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Evidence-Based Practice Self-Efficacy and Outcome Expectancy in the Nurse Resident

Amy L. Smith MSN, RN

Doctor of Nursing Practice Final Scholarly Project

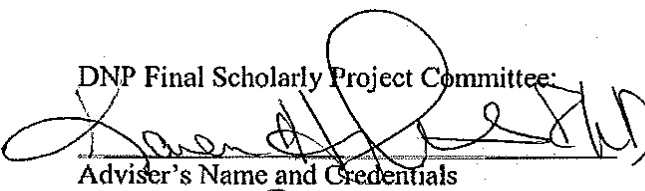
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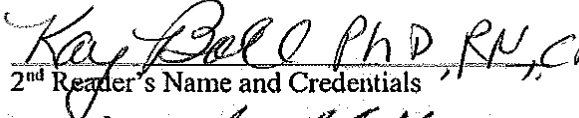
Doctor of Nursing Practice

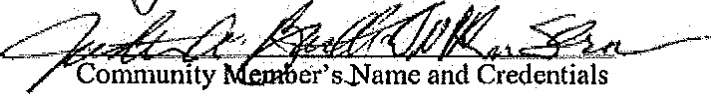
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2019

DNP Final Scholarly Project Committee:

 Adviser's Name and Credentials

 2nd Reader's Name and Credentials

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Executive Summary

Evidence-based practice (EBP) implementation in healthcare has been associated with improved patient outcome, reduction of costs, and increases in nursing job satisfaction (Melnik & Fineout-Overholt, 2015); however, a lack of implementation remains (Melnik, Fine-out Overholt, Gallaher-Ford & Kaplan, 2012). Although EBP training is effective in improving nurses' knowledge of and attitudes toward EBP, such training does not consistently result in behavior change (Jackson, 2016; Black, Balneaves, Garossino, Puyat & Qian, 2015). The results of previous studies support the role of self-efficacy in the promotion of EBP implementation (Blackman & Giles, 2017; Ryan, 2016). The Institute of Medicine's Initiative on the Future of Nursing (2010) recommended that nurse residency programs be implemented to improve retention of new graduates, and to increase the implementation of EBP; as a result, training in EBP skills is recommended for inclusion in nurse residency programs (Pittman & Herrera, 2013). The purpose of this study is to examine how EBP training provided to nurse residents affects their EBP self-efficacy and outcome expectancy. Convenience samples of nurse residents in two acute care hospital residency programs were surveyed using Chang and Crowe's (2011) instrument which measures self-efficacy and outcome expectancy of EBP (Cronbach's $\alpha = 0.96$). The total self-efficacy (SE) scores for the paired surveys group mean increased from 156.94 to 158.53 and a paired t-test showed the difference was not significant. The total outcome expectancy (OE) scores decreased from 51.58 pre-survey to 47.94 post survey and a paired t-test indicated the change was significant ($p < .05$). Consistent with the influence of the sources of SE (Bandura, 1977), a repeat measure of the SE and OE for the nurse residents at the end of

residency after completion of the EBP project may result in positive differences in SE scores because of the influence of the four sources of efficacy.

Problem Identification: The Introduction

The implementation of evidence-based practice (EBP) has been consistently associated with improved patient outcomes and quality of care, reduction of healthcare costs, and increased nursing job satisfaction (Melnik & Fineout-Overholt, 2015). However, a lack of implementation at the point of care remains because of a variety of obstacles, including lack of knowledge and confidence in EBP skills (Melnik, Fine-out Overholt, Gallaher-Ford & Kaplan, 2012). EBP training has been shown to be effective in improving nurses' knowledge of and attitudes toward EBP but does not consistently result in behavioral change (Jackson, 2016; Black, Balneaves, Garossino, Puyat & Qian, 2015). Bandura's self-efficacy theory (1977) states that a person's efficacy beliefs have a one-way causal effect on behavior, and specific efficacy intervention strategies consistently promote behavioral change (Bandura, 1977; Fawcett, 2015). The two main constructs of self-efficacy theory are efficacy expectation, which is defined as "the conviction that one can successfully execute the behavior required to produce an outcome," and outcome expectancy, or... "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p.193).

The Institute of Medicine's Initiative on the Future of Nursing (2010) recommended that nurse residency programs be implemented to recruit and retain new nursing graduates. In an effort to improve retention of new graduates and increase the implementation of EBP, training in EBP skills is recommended for inclusion in nurse residency programs (Pittman & Herrera, 2013). The purpose of this study is to examine how EBP training provided to nurse residents

affects their EBP self-efficacy and outcome expectancy in the first year of practice. Increasing understanding of how training influences the EBP self-efficacy of nurse residents can contribute to efforts to increase EBP implementation at the bedside to foster safety and quality of care.

Background and Significance of the Problem

The new graduate nurse enters a workforce that is strained by multiple factors, including a lack of adequate supply of registered nurses (RNs), increased patient acuity, and decreased length of patient stay, all contributing to a stressful work environment in which horizontal violence is commonplace (Zinn, Guglielmi, Davis, & Moses, 2012; Hamstrom, Kankkunen, Suominen, & Mereotoja, 2012). The ever-increasing need for RNs is highlighted by the American Nurses Association (ANA) projection that, with 500,000 nurses anticipated to retire by 2022, 1.1 million new RNs will be needed to replace the aging RN workforce and avoid a nursing shortage (ANA, 2018). Continued escalation of health-care costs contributes to shortened lengths of stays, resulting in higher patient acuity. Higher patient acuity, combined with advances in healthcare technologies, demands that new nurses acquire high levels of professional competency (Hamstrom et al., 2012). Additionally, new nurses enter a highly rewarding but intensely stressful environment often affected by horizontal violence. In a study of RNs' perceptions of horizontal violence, Purpora, Blegen and Stotts (2015) reported that the majority of nurses (79.4%) had experienced horizontal violence at work at least once in the preceding six months. The perception of horizontal violence has been found to have a significant positive correlation to a nurses' intent to leave the workplace (Armmer & Ball, 2015).

In combination, the multiple stress factors produce a complex, demanding healthcare environment and contribute to the stress experienced by new graduates in the transition to

practice period. The transition shock model (Duchscher, 2008) describes the first year of practice for the new graduate nurse as a crisis period of confusion, doubt, disorientation, and loss when the new nurse experiences intense emotional, physical, intellectual, and socio-developmental changes. One study of new graduate nurses' experiences in their first year of practice showed that a significant factor influencing the transition experience was that the amount and quality of support new nurses needed which were not aligned with the amount of support provided during the transition period (Parker, Giles, Lantry, & McMillan, 2014). Without adequate workplace support during the crucial first year, new graduates experience high degrees of job dissatisfaction and burn-out, leading to high levels of attrition and perhaps a lack in competence to provide safe, quality care (Clipper & Cherry, 2015). An estimated 30-50% of new graduates change jobs or leave the workplace entirely in the first three years of practice (Snavey, 2016) which has significant economic effects on hospitals. The average cost of attrition per RN is \$37,700 to \$58,400 resulting in a loss of \$5.2 to \$8.1 million to the average hospital (Nursing Solutions, 2016).

In addition to the substantial economic impact of attrition, an additional, significant area of concern is safety of the consumer. New graduates without adequate transition support lack the competence to provide safe, quality care to patients which may increase patient care errors and cause potential harm to the public (Clipper & Cherry, 2015). An RN's ability to provide safe care is based on his or her competency in critical thinking and problem-solving skills (Fero, Wisberger, Wesmiller, Zullo, & Hoffman, 2008). A study of 2,144 newly hired nurses, undertaken using the *Performance Based Development System Assessment* tool to assess the critical thinking abilities based on years of experience in practice, found that many new

graduates with less than one year of experience fail to meet expectations for the critical thinking skills needed for safe practice (Fero, et al., 2008). In a study examining the safety concerns of new-to-practice RNs, Myers, et al. (2010) reported that both new graduate nurses and their preceptors state concerns about the new graduate's critical thinking ability, lack of skills, and difficulty seeing a holistic view of the patient situation beyond the tasks at hand. To meet the demand for new RNs and ensure safe and quality care, novice nurses need support and continued training during the transition to practice (TTP) period.

