

CAPABILITY BELIEFS TO ACCESS RESEARCH-BASED KNOWLEDGE IN
EMERGENCY DEPARTMENT REGISTERED NURSES WHO PROVIDE
DIRECT CARE: A TWO-GROUP RANDOMIZED CONTROL TRIAL

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE GRADUATE SCHOOL OF THE
TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

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DENTON, TEXAS

DECEMBER 2018

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DEDICATION

For my husband Jay Hyde, for all of your encouragement and patience. We all have dreams. But in order to make dreams come into reality, it takes a lot of determination, dedication, self-discipline, and effort.

ACKNOWLEDGMENTS

I would like to gratefully acknowledge all of the people who made this possible. Thank-you to my chair Dr. Rita DelloStritto for having patience, believing in me, and pulling me back from the ledge more than once. Thank-you also to my committee members, Drs. Michael Mistic, Anlee Birch-Evans, and Steve Branham for their time and dedication to the process. To my friends Jen Zeien and Thenga Nguyen, thank-you for the support, laughter, emails, conversations, cheerleading, coffee, hugs, chocolate, and long nights of studying.

ABSTRACT

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The purpose of this study was to examine the effect of an evidence-based practice video on capability beliefs of emergency nurses to access research-based knowledge for everyday practice. A randomized, two-group, experimental design was implemented using a sample of 260 emergency department (ED) nurses. The experimental group consisted of 147 nurses, each of who viewed the intervention video, which demonstrated user-friendly ways to access research-based knowledge. The remainder of the participants viewed an unrelated video. Confidence levels were measured using the Evidence-Based Practice Capability Beliefs Scale (EBPCBS) post intervention. For inferential findings, data was analyzed using Independent t-tests and Mann-Whitney U. Descriptive statistics and p-values were compared and Chi-square statistics were used.

The setting for data collection for this study was online via a link to a survey in PsychDATA[®]. Convenience sampling using a peer-referral strategy was used to recruit participants. Demographic information was obtained following completion of the survey. There were statistically significant differences ($p < 0.05$) between the randomized groups

for each survey question, as well as overall confidence levels. Confidence levels were measured as mean scores for the six questions on the EBPCBS, with the intervention group consistently scoring higher. Descriptive statistics for the sample found no significant differences between the two groups based on demographic data. The ED nurses, who viewed the intervention video, reported significantly higher confidence levels ($M = 3.00, SD = 0.63$) to access research-based knowledge, when compared to ED nurses who viewed an unrelated video group ($M = 2.51, SD = 0.98$). Key-words: evidence-based practice, research-based practice, research-based knowledge, capability beliefs, nursing best practice, nurse decision-making.

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CHAPTER I

INTRODUCTION

Nurses comprise the largest segment of the health care workforce (Titler, 2008), and the care that nurses provide can determine the quality and safety of patient care (Institute of Medicine, 2010). The use of research-based knowledge in nursing practice has been positively associated with safe patient care, is an expectation of nursing practice, and is a component of evidence-based practice (EBP) (Aboshaiqah, Qasim, Abashaireth, & Patalagsa, 2014; Bostrom, Sommerfield, Stenhols, & Kiessling, 2018).

Evidence-based practice is a globally accepted concept developed by Dr. David Sackett, in 2000, for patient care delivery that is grounded in current research findings (Wallin, Bostrom, & Gustavsson, 2012). The goal of EBP is to ensure that patients receive care that is safe and appropriate, given consideration to patient values and expertise of the clinician (Shafiel, Baratimarnani, Goharinezhad, Kallhor, & Azmal, 2014). This study focused on the acquisition of research-based knowledge to problem solve in real-time nursing practice situations, where traditional research is not feasible. Research-based knowledge acquisition is not synonymous with EBP, as it differs in that it is only one behavior in the EBP process.

Problem of Study

Traditional patient safety research is concentrated predominantly on retrospective data analyses to identify patient safety issues, and to demonstrate that a new practice process will lead to improved quality and patient safety (Leape & Burwick, 2005).

Significantly less research consideration has been given to specific EBP nursing behaviors (Titler, 2008). For example, the Agency for Healthcare Research and Quality (AHRQ) has developed safety strategies to prevent adverse drug events, which address medication safety at the stages of prescribing, transcribing, dispensing, and administration (AHRQ, 2015). The administration stage relates to nursing practice; and is known as the five rights of medication administration (i.e., administering the right medication, in the right dose, at the right time, by the right route, to the right patient). Although these five rights are important, simply administering the medication, as written by the provider and dispensed by the pharmacy, does not ensure the right medication is administered by the nurse. Missing is nurse problem solving in this situation. The medication may be completely inappropriate for the specific situation. Evidence-based practice behaviors are needed to address this issue. The focus of nursing action on rules, rather than knowledge, impedes the development of a culture of safety, and undermines nursing contribution to it (Kagan & Barnoy, 2013).

