpreting qualitative results	N	55	93	73	41	21	283
	%	19.4	32.9	25.8	14.5	7.4	100.0
Giving an oral presentation locally	N	50	61	60	62	50	283
	%	17.7	21.6	21.2	21.9	17.7	100.0
Giving an oral presentation at a national or international conference	N	94	65	46	50	28	283
	%	33.2	23.0	16.3	17.7	9.9	100.0
Writing and publishing research in academic journals	N	102	78	55	35	13	283
	%	36.0	27.6	19.4	12.4	4.6	100.0
Reading and interpreting research	N	38	63	75	70	37	283
	%	13.4	22.3	26.5	24.7	13.1	100.0
Applying the outcomes of research to your practice	N	24	35	75	88	61	283
	%	8.5	12.4	26.5	31.1	21.6	100.0

RNs Support and Opportunities Scales

		Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Total
I work within a research-supportive environment	N	12	32	42	125	72	283
	%	4.2	11.3	14.8	44.2	25.4	100.0
I am aware of the support available for research	N	16	45	59	114	49	283
	%	5.7	15.9	20.8	40.3	17.3	100.0
I am aware of the research priorities for my organization	N	24	32	70	104	53	283
	%	8.5	11.3	24.7	36.7	18.7	100.0
I work within a research-active environment	N	28	51	50	92	62	283
	%	9.9	18.0	17.7	32.5	21.9	100.0
Participating in research is supported by my organization	N	10	26	75	109	63	283
	%	3.5	9.2	26.5	38.5	22.3	100.0
There are opportunities for me to attend research talks and seminars	N	14	48	51	120	50	283
	%	4.9	17.0	18.0	42.4	17.7	100.0
Participation in research is supported by my peers	N	8	36	62	118	59	283
	%	2.8	12.7	21.9	41.7	20.8	100.0
I am aware of training opportunities related to research	N	20	63	66	84	50	283
	%	7.1	22.3	23.3	29.7	17.7	100.0
I am aware of funding opportunities relating to research	N	40	82	76	66	19	283
	%	14.1	29.0	26.9	23.3	6.7	100.0
I am aware of opportunities to participate in research	N	28	59	70	85	41	283
	%	9.9	20.8	24.7	30.0	14.5	100.0
Participating in research is supported by my line manager	N	13	26	96	90	58	283
	%	4.6	9.2	33.9	31.8	20.5	100.0
I have sufficient time to participate in research	N	55	96	49	61	22	283
	%	19.4	33.9	17.3	21.6	7.8	100.0
There are opportunities for me to attend national and international research conferences	N	36	59	90	70	28	283
	%	12.7	20.8	31.8	24.7	9.9	100.0
I already have access to all the resources I need to participate in research	N	40	76	82	63	22	283
	%	14.1	26.9	29.0	22.3	7.8	100.0
I have clear goals for participating in research	N	41	80	74	62	26	283
	%	14.5	28.3	26.1	21.9	9.2	100.0
Other nurses I know participate in research	N	28	56	58	102	39	283
	%	9.9	19.8	20.5	36.0	13.8	100.0

RNs Motivation Scales

		Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Total
Participating in research will be of benefit to my profession	N	2	5	16	112	148	283
	%	0.7	1.8	5.7	39.6	52.3	100.0
Participating in research will be of benefit to my career	N	3	20	35	103	122	283
	%	1.1	7.1	12.4	36.4	43.1	100.0
Participating in research will be of benefit to patients	N	2	2	11	107	161	283
	%	0.7	0.7	3.9	37.8	56.9	100.0
Participating in research will be of benefit to my organization	N	2	5	20	120	136	283
	%	0.7	1.8	7.1	42.4	48.1	100.0
Participating in research will be of benefit to me	N	3	9	36	112	123	283
	%	1.1	3.2	12.7	39.6	43.5	100.0
I get/would get professional satisfaction from participating in research	N	4	13	48	109	109	283
	%	1.4	4.6	17.0	38.5	38.5	100.0
I am motivated to participate in research	N	10	36	70	91	76	283
	%	3.5	12.7	24.7	32.2	26.9	100.0

RNs Individual Roles and Characteristics Scales

		Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Total
I feel/would feel anxious about participating in research	N	32	112	41	71	27	283
	%	11.3	39.6	14.5	25.1	9.5	100.0
Only academics should participate in research	N	99	146	22	11	5	283
	%	35.0	51.6	7.8	3.9	1.8	100.0
I am confident in my ability to participate in research	N	8	27	65	137	46	283
	%	2.8	9.5	23.0	48.4	16.3	100.0
I am sufficiently skilled to participate in research	N	6	26	61	144	46	283
	%	2.1	9.2	21.6	50.9	16.3	100.0
I have sufficient knowledge to participate in research	N	6	27	67	138	45	283
	%	2.1	9.5	23.7	48.8	15.9	100.0
I am competent to participate in research	N	4	18	44	168	49	283
	%	1.4	6.4	15.5	59.4	17.3	100.0
I am able to determine my own research-related training needs	N	11	40	84	114	34	283
	%	3.9	14.1	29.7	40.3	12.0	100.0
Participating in research is already part of my practice	N	41	83	30	92	37	283
	%	14.5	29.3	10.6	32.5	13.1	100.0
It is part of my role to participate in research	N	40	70	44	95	34	283
	%	14.1	24.7	15.5	33.6	12.0	100.0
I support others to participate in research	N	4	9	16	133	121	283
	%	1.4	3.2	5.7	47.0	42.8	100.0