Potential Solutions

Recognizing the need to support new nursing graduates, the landmark report- *The Future of Nursing: Leading Change and Advancing Health* (IOM, 2010), recommended to the federal government, state boards of nursing, and healthcare organizations that TTP programs (i.e., nurse residency programs) should be widely implemented. The effectiveness of TTP programs to produce transformative changes has been well documented and has shown to be highly effective in improving job satisfaction, decreasing turnover, and increasing new nurse competency and safety practices (Goode, Lynn, & McElroy, 2013; Goode, Ponte, & Havens, 2016; Kramer et al., 2012; Letourneau & Fater, 2015; Pittman & Herrera, 2013; Missen, McKenna, & Beauchamp, 2014; Spector & Echternacht, 2010). Studies of the effectiveness of TTP programs to date have shown consistent benefits to the graduate nurse (i.e., increased confidence and competence) and to the employing institution (i.e., increased job satisfaction and retention). More research, however, is needed to examine whether TTP programs have direct benefits to patient safety and outcomes.

Despite the overwhelming evidence of the effectiveness of TTP programs, no national standardization or mandatory accreditation to ensure quality of TTP program curricula exists; therefore, program structure, length, and outcomes vary, making meaningful evaluation of patient safety outcomes difficult (Goode, et al., 2016). The American Association of College of Nursing (AACN) has a voluntary accreditation program for nurse residency programs (AACN, 2019). Several national organizations are working to develop and validate evidence-based standardized TTP curricula including the AACN and the National Council of State Boards of Nursing (NCSBN) and have studied outcomes of implementation of model curricula during the past 10 years. A key element identified as essential in both the AACN residency program and the NCSBN TTP study to improve safety and quality outcomes is the inclusion of training new nurses on the implementation of evidence-based practice (Goode, et al., 2013; Spector et al., 2015).

Promotion of EBP for Quality and Safety

Research on the use of evidence-based practice (EBP) over several decades has consistently shown that EBP improves patient care quality, safety, and patient outcomes (Melnik & Fineout-Overholt, 2015; Melnyk, Fineout-Overholt, Giggelman, & Choy, 2017; Talsma, Garday, Geetham, Heinrich, & Steinwachs, 2008). Despite the universal calls for EBP implementation at the point of care, rates of implementation have been low because of a variety of reported obstacles, including lack of knowledge, time, research appraisal skills, availability of research, and lack of peer mentors (Melnik & Fineout-Overholt, 2015). This lack of implementation has been partly explained in a recent large nationwide study (n= 2,344) of U.S. nurses' EBP competencies within 19 hospital systems, in which nurses self-reported a lack of

competency in all of the 24 EBP competencies surveyed (Melynk, et al., 2018). Emphasizing the importance of EBP in TTP programs, a national longitudinal cohort study examining nurse graduates' EBP capability beliefs found their capability beliefs to be stable over the first three years of practice, indicating the importance of promoting the positive development of EBP competencies early in a nurse's career (Ehrenberg, Gustavsson, Wallin, Bostrom, & Rudman, 2016).

As nurse residency programs have integrated EBP as an essential skill for new graduates to promote safety and quality, studies of EBP training effectiveness have emerged. Many TTP programs incorporate EBP modules either in face-to-face classes or via online modules over the course of the residency year and may include an individual or team EBP implementation projects requiring the components of a PICO (population or problem, intervention, comparison and outcome) formatted question, literature search, critique and poster development as the end-product of training. Research on EBP training of both nurses and nurse residents consistently demonstrates effectiveness in increasing nurses' knowledge and attitudes toward EBP (Black, et al., 2015; Hosking, et al., 2016; Jackson, 2016; Mick, 2014), but does not consistently result in increased willingness to implement EBP which is the ultimate goal of effective behavioral change. To promote implementation of EBP by nurse residents, a theoretical framework that goes beyond examination of knowledge and attitudes to examine behavioral change is needed.

The Role of Self-Efficacy/Capability Beliefs

Self-efficacy theory, identified by Bandura (1977), has been recognized as a significant factor in the promotion of behavioral change in the healthcare literature and has been studied in relationship to the promotion of EBP implementation in nurses, nursing students, nurse

practitioners, physicians, therapists and rehabilitation counselors nationally and internationally (Appendix A). The studies on EBP and self-efficacy conducted during the past decade contain varied methodologies and examine a wide variety of variables. However, self-efficacy or capability beliefs consistently have been found to be a significant factor in the promotion of EBP implementation at the point of care (Blackman & Giles 2017; Bostrom, Sommerfeld, Stenhols, & Klessing 2018; Bostrom, Rudman, Ehrenberg, Gustavsson, & Wallin 2013; Bissett, Cvach, & White, 2016; Llasus, Angosta, & Clark, 2014; Ryan, 2016; Tansey, Bezyak, Chan, Leahy, & Lui, 2014; Turner, Nicholson, & Sanders, 2011; Underhill, Roper, Siefert, Boucher, & Berry, 2015). Self-efficacy theory (Bandura, 1977) describes two constructs that are related to behavioral change: self-efficacy (the confidence that one can execute a behavior) and outcome expectancy (the estimate of outcomes that will result from the behavior). Tansey et al. (2014) surveyed 396 vocational rehabilitation counselors and found that self-efficacy (SE) and outcome expectancy (OE) are positively associated with readiness to use EBP and accounted for 44% of the variance with OE being the more significant predictor. Several studies have focused on model development to explain the relationship of knowledge, self-efficacy and implementation of EBP. Llasus et al. (2014) utilized regression modeling to analyze the contributions of EBP readiness, self-confidence and EBP implementation in a sample of nursing students in their last semester. EBP readiness (self-efficacy) was found to mediate the relationship between knowledge and implementation which is an important step in model development and supports the use of self-efficacy theory to promote EBP implementation (Llaus et al., 201). Bandura (1977) described four specific sources of self-efficacy promotion (vicarious experiences, mastery, verbal persuasion and physiologic effects) that were used to develop an EBP training intervention by

Kiss, O'Malley, and Hendrix (2010) in which 19 of 20 items measuring SE showed significant improvement ($p < 0.05$). Vicarious experiences or witnessing others successfully implement a behavior, identified by Bandura (1977) as a source of SE, have been identified as factors contributing to increased self-efficacy and the implementation of EBP in several studies examining role modeling (Blackman & Giles, 2017; Ryan, 2016).

Interventions to Promote Self-Efficacy in EBP

Because the findings in the literature support the role of self-efficacy in the promotion of EBP implementation, investigation of which specific strategies are effective to promote EBP self-efficacy is needed. A variety of EBP educational interventions have been studied in a “bundled” format including face-to-face sessions, online modules, interactive sessions, and project completion with significant increases in EBP self-efficacy reported after the training intervention (Bissett et al. 2016; Kiss, et al. 2010; Turner et al. 2011). In a descriptive workplace interventional study of primary care practitioners from Australia, Turner et al. (2011) provided training to promote efficacy in the use of evidence-based parenting intervention and reported that the training increased provider self-efficacy and was positively associated with implementation. The population of nursing students and new graduates' self-efficacy has also been studied (Bostrom et al, 2013; Blackman & Giles, 2017; Llasus et al. 2014; Ryan, 2016), although few studies address the role of outcome expectancy (Tansey et al., 2014; Spek, B. Wieringa-De Ward, M., Lucas, C., & van Dijk, N., 2013). Bostrom et al. (2013) investigated 18 different variables including individual and organizational factors in a large sample ($n=1256$) of newly graduated registered nurses in Sweden and found that self-efficacy or capability beliefs were the only significant factor associated with EBP implementation. With the increasing prevalence of

nurse residency programs and their importance in the promotion of safety and quality of care by the new graduate, further studies investigating the effectiveness of nurse residency training interventions related to self-efficacy, outcome expectancy, and EBP implementation are needed and represent a gap in the existing literature.