Nurses have a professional duty, not only to ensure that the medication is administered correctly, according to the five medication rights, but additionally, whether the prescribed medication is safe to administer in the specific clinical situation (Choo, Hutchinson, & Bucknall, 2010). Many times, it is the nurse alone, who stands between the preventable medical error and the patient (Bagenal, Sahnun, & Shantikumar, 2016). Therefore, if nurse acquisition of research-based knowledge, while engaged in providing patient care, is better understood, strategies can be developed to support increased EBP behaviors, which may result in improved patient outcomes. Medication administration is

a salient example of a problem that must be solved with “on the spot” reflective nursing practice, supported by current research-based knowledge.

Rationale for the Study

Despite efforts to move EBP behaviors into regular nursing practice, the scholarship of research remains primarily in academia (Rolfe, 2014). Many problems nurses face in the course of a day are of the multifaceted variety, meaning complex issues must be solved with on the spot reflection, and actions must be undertaken within time constraints that further add to the complexity of patient care (Rolfe, 2014). This study proposes to introduce novel approaches to bridge the research-based knowledge gap, using smart-phone and internet technology to develop nurse confidence in the specific EBP behavior of acquisition of research-based knowledge, using practice friendly ways that can be performed at the point of care.

Internet technology, including handheld technology, is an effective clinical tool that can be used to access research-based knowledge, and support EBP behaviors that require complex thinking (Hudson & Buell, 2011). Although nurses tend to agree that acquisition and implementation of research-based knowledge would improve patient care, nurses do not see the relevance of research in their own practice (Aboshaiqah et al., 2014; Bahadori, Raadabadi, Ravengard, & Mahaki, 2016), nor do they consider research a part of their professional responsibility (Majid et al., 2011; Wallen et al., 2010).

This study has the potential to change the concept of research knowledge in nursing practice, in alignment with the vision of the Institute of Medicine (IOM) Future of Nursing (2010) report, by assessing capability beliefs of emergency nurses to access

research-based evidence for use in regular practice. Emergency nurses will be used for this study. They are well suited to innovative approaches due to the variety and complexity of their clinical experiences.

Theoretical Framework

Bandura's social cognitive theory (SCT) theory conceptualizes personal efficacy beliefs as "beliefs in one's own capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). SCT, in 1977, was known as social learning theory, and was concerned with people's beliefs in their capabilities (Bandura, 1997). Later, in 1986, it became known as SCT. Bandura recognized individuals as self-organizing, proactive, self-reflecting, and self-regulating, rather than simply reactive individuals, who are shaped by their environment. According to SCT, human performance results from a dynamic relationship of personal, behavioral, and environmental influences (Glanz, Rimer, & Viswaneth, 2008). As an example, the way in which people interpret the consequences or benefits of their behavior informs, and may change, subsequent behavior. This is the foundation of Bandura's (1986) conception of reciprocal determinism.

The reciprocal nature of the determinants of human functioning in SCT makes it appropriate for research efforts to be directed at personal, environmental, and behavioral factors. Strategies for increasing EBP behaviors can be aimed at cultivating cognitive or motivational processes, developing behavioral competencies, and altering the social environments where nurses work. Specifically, the aim of this research was to direct self-beliefs and habits of thinking that EBP behaviors could be regularly used in nursing

practice (personal factors), improve nurses' EBP skills and self-regulatory practices (behavioral factors), and alter the processes and structures that undermine nurses' EBP behaviors (environmental factors).

Bandura stressed that human behavior and motivation are driven by beliefs that people have about their own capabilities (Pajares, 2005). The theoretical basis for the dependent variable in this study, capability beliefs to access research-based knowledge, aligns with Bandura's ideas about self-efficacy (see table 1). Self-efficacy is one's beliefs about how his or her actions produce future achievements.

Table 1

How the Study Connects with Bandura's Social Cognitive Theory

Capability Beliefs	Behavior	Personal Factors	Environmental Factors
Intervention (EBP/SCT exercise) will show user-friendly ways to incorporate research-based knowledge into practice in real-time.	Improve EBP skills and self-regulatory practices.	Self-belief EBP can be regularly used in practice	Alter processes that undermine EBP behaviors

Note: EBP = evidenced-based practice; SCT = social cognitive theory

Assumptions

The following assumptions, based on Bandura's SCT (1986), were drawn for the purposes of this study:

1. The interactive nature of personal, behavioral, and environmental factors in the SCT makes it appropriate for research efforts to be directed at personal, behavioral, and environmental factors.