Project Implementation and Measures

The overarching theoretical framework for this project is Melynk and Fineout-Overholt's Advancing Research through Close Collaboration (ARCC) EBP model (2005). Additionally, Bandura's self-efficacy theory (1977) is used to define the constructs related to a clinician's beliefs in their ability to implement the EBP process. The survey instrument used in this project is based on the main constructs of self-efficacy theory.

The Advancing Research Through Close Collaboration Model

The ARCC model identifies potential strengths and barriers within an organization for the successful implementation of EBP and defines strategies to increase clinicians' beliefs in the value of EBP and their ability to implement EBP in the practice setting. One of the key components of the ARCC model is the train-the-trainer approach: use of EBP mentors who are clinicians trained in EBP to provide training and role modeling to point-of-care clinicians in the use of EBP to improve patient outcomes (Melynk and Fineout-Overholt, 2015). The effectiveness of the ARCC model for implementing EBP organizational change was demonstrated in an acute care hospital including preparation of a group of EBP mentors (n=58) to lead organizational change (Melynk et al., 2017). Findings showed an increase in clinician's EBP beliefs and implementation of EBP, improvements in several key patient outcomes and a positive movement of the organizational culture toward EBP (Melynk, et al., 2017).

The ARCC model also proposes that the use of EBP mentors in an organization to provide interactive EBP training opportunities for point-of-care staff will result in an increase in clinician's beliefs about, valuation of, and ability to implement the EBP process (Melynk & Fineout-Overholt, 2015). Aligned with the ARCC model, this project will examine the effect of EBP training on the nurse residents' beliefs about their ability to implement EBP at the point of care.

Self-Efficacy Theory

Self-efficacy theory (SET) examines the relationship between cognitive-based sources of motivation including the concepts of efficacy expectations and outcome expectations and their effect on behavior and outcomes (Bandura, 1977). Efficacy expectation or self-efficacy is the belief that one can perform the behavior needed to produce the outcome, whereas outcome expectation is the appraisal that a particular behavior will result in the desired outcome (Bandura, 1977). SET focuses on the central role of efficacy expectation in determining the choice of activities undertaken; unlike the broad concept of self-esteem, self-efficacy is task or situation specific (Bandura, 1971). Both constructs of SET, self-efficacy expectation and outcome expectation, are important to evaluate because efficacy expectation and outcome expectation can be incongruent so that an elevated sense of self-efficacy may not result in the expected behavior if the outcome expectation is not desirable (Parjares, 2002).

SET is appropriate for examining a nurse's capability beliefs in EBP implementation. Previous studies of healthcare workers' EBP practices have concentrated on increasing knowledge and attitudes about EBP. Gains in these constructs, however, have not resulted in the desired behavioral change of EBP implementation overall (Black et al., 2015; Hosking, et al.,

2016; Jackson, 2016; Mick, 2014). SET has been chosen to underpin this project because SET is one of the most influential behavioral theories studied by many disciplines; in studies of motivational principles, SET has been shown to be a consistent predictor of behavior (Graham & Weiner, 1996). In the application of SET, identifying an instrument aligned with the theory's proposed relationship between the concepts of self-efficacy, outcome expectancy, and behavior is important. The central constructs of SET—self-efficacy expectation and outcome expectation—were used to create a valid and reliable instrument by Chang and Crowe (2011), which includes specific items to measure nurses' expectations for each of the five steps of the EBP process. The instrument was used in this project.

Purpose, Objectives and Sample

A quasi-experimental, descriptive, mixed-methods approach was implemented using a pre-test/post-test design to examine how EBP training provided to two samples of nurse residents affects their EBP self-efficacy and outcome expectancy. Increasing understanding of how training influences EBP self-efficacy and outcome expectancy of nurse residents can contribute to efforts to increase EBP implementation at the bedside that, in turn, fosters safe, quality care. The purpose of this project is to describe how EBP training provided to nurse residents affects their EBP self-efficacy and outcome expectancy. The project has three objectives:

Objective 1. To describe how EBP training interventions affect the EBP expectations (self-efficacy) of nurse residents.

Objective 2. To describe how EBP training interventions affect the EBP outcome expectations of nurse residents.

Objective 3. To provide recommendations for clinical change to nursing onboarding programs based on the survey results.

The target population for this project consists of nurse residents meeting the inclusion criteria defined as registered nurses participating in a one-year nurse residency training program as new hires to a hospital. As a convenience sample, nurse residents in the Fairfield Medical Center (FMC) Pathways to Practice Program and The Ohio State University (OSU) Wexner Medical Center The James Cancer Hospital Nurse Residency Program were invited to participate in a survey. Recruitment included a verbal invitation to participate during a nurse residency class during which an informed consent script was read and provided to participants. The following study information was included: subject rights, study purpose and procedures, duration of participation, and the contact information for principle investigators (Appendix B). No incentives for participation were offered. The OSU sample included 85 nurse residents in cohorts starting in August through November 2018 and the FMC sample included 20 nurse residents starting in September 2018. Institutional Review Board approvals were received from both study sites including The OSU Office of Responsible Research Practices and the Mount Carmel Institutional Review Board, Office of Research Affairs as well as the Otterbein University Institutional Review Board (Appendix C).

Survey Instrument

The EBP Self-Efficacy (SE) and EBP Outcome Expectancy (OE) beta version instrument (Chang & Crowe, 2011) was used for the survey of nurse residents. Permission for use was obtained from the authors. The EBP SE and OE survey (Chang & Crowe, 2011) measures the efficacy of EBP training interventions in nurses and other healthcare workers based on the key

constructs of Bandura's self-efficacy theory and the five steps of the EBP process (Appendix D). The Self-Efficacy in EBP scale (SE-EBP) includes 28 items on an 11 point Likert-type scale (total score range 0 to 280) which measures the level of confidence nurses have about EBP. The Outcome Expectancy in EBP scale (OE-EBP) includes 8 items on an 11 point Likert-type scale (total score range 0 to 80) which measures respondent confidence that accomplishing the steps of EBP would lead to improved quality of patient care. Validation testing has shown it to be a valid and reliable instrument (Chang & Crowe, 2011) SE-EBP and OE-EBP scales had high reliability ($\alpha = 0.96$), and content validity was established by an expert panel and the use of the five steps of EBP. Construct validity of the SE-EBP scale was supported because it could distinguish between participants with and without prior exposure to EBP,

Measure of Project Success

The achievement of the Doctor of Nursing Practice (DNP) project objectives are measured by the collection of meaningful data on the relationship of EBP training to nurse residents' self-efficacy and outcome expectancy, which contribute to the understanding of how these measures influence nurses' implementation of EBP and allow recommendations for future EBP training interventions for nurse residents.

Project Timeline

The survey items were entered into the Qualtrics software [version 3.8.0] © 2019 in preparation for survey administration at the two study sites. Survey administration began in August 2018 through March 2019. The pre-survey was administered during the initial residency class and the post-survey was given after the EBP training was presented. The survey dates for both study sites vary by the start date of each nurse residency cohort See Table 1.

Table 1. Survey Implementation Schedule

Ohio State University The James Cancer Center Nurse Residency Program		
<i>Summer/Fall 2018 Cohort</i>	<i>Survey administered</i>	<i>Date and time</i>
Cohort #23	Pre-survey	Aug 16 th 10 a.m.
Cohort #23	Post-survey	Feb 11 th 10 a.m.
Cohort #24	Pre-survey	Sept 18 th 10 a.m.
Cohort #24	Post-survey	Dec 20 th 10 a.m.
Cohort #25	Pre-survey	Oct 2 nd 12 p.m.
Cohort #25	Post-survey	Feb 18 th 10 a.m.
Cohort #26	Pre-survey	Oct 3 rd 9:30 a.m.
Cohort #26	Post-survey	Feb 19 th 10 a.m.
Fairfield Medical Center Pathways to Practice Program Nurse Residency Program		
<i>Summer/Fall 2018 Cohort</i>	<i>Survey to be administered</i>	<i>Date and time</i>
Summer/Fall Cohort	Pre-survey	Sept 11 th 5 p.m.
Summer/Fall Cohort	Post-survey	Jan 15 th 5 p.m.

Project Budget

Estimated expenses for the implementation of the DNP project are outlined in the Table

2. A funding proposal was submitted to the Otterbein University Student Research Fund and an award of \$303.00 was provided for this project. Project expenses as outlined totaled \$461.83.

Table 2. Doctor of Nursing Practice Project Expenses

Research Expenses	Calculation	SRF Request	Budget Variance	Total
Data analysis and statistical consultation		\$100.00	Not Used (\$100)	_____
Editor for final draft review	\$50.00/hr X 3hr	_____	\$150	\$150
Travel expenses for data collection	0.545 cents per mile	98.10 + 196.20 = \$294.30	98.10+163.50 = \$261.60 (\$32.70)	\$261.60

	FMC (45 miles/90 round trip) x 2= \$98.10 OSU (15 miles/30 round trip) x 12=\$196.20		1 OSU cohort cancelled; Trips= (15 miles/30 round trip) x 10= \$163.50	
Copying costs for paper surveys	10 pages, 30 copies	\$15.00	Survey and consent script copying \$64.78 + \$35.45 = \$100.23 \$85.23	\$100.23
Total Budget	_____	\$409.30	+\$102.53 over estimated	\$511.83
Otterbein Student Research Fund Award		\$400 requested		\$303.00 SRF Awarded

FMC= Fairfield Medical Center, OSU = Ohio State University, SRF = Student Research Fund

Financial Implications and Analysis

In considering the value of a nurse residency program and the impact on a nurse resident's self-efficacy in EBP, a variety of factors should be considered. Of primary consideration are the overall benefits of nurse residency programs and EBP training to the healthcare system, as well as financial implications. A cost-benefit analysis would require the examination of the short-term return on investment (ROI) of the implementation of a nurse residency program, and the long-term ROI of the continued use of EBP by the nurse residents as they move through their careers.

Overall Benefits of Nurse Residency Programs: The “So-What” Factor

In considering the value of an EBP project, a crucial evaluative factor is what potential impact the project will have on healthcare? This has been referred to as the “so-what” factor by Melynck (2014) as she emphasized the importance of asking, “So what difference will the study

or project make in improving healthcare quality, costs, and most important patient outcomes?”

(p. 1). In considering this question, nurse residency programs have been shown to increase the competence and confidence of new nursing graduates, improve new graduate critical thinking skills, decrease error risk, and decrease overall attrition rates in the first years of practice (Goode et al., 2013; Goode et al., 2016; Kramer et al., 2012; Letourneau & Fater, 2015; Pittman & Herrera, 2013; Missen et al., 2014; Spector & Echternacht, 2010). To evaluate the investment of time and resources in a nurse residency program, Linus, Reeder, Bradley and Polis (2014) implemented a mixed-methods study evaluating the perceptions of effectiveness of nurse residency programs from the view point of nurse leaders. The nurse leaders found that nurse residents were assimilated more quickly into the professional nurse role and were more likely to join a unit committee, were apt to have enhanced knowledge of EBP, were more accountable for patient care, and were more likely to have a better understanding of how their practice influenced the quality of patient care (Linus, et al., 2014).

In addition, the implementation of EBP, a vital component of nurse residency programs, has been recognized nationally and internationally as a significant factor to provide improved patient outcomes and quality of care at the lowest costs (Melynk & Fineout-Overholt, 2015). In terms of financial savings, estimations have shown that the use of EBP by healthcare systems would reduce spending by 30% (Melynk, 2014). Savings, resulting from EBP implementation, would include the reduction of the high rate of medical errors and associated costs, poor quality healthcare, and wasteful spending (Melynk, 2014). To further quantify the overall benefit of the implementation of a nurse residency program that promotes the implementation of EBP, a cost-benefits analysis is needed examining both the short and long-term impact on ROI.

Return on Investment of a Nurse Residency Program

A primary area of short-term cost savings related to the implementation of a nurse residency program is the savings associated with decreased attrition of the new graduate nurse. The average attrition rate of a new nurse graduate is estimated to be as high as 30-50% over the first three years of practice (Snively, 2016). Hillman and Foster (2011) examined the organizational cost savings over a four-year period related to the effect of a nurse residency program on new graduate retention rate; they reported a retention rate increase from 50% to an average of 90.8% and reported a costs savings of more than 4 million dollars. Pine and Tart (2007) examined retention efforts and ROI of implementation of a nurse residency program in a collaborative effort between the Health Care Consortium in Houston Texas and the American Association of Colleges of Nursing (AACN). In calculating the ROI, the cost of the nurse residency program was calculated including costs related to materials and curriculum, faculty salary, the resident's salary after orientation, and replacement cost of unit-based coverage for the graduate nurse to attend the program (Pine and Tart, 2007). The net program benefits were calculated based on the savings realized from a previous attrition rate of 50% to an improved rate of 13% after implementation of a nurse residency program (Pine and Tart, 2007). The ROI was calculated by taking the net program benefit savings divided by the program's cost and produced an 8.847 ROI or 884.7% ROI which represented a noteworthy initial cost savings for the dollars invested in the nurse residency program (Pine and Tart, 2007). Trepanier, Early, Ulrich & Cherry (2012) conducted a retrospective cost-benefit analysis of new graduate nurse residency program implementation in 15 hospitals in multiple states based on turnover and contract labor costs and reported a significant decrease in attrition over 12 months, from 36.08% to 6.41% ($p < 0.05$) and a

reduction in contract labor costs from \$19,099 to \$5,490 ($p < 0.05$) per average daily census.

Trepanier et al. (2012) concluded that cost-benefit analysis net savings were \$10 to \$50 per patient day as compared with traditional orientation methods.

Return on Investment of EBP Implementation

As discussed, the implementation of nurse residency programs resulted in significant short-term ROI (Pine & Tart, 2007; Hillman & Foster, 2011). The next financial consideration is the potential for long-term ROI of training new graduates to implement EBP initiatives. After the initial investment of EBP training, Ehrenberg, et al., (2016) reported that national longitudinal study results showed that the self-efficacy beliefs of nurse graduates remain steady over the first three years of practice. With new nurses trained to effectively implement EBP, what cost savings and ROI potential can be demonstrated for EBP project implementation?

Individual EBP project savings.

As with many change projects, each EBP initiative will require an investment of resources to achieve desired patient outcomes and cost savings.

For EBP processes, up-front resources (people and time) are needed to: review the evidence (when needed); determine outcomes to be measured and collect baseline data; design a practice change protocol; implement the protocol ... [and] collect further data to evaluate the practice change; and develop a plan for ongoing monitoring and re-infusion to sustain gains. (Tucker, 2014, p. 271)

Potential cost savings include reduction in complication rates, decreased lengths of stay, and improved patient self-management, leading to decreased readmission costs. The Institute of Healthcare Improvement (IHI) has developed a framework for calculating the ROI of EBP

projects which can be used to justify the costs of implementation of practice change (Tucker, 2014). The IHI framework includes four steps used to calculate EBP project ROI.