2. Strategies for increasing EBP behaviors can be aimed at cultivating cognitive or motivational processes, developing behavioral competencies, and altering the social environments where nurses work.
3. All participants are honest in their answers.
4. All participants were practicing ED nurses.
5. All participants were fluent in the English language.

Research Question

The research question for this study is as follows: “Do Emergency Department (ED) nurses, who provide direct patient care, and who view an evidence-based practice (EBP) /Social Cognitive Theory (SCT) based video report higher capability beliefs to access research-based knowledge, as measured by the Evidence Based Practice Capability Scale (EBPCBS) compared to ED nurses who view an unrelated video?”

Definition of Terms

The terms of this study are defined as follows:

Emergency Department: The hospital department that provides emergency medical and surgical care to sick and injured patients. The Emergency Department (ED) provides care to adults and children in all disciplines of medicine, including injury, infection, obstetrics, and complications of existing conditions (World Health Organization, n.d.). In addition to providing emergency care to the community, emergency personnel often respond to emergency situations within the hospital (Medicinenet.com, 2016).

Registered Nurse: A person licensed in their state to practice nursing. This person will have earned either an associate degree, diploma, or a bachelor's degree as part of their basic nursing education. Nurses with advanced practice degrees also participated in this study. Emergency nursing is a specialty discipline within the field of professional nursing which cares for patients with emergencies, that require prompt medical attention to avoid disability or death (Emergency Nurses Association, n.d.). All nurses in this study work in the ED.

Direct Patient Care: Nursing care that is provided to patients and their families to meet basic human needs, as opposed to indirect care that is more focused on the environment where patient care is provided, and direct patient contact is only incidental. (Yorke, 2017).

Evidence-Based Practice: An approach to problem solving in clinical practice that incorporates use of current research-based knowledge in conjunction with clinician ability and patient preference and values (Sackett et al., 2000).

Social Cognitive Theory: A theory that is concerned with how people behave and learn according to the ways that personal, behavioral, and environmental factors interact with each other (Glanz, Rimer, & Viswanath, 2008).

Evidence-Based Capability Belief Scale: An instrument that was developed and validated by Wallin, Bostrom, & Gustavsson (2012) and based on the description of EBP by Sackett et al., (2000). The instrument is a six-item questionnaire that is one-dimensional, only measuring capability beliefs in the following clinical processes:

1. Formulating clinical questions.

2. Searching for relevant knowledge.
3. Critically appraising the best knowledge.
4. Implementing evidence.
5. Evaluating practice performance.
6. Participating in evaluating whether current practice reflects current knowledge.

Limitations

The following are limitations to this study:

1. The majority of the respondents live and practice in the United States; therefore, the findings cannot be generalized outside the United States.
2. All participants were volunteers; therefore, this method may provide a biased sample.
3. The Evidence-Based Capabilities Belief Survey is a self-reported tool that introduces the possibility of social desirability response bias, in which the participants may represent themselves by responding based on the prevailing societal beliefs (Polit & Beck, 2012).
4. The use of a web-based survey limits the number of participants, in that the respondents must have access to the internet in order to participate. There may be other eligible nurses without ready access to the Internet, who were unable to participate in this study.

Summary

The purpose of this study was to evaluate whether ED nurses, who watched a video that modeled user-friendly ways to access research-based knowledge, had increased levels of confidence to access research-based knowledge, when compared to similar ED nurses who viewed an unrelated video. Emergency nurses were used in this study due to the complexity of their work experiences, and the extraordinary amount of complex problems that must be addressed within short time frames. Decision-making that is based on habit results in care that becomes outmoded and is potentially unsafe. The goal of EBP is to ensure patients receive care that is appropriate and consistent with current evidence.

This research is different from previously available studies and will add to the paucity of information on specific EBP behaviors. This study provides a vision for future experimental studies, with the long-term goal of establishing a sustainable process that supports EBP behaviors.

CHAPTER II

REVIEW OF LITERATURE

Little has been written about specific EBP nursing behaviors. The aim of this literature review is to conduct an integrative review examining how EBP is used in nursing practice.

The integrative review method was used to include a combination of research designs and methodologies. Due to the scant amount of literature specific to nurses' acquisition of research-based knowledge for daily practice, it was deemed important by this researcher to include articles that represented specific attributes of evidence-based nursing practice in order to grasp a comprehensive review of the topic. These attributes included nurse engagement in accessing research-based knowledge, conscientious use of research-based knowledge in daily practice, ongoing assessment of research-based practice by continued education, and reevaluation of practice. Both quantitative and qualitative articles were considered.

A computerized search was conducted using three electronic databases: Cumulative