1. Identification of the improvement goal: calculation of the current scope of the problem in the organization to establish baseline costs.
2. Estimation of improvement costs: identification of the initial and lifetime costs of each improvement strategy.
3. Calculation of revenue improvement through cost avoidance: determination of the costs avoided through goal achievement.
4. Calculation of the ROI: comparison of total annual cost avoidance compared to initial total cost to identify financial savings. (Tucker, 2014, p. 272)

For individual project planning, the use of the IHI model for calculation of EBP project ROI can be used by nurse leaders to support their staff in project initiatives and inclusion in operational budget planning (Tucker, 2014).

System-wide EBP project savings.

The IHI framework for evaluation of financial savings of EBP projects can also be used to evaluate system-level implementation of change initiatives. The Catholic Health Initiatives (CHI) organization, a large faith-based healthcare system, which operates 72 hospitals over 18 states used the IHI framework to develop a fiscal evaluation prototype of its EBP model implementation system-wide (Schifalacqua, Mamula & Mason, 2011). Based on an extensive literature review, CHI developed EBP toolkits aimed at reduction of length of stay and prevention of adverse events within their organization (Schifalacqua, et al., 2011). Criteria from the Centers for Disease Control (CDC) and the National Health Care Safety Network (NHSN)

were used to define outcome data collection and were included in each EBP bundle (Schifalacqua, et al., 2011). Cost averages were identified on each healthcare-associated condition by Schifalacqua et al., (2011) by alignment with data from national organization benchmark metrics (i.e., CDC, IHI, the Agency for Healthcare Research and Quality [AHRQ], the Society for Healthcare Epidemiology of America [SHEA], and the Association for Professionals in Infection Control and Epidemiology [APIC]). Cost of care savings related to EBP bundle implementation were evaluated for a variety of preventable healthcare associated conditions (i.e., infections, falls, pressure-ulcer prevention, venous thromboembolism prevention and surgical never-events). The calculation of the cost of care after EBP bundle implementation was determined by using the following fiscal evaluation algorithm: baseline data cost of care minus the measurement data cost of care (after toolkit implementation) equals fiscal improvement cost of care (Schifalacqua, et al., 2011). Application of the IHI Framework for calculation of ROI related to EBP bundles at the system level allowed for the identification of the system-wide cost of care performance data as well as examination of EBP bundle compliance and cost savings achieved at individual hospitals (Schifalacqua, et al., 2011).

Summary of Financial Implications of EBP Training for Nurse Residents

Overall cost-benefit analysis demonstrates the importance of the author's current project on evaluation of the self-efficacy and outcome expectancy of the nurse resident's ability to implement EBP. The benefit of EBP self-efficacy for the nurse resident is supported by the financial implications discussed in both short-term and long-term benefits of contributions of nurse residency programs overall as well as the ROI of EBP project implementation over a nurse's career in healthcare. Nurse residency programs have been shown to contribute to the

assimilation and effectiveness of the new graduate's transition into the professional role and provide a significant ROI by decreasing nurse attrition and use of contract labor (Trepanier, et al., 2011). Providing EBP training during nurse residency equips the nurse graduate with EBP skills and improved self-efficacy in EBP implementation and contributes to the long-term benefits to the healthcare system. New nurses skilled and confident in EBP implementation contribute to change projects which provide for decreased length of stay, reduction in error-related costs, improved patient healthcare outcomes, and decreased readmission rates, all of which result in positive ROI and cost savings for the healthcare organization.

Outcomes and Evaluation

Data Analysis and Results

The EBP Self-Efficacy (SE) and EBP Outcome Expectancy (OE) beta version instrument (Chang & Crowe, 2011) was administered using Qualtrics (version 3.8.0, copyright 2019) [computer software]. Surveys were completed by 83 of 86 possible participants (97% response rate) between August 2018 and November 2018 at the start of the nurse residency program. Post survey data was collected from December 2018 through February 2019 after EBP training was implemented. Survey data was imported into Microsoft Excel (version 1901, copyright 2016) [computer software] for data cleaning and pre and post survey data for each participant was matched using a unique code identifier provided by participants. After data cleaning and removal of incomplete survey data and participant attrition, paired comparisons were conducted on 67 (81%) nurse residents who completed both surveys.

Sample characteristics.

Participants included 60 females (90%) and 10 males (10%) between the ages of 22 and 39 with a mean age of 23.8 years. Sixty (90%) of the participants held a bachelors' degree in nursing as their highest degree, six (9%) held an associate's degree in nursing, and only one had a master's degree in nursing. The majority of participants (96%) had graduated from a nursing program in the previous 6 months, and most (73%) were assigned to work on a medical surgical or oncology specialty unit (Table 3).

Table 3. Sample Characteristics

Sample Characteristics	N	Percent
Gender		
Female	60	90
Male	7	10
Age Group		
22-25	49	73
26-29	11	16
30-33	2	3
34-37	1	2
38-40	2	3
Not Given	2	3
Nursing Education		
ADN	6	9
BSN	60	90
Masters	1	1
Time as Registered Nurse		
0-6 months	64	96
7-12 months	2	3
13-18 months	1	1
More than 18 months	0	0
Unit Assigned		
Medical Surgical	42	63
ICU	6	9
Step Down	12	18
Specialty/Other	7	10

Survey results.

The total SE scores (28 items, scored 0 to 280) for the paired surveys were calculated; the group mean for total SE scores increased from 156.94 pre-survey to 158.53 post survey and a t-test for paired sample means showed the difference was not significant (Table 4). Previous validation studies by Chang and Crowe (2011) established the reliability of three subscales on the SE measure including: Identifying the Clinical Problem (5 items, $\alpha=0.91$), Searching for the Evidence (9 items, $\alpha=0.96$), and Implementing the Evidence into Practice (14 items, $\alpha=0.96$); differences for these subscales were analyzed. Comparison of total scores for each of the subscales showed an increase in the mean scores for the Identifying the Clinical Problem and Implementing the Evidence into Practice subscales, but a decrease in the total mean score for the Searching for the Evidence subscale was noted. Analysis of the t-test for paired sample means showed no significant differences for the subscale means (Table 4).

The total outcome expectancy (OE) scores (8 items, scored 0 to 80) were calculated and the group mean total score was found to decrease from 51.58 pre-survey to 47.94 post survey and a t-test for paired sample means indicated this decrease to be a significant change ($p<.05$). The 95% confidence interval for the mean difference was [22.25 to 29.53] (Table 4).

Table 4. Survey Results

EFFICACY MEASURE	PRE	POST	DIFFERENCE
Scale (Possible)	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Paired t-test</i>
Self-Efficacy Total (280)	156.94 (40.99)	158.53 (32.96)	0.33* NS
Identifying (50)	28.15(7.42)	29.62 (5.84)	0.21* NS
Searching (90)	58.32 (16.59)	55.41 (11.91)	1.78* NS
Implementing (140)	70.46 (21.88)	73.49 (19.30)	1.14* NS
Outcome Expectancy Total (80)	51.58(14.39)	47.94 (11.66)	2.30 ($p<.05$)
			*NS=not significant

Outcomes and Conclusions

Objective 1. To describe how EBP training interventions affect the EBP expectations (self-efficacy) of nurse residents.

The EBP training provided to nurse residents between the pre and post survey measures included attending an EBP class presenting the steps of EBP, the literature review process, use of database resources, and information on project selection. Data analysis of the difference in EBP SE scores demonstrated that the training provided to the residents through the mid-way point of the residency program did not significantly affect the nurse residents' EBP SE. This finding is consistent with previous literature which reports that information provided about EBP increases knowledge about and attitudes toward EBP but may not directly affect the readiness to use in practice (Black, et al., 2015; Hosking, et al., 2016; Jackson, 2016; & Mick, 2014).

Confidence in EBP can be enhanced through the focus on Bandura's (1977) sources of self-efficacy (i.e., mastery experiences, vicarious experiences, verbal persuasion and physical and emotional states). During the second half of the residency program, nurse residents began to work in groups on their projects aided by mentors from their assigned units. The implementation of learned BP skills within the group projects during the second half of the residency program provides input from each of Bandura's sources of efficacy. As projects are implemented, mastery experiences (e.g., success in learning a new behavior), vicarious experiences (e.g., modeling by mentors), and verbal persuasion (e.g., positive encouragement), as well as awareness of how negative emotional states such as anxiety may affect their confidence, will be provided to nurse residents and may be effective in improving SE in EBP (Chang & Levin, 2014). Consistent with the influence of the sources of SE (Bandura, 1977), a repeat measure of the SE and OE for the

nurse residents at the end of residency after completion of the EBP project may result in positive differences in SE scores because of the influence of the four sources of efficacy.

Objective 2. To describe how EBP training interventions affect the EBP outcome expectations of nurse residents.

Data analysis of the difference in EBP OE scores demonstrated that the training provided to the residents through the mid-way point of the residency program demonstrated a significant decrease in the nurse residents' EBP OE. SE theory (Bandura, 1977) describes the impact of emotional states on efficacy with both positive and negative influences. Studies on the new graduate's stress and anxiety during the transition period of the first year of practice demonstrates that stress and anxiety of the transition peaks at around three to six months which aligns with the timeframe when the post survey data was collected in this project (Cheng, Tsai, Chang & Liou, 2014). The increased stress during the mid-point of the residency period may have contributed to the decrease in OE scores found in this project.

Tansey et al, (2014) reported that both SE and OE were positively associated with readiness to use EBP with OE being the most significant predictor. The significance of the decrease in OE found in this project is emphasized by Parjares (2002); when the relationship between efficacy expectation and outcome expectation are not aligned, the expected behavior may not result if outcome expectation is not optimal. The decrease in the OE total scores in this sample may have contributed to the lack of the desired increase in total SE scores after EBP training.

Barriers Encountered

The pre-post survey design of the project and the need to pair individual participant scores for the paired t-test analysis resulted in loss of participant data because of attrition of participants over the study time period or inability to match data by the unique identifier codes. The FMC residency classes were highly recommended but not mandatory resulting in a variable attendance and missing data. Both hospital systems require nurse residents to complete numerous surveys to evaluate their transition experience which may contribute to survey fatigue, although the participation rate for the current project remained high (97%) overall. The established survey instrument used (Chang and Crowe, 2011) included the term “surname” when collecting the unique code identifiers used for matching pre and post data. A discovery was made during data collection that many nurse residents were not familiar with the meaning of this term and this may have contributed to difficulty in providing the code identifier.

Recommendations

Objective 3. To provide recommendations for clinical change to nursing onboarding programs based on the survey results.

Recommendations for onboarding programs would include providing residency class support for the full first year of practice to provide needed transition support beyond the critical peak stress experienced at three to six months. A one-year residency allows time for EBP skill development, project identification, and full project implementation which expose the new graduate nurse to Bandura’s (1977) four sources of efficacy development. Transition to practice curriculum on EBP should purposefully integrate:

- mastery experiences where learning activities are structured from simple to more complex to allow for success;
- vicarious experiences where mentors or past residents share their experiences or are observed successfully implementing the steps of EBP;
- verbal persuasion including meaningful feedback and positive reinforcement of EBP skills; and
- promotion of residents understanding of how negative emotional states such as stress affect their efficacy beliefs.

The participants in this project were from an acute care specialty center as well as a community-based hospital residency program thereby making findings applicable to similar hospital-based residency program settings. The major limitation of the project was due to the required timeframe for project completion, residents were surveyed at the mid-way point of their program thus limiting the effect of the EBP project implementation on their efficacy beliefs. Significant increases in EBP SE were found by Chang and Levin (2014) when students were given an EBP course and an EBP project was implemented related to clinical practice and the training process included focus on Bandura's four sources of efficacy. In the future, more work is needed to explore the specific influence of the sources of efficacy within the EBP training programs for nurse residents.

Summary

The implementation of EBP, a vital component of nurse residency programs, has been recognized as a significant factor to provide improved patient outcomes and quality of care at the lowest costs (Melynk & Fineout-Overholt, 2015). As nurse residency programs have included EBP as an essential skill for new graduates, and as findings in the literature support the role of

SE in the promotion of EBP implementation, investigation of which specific strategies are effective to promote EBP SE is needed. The current project measured SE and OE at the beginning and mid-point of a nurse residency program (month five or six) following the provision of classroom training on EBP and did not demonstrate an increase in the efficacy measures. Timing of the survey at the mid- year point before residents completed the EBP projects may have contributed to the lack of significant increase in SE because the residents had not yet completed the EBP project which would expose them to Bandura's sources of efficacy. Despite financial considerations that may drive the shortening of residency programs to less than one year, the need to have time for EBP project development and implementation which exposes residents to the four sources of efficacy promotion (mastery, vicarious experiences, verbal persuasion and emotional states) is recommended because increases in efficacy measures have been found to be positively correlated to intention to use in practice (Chang & Levin, 2014). To capture the efficacy promotion effects of the four sources of efficacy during EBP project implementation, evaluation of SE and OE measures at the end of the nurse residency program is recommended for future study.

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Appendix A

Synthesis Table of Findings on Self-Efficacy/Capability Beliefs and EBP

Relationship to EBP intent or implementation	1	2	3	4	5	6	7	8	9	10	11
EBP SE/CB	↑	↑	↑	↑	NE	↑	↑	↑	RM	↑	↑ _{NI}
EBP Outcome Expectancy	NE	NE	NE	NE	NE	NE	↑	NE	—	NE	NE
Collective Efficacy	NE	NE	NE	NE	NE	NE	NE	↑	NE	NE	NE
Gender	NE	—		NE	NE	NE	NE	—	NE	NE	NE
Yrs of experience	—	NE	NE	NE	↑	NE	NE	NE	NE	NE	NE
Type of HC professional	Dr-↑	NE	NE	NE	NE	NE	NE	—	NE	NE	NE
Previous EBP Education	NE	Indirect effect	NE	NE	↑	NE	NE	NE	—	NE	NE
Witnessing EBP	NE	↑	NE	↑	—	NE	NE	NE	NE	NE	NE
ESL	NE	↓	NE	NE	NE	NE	NE	NE	—	NE	NE
Last Clinical venue	NE	—	NE	NE	NE	NE	NE	NE	NE	NE	NE
EBP training Intervention to SE	NE	NE	↑	NE	—	NE	NE	NE	—	↑	↑ _{BC}

Inclusion criteria: Studies published within 8 years examining EBP SE or Capability Beliefs in HC workers. 1=Bostrom et al. (2018); 2 = Blackman et al. (2017); 3=Bissett et al. (2016); 4=Ryan (2016), 5=Underhill et al. (2015); 6= Llausus et al. (2014); 7= Tansey et al. (2014), 8=Bostrom, et al. (2013); 9=Spek et al. (2013); 10=Turner et al. (2011); 11= Kiss et al. (2010)

NE= not examined, SE/CB = self- efficacy or capability beliefs relationship to EBP use, RM = reverse model used (increase knowledge and skill increases self-efficacy and task value) BC= included components of Bandura's SET, NI – no measure of intent or implementation

Appendix B

Informed Consent Script: Ohio State University

Subject Rights: The Ohio State University supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty and you may choose not to answer specific questions.

Purpose of the study: We are interested in studying the impact of evidence-based practice training on nurse residents. As nurse residents in this program, you are invited to participate in this study.

Study procedures: If you decide to participate in this study, you will be asked to complete a likert-type survey where you will be asked questions about your experience with evidence-based practice.

Duration of subjects participation: You will be invited to take the survey at the beginning, middle and end of the residency program and the survey will require 10-15 minutes to complete each time.

Confidentiality: Your participation is solicited although strictly voluntary and anonymous. To enable us to match your responses on the 3 questionnaires, a code identifier will be provided that only you can generate.

Contacts and Questions: If you would like additional information concerning this study before or after it is complete, please feel free to contact us by phone or mail.

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Co-Investigator: Amy L. Smith, MSN, RN, CNE
614-940-2406

For questions about your rights as a participant in this study or to discuss other study related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251

Incentives: No incentives are offered for your participation.

Sponsor: Not applicable.

Informed Consent Script: Mount Carmel Health System – Fairfield Medical Center

You are being asked to participate in a research study designed to investigate/learn about your use of evidence-based practice. If you wish to participate in this study, simply complete this survey. If you do not want to participate, please disregard this survey. Approximately 50 nurse residents will be invited to participate.

Participating in this study may not involve any direct benefit to you. There are no risks to completing this survey. Your individual results will not be shared with your educators or your institution and cannot affect your grades, employment or job security in any way.

Your participation in the study is kept confidential. Your identity will not be revealed on any report or publication.

If you have any questions regarding your participation in this study, you may contact Karen Hughes who is the principal investigator of this study at 614 823-1614.

If you have any questions regarding your participation in this study, you may contact Amy Smith at 614 823-1614, who is the person in charge of this study. You may also contact the Mount Carmel Institutional Review Board (IRB) which monitors the study, at (614) 546-4325.

By completing the survey, you are acknowledging your understanding of the study and giving your consent to participate.

If you wish to participate, please complete the survey. Once you have finished, please submit the survey online at the link provided.

Appendix C

Ohio State Office of Responsible Research Practices

05/07/2018

Study Number: 2018E0299

Study Title: Evidence-based Practice Self-Efficacy and Outcome Expectancy in the Nurse Resident

Principal investigator: Colleen O'Leary

Date of determination: 05/07/2018

Qualifying exempt category: #1, #2

Dear Colleen O'Leary,

The Office of Responsible Research Practices has determined the above referenced project exempt from IRB review.

Please note the following about this determination:

- Retain a copy of this correspondence for your records.
- Only the Ohio State staff and students named on the application are approved as Ohio State investigators and/or key personnel for this study.
- Simple changes to personnel that do not require changes to materials can be submitted for review and approval through Buck-IRB.
- No other changes may be made to exempt research (e.g., to recruitment procedures, advertisements, instruments, protocol, etc.). If changes are needed, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Records relating to the research (including signed consent forms) must be retained and available for audit for at least 5 years after the study is closed. For more information, see university policies, [Institutional Data](#) and [Research Data](#).
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University's OHRP Federalwide Assurance #00006378. Human research protection program policies, procedures, and guidance can be found on the [ORRP website](#).

Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.

Jacob Stoddard
stoddard.13@osu.edu
(614) 292-0526

MOUNT CARMEL

Institutional Review Board, Office of Research Affairs
6150 East Broad Street • Columbus, Ohio 43213
mountcarmelhealth.com/research

May 21, 2018

Amy Smith, RN
Otterbein University
1 South Grove Street
Westerville, Ohio 43081

Re: Evidence-based Practice Self-Efficacy and Outcome Expectancy in the Nurse Resident IRB study #1804304

Dear Ms. Smith,

The above titled research protocol has been approved by expedited review. The IRB was able to provide expedited approval under 45 CFR 46.110 (7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Items receiving expedited review and approval:

- Protocol
 - Request for waiver of documentation of informed consent
 - Self-efficacy in Evidence Based-Practice Activities and Outcome Expectations of Evidence Based Practice with elements of informed consent

The research site approved for this research protocol:

Fairfield Medical Center

This approval will appear on the agenda at the next convened meeting of the IRB. If any issues are raised, you will be notified in writing.

Date of Initial approval: 5/16/18 Date of Expiration: 5/15/19

This approval period is for one year. A continuing review must be accomplished before this study can proceed beyond the date of expiration. As part of our continuing review process, we may randomly audit your study to ensure compliance with regulations.

All correspondence regarding this study must be identified by protocol title and the assigned IRB number, 180430-4. Upon completion of the study, you will be required to submit a protocol termination report

As Principal Investigator, your responsibilities with regard to this research protocol are:

- to conduct the research study in an ethical manner
- to obtain prior review from the IRB before implementing any protocol amendments and changes to approved research except where necessary to eliminate apparent immediate hazards to the study subjects, ■ to immediately report to the IRB any serious adverse reactions and/or unanticipated effects on subjects which may have occurred as a result of this study,

v. 8/31/07

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Protocol Title: Evidence-based Practice Self-Efficacy and Outcome Expectancy in the Nurse Resident]

IRB Study#: 1804304

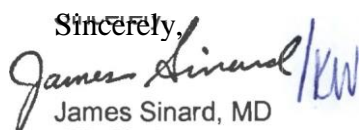
Page 2 of 2

- to report any significant changes to the study site and significant deviations from the research protocol,
- to report all deaths of enrolled subjects at the approved site, ● to submit a termination report upon completion, ● to train study personnel in the proper conduct of human subject research and the protection of human subjects, ● to prepare and maintain adequate and accurate case histories that record all observations and other data pertinent to the investigation on each individual administered the investigational drug/device or employed as a control in the investigation. Case histories include the case report forms and supporting data/source documents (e.g., signed and dated consent forms and medical records, progress notes of the physician, the individual's hospital chart(s), and the nurses' notes). The case history for each individual shall document that informed consent was obtained prior to participation in the study.

The Mount Carmel Institutional Review Board is duly constituted fulfilling FDA requirements for diversity. Only those IRB/IEC members who are independent of the investigator and the sponsor of the trial are allowed to vote/provide opinion on the trial. The IRB has written procedures for initial and continuing review of clinical trials, prepares written minutes of convened meetings, and retains records pertaining to the review and approval process; all in compliance with requirements defined in 21 CFR (Code of Federal Regulations) Parts 50, 56 and ICH (International Conference on Harmonization) guidance relating to GCPs (Good Clinical Practice).

If you have any questions regarding your protocol or this letter, please contact the IRB office at 614/5464325 or e-mail irb@mchs.com.

Sincerely,



James Sinard, MD

IRB Chairperson

Mount Carmel Institutional Review Board

cc: IRB File

Otterbein University IRB Committee

INSTITUTIONAL REVIEW BOARD
RESEARCH INVOLVING HUMAN SUBJECTS
OTTERBEIN UNIVERSITY

☒ Original Review
☐ Continuing Review
☐ Five-Year Review
☐ Amendment

ACTION OF THE INSTITUTIONAL REVIEW BOARD

With regard to the employment of human subjects in the proposed research:

HS # 17/18-84

Smith & Hughes: Evidence-based Practice Self-Efficacy and Outcome Expectancy ...

THE INSTITUTIONAL REVIEW BOARD HAS TAKEN THE FOLLOWING ACTION:

☒ Approved
☐ Approved with Stipulations*
☐ Deferred
☐ Disapproved
☒ Waiver of Written Consent Granted

*Stipulations stated by the IRB have been met by the investigator and, therefore, the protocol is APPROVED.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least four (4) years beyond the termination of the subject's participation in the proposed activity. Should the principal investigator leave the college, signed consent forms are to be transferred to the Institutional Review Board for the required retention period. This application has been approved for the period of one year. You are reminded that you must promptly report any problems to the IRB, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential.

Date: 21 June 2018

Signed: Meredith C. Fry
Chairperson

OC HS Form AF

Appendix D

Demographics Questions**Introduction**

Thank you for your participation in this survey. This is the first of 3 questionnaires designed to find out how you feel about your own abilities in regard to evidence-based practice. Your answers will assist us in continuing to develop programs for promoting evidence-based practice.

There are no right or wrong answers to the questions. Feedback on final results will be available to all participants.

Answers to the questions are anonymous. To enable us to match up your responses to the three questionnaires, please complete the code identifier below that only you can generate. We will also ask you to provide your background information again for the 2nd and 3rd questionnaires to help us with the matching process.

Please answer the following to create your own unique code identifier:

What is the first letter of your surname?

What is the second letter in your mother's first name?

What is the second letter in your father's first name?

What is the day (in the month) of your birthday?
(e.g., 20th)

Demographics

What is your age in years?

What is your gender?

☐ Male

- ☐ Female

What is your racial or ethnic group?

- ☐ White
- ☐ Black
- ☐ Asian
- ☐ American Indian or Alaskan Native
- ☐ Native Hawaiian or Pacific Islander
- ☐ Hispanic or Latino
- ☐ Other

What is the highest level of nursing education you have completed?

- ☐ Diploma
- ☐ Associate degree in nursing (ADN)
- ☐ Bachelors degree in nursing (BSN)
- ☐ Masters degree in nursing (MSN)
- ☐ Doctoral degree in nursing (PhD or DNP)

How much time has elapsed since your graduation from a nursing pre-licensure program?

- ☐ Less than 6 months
- ☐ 7-12 months
- ☐ 13-18 months
- ☐ 19 -24 months
- ☐ > 2 years but < 5 years
- ☐ > than 5 years

How much time have you spent working as a registered nurse?

- ☐ Less than 6 months
- ☐ 7-12 months
- ☐ 1-2 years
- ☐ 3-5 years
- ☐ 6-10 years

- ☐ greater than 10 years

Other than this class, how much training on evidence-based practice have you attended ?

- ☐ None
☐ less than 10 hours
☐ 10-40 hours
☐ 41-80 hours
☐ More than 80 hours

Other than this class, how many evidence-based practice projects have you completed?

- ☐ 0
☐ 1-2
☐ 3-4
☐ 5 or more

What type of nursing unit are you currently working on?

- ☐ ICU
☐ Step down unit
☐ Emergency room
☐ Medical surgical unit
☐ OB
☐ Pediatrics
☐ Operating room or PACU
☐ Observation unit
☐ Other

Self-Efficacy in Evidence-Based Practice (SE-EBP)

For the next questions, please rate how **confident** you are in your ability to successfully accomplish each of the following activities. Each activity is related to the successful practice of evidence-based healthcare. In the boxes provided to the right of each activity, please indicate (by circling one number on each line) your degree of confidence, from 0 (no confidence at all) to 10 (extremely confident).

<p><i>How <u>confident</u> are you in your ability to successfully accomplish each of the following activities?</i></p>	No confidence at all					Somewhat confident					Extremely confident
1. Identify a clinical problem needing evidence to guide nursing care	0	1	2	3	4	5	6	7	8	9	10
2. Generate a clinical question from a problem requiring evidence	0	1	2	3	4	5	6	7	8	9	10
3. Identify gaps in the knowledge under-pinning my own professional practice	0	1	2	3	4	5	6	7	8	9	10
4. Clearly and succinctly define the clinical problem requiring evidence	0	1	2	3	4	5	6	7	8	9	10
5. Determine what I know and don't know about the problem	0	1	2	3	4	5	6	7	8	9	10
6. Use computers to search for evidence-based information	0	1	2	3	4	5	6	7	8	9	10
7. Identify key words, subjects and/or concepts to guide the search for information	0	1	2	3	4	5	6	7	8	9	10
8. Locate local and/or on-site information resources to be able to conduct research (e.g., library and computer resources)	0	1	2	3	4	5	6	7	8	9	10
9. Conduct a literature search on my own using bibliographic data bases e.g., MEDLINE, CINAHL	0	1	2	3	4	5	6	7	8	9	10
10. Conduct a literature search on my own using other sources of important evidence-based information e.g., Cochrane Library, Joanna Briggs Institute	0	1	2	3	4	5	6	7	8	9	10

<p><i>How <u>confident</u> are you in your ability to successfully accomplish each of the following activities?</i></p>	No confidence at all						Somewhat confident					Extremely confident
11. Locate appropriate online guidelines (e.g., NICE, NGC, NHS)	0	1	2	3	4	5	6	7	8	9	10	
12. Seek assistance when necessary from librarian personnel and/or research staff to help with the search for evidence	0	1	2	3	4	5	6	7	8	9	10	
13. Retrieve and organise the saving of relevant search information on the computer	0	1	2	3	4	5	6	7	8	9	10	
14. Read systematic reviews	0	1	2	3	4	5	6	7	8	9	10	
15. Critically appraise the quality of the evidence	0	1	2	3	4	5	6	7	8	9	10	
16. Assess the applicability (usefulness in own clinical practice) of the evidence	0	1	2	3	4	5	6	7	8	9	10	
17. Assess the impact of the evidence (i.e., the size of the effect)	0	1	2	3	4	5	6	7	8	9	10	
18. Determine the levels of evidence	0	1	2	3	4	5	6	7	8	9	10	
19. Distinguish between research evidence and expert opinion	0	1	2	3	4	5	6	7	8	9	10	
20. Recognise gaps in the evidence	0	1	2	3	4	5	6	7	8	9	10	
21. Use evidence in my clinical practice and decision making about an individual patient's care according to their circumstances	0	1	2	3	4	5	6	7	8	9	10	
22. Incorporate evidence into policies	0	1	2	3	4	5	6	7	8	9	10	
23. Participate in the development of evidence-based guidelines	0	1	2	3	4	5	6	7	8	9	10	
24. Share evidence and related information with colleagues	0	1	2	3	4	5	6	7	8	9	10	

<p><i>How <u>confident</u> are you in your ability to successfully accomplish each of the following activities?</i></p>	No confidence at all					Somewhat confident					Extremely confident
25. Identify criteria to use for auditing my/others' practice to determine the level of adherence to evidence-based practice	0	1	2	3	4	5	6	7	8	9	10
26. Collect audit data about my/others' practice to determine level of adherence to evidence-based practice	0	1	2	3	4	5	6	7	8	9	10
27. Evaluate the efficiency and economic impacts of evidence-based change in practice	0	1	2	3	4	5	6	7	8	9	10
28. Evaluate the impact of my/others' EBP practice on patient health outcomes and satisfaction	0	1	2	3	4	5	6	7	8	9	10

Outcome Expectations of Evidence-Based Practice

For the next questions, please rate how **confident** you are that successful accomplishment of each of the following activities will lead to the desired outcome. Each activity with its desired outcome is related to practicing evidence-based healthcare. In the boxes provided to the right of each activity, please indicate (by circling one number on each line) your degree of confidence, from 0 (no confidence at all) to 10 (extremely confident).

How confident are you that accomplishing the following activities will lead to the stated outcome?	No confidence at all					Somewhat confident					Extremely confident
1. Stating a clear definition of the clinical problem requiring evidence will make it easier for me to search for evidence	0	1	2	3	4	5	6	7	8	9	10
2. Finding the evidence will lead to higher quality work in my nursing/midwifery care	0	1	2	3	4	5	6	7	8	9	10
3. Assessing the levels of evidence will improve my use of evidence in nursing/midwifery care	0	1	2	3	4	5	6	7	8	9	10
4. Critically appraising systematic reviews of evidence will enable me to select higher quality evidence to guide my nursing/midwifery care	0	1	2	3	4	5	6	7	8	9	10
5. Appraising evidence will assist me to produce higher quality policies/guidelines/carepaths	0	1	2	3	4	5	6	7	8	9	10
6. Applying evidence into practice will lead to higher quality of work in my nursing/midwifery care	0	1	2	3	4	5	6	7	8	9	10
7. Participating in the development of evidence-based policy/practice guidelines leads to a feeling of achievement	0	1	2	3	4	5	6	7	8	9	10
8. Evaluating the effectiveness of my evidence-based practice will enable me to achieve better patient outcomes	0	1	2	3	4	5	6	7	8	9	10

Thank you for your participation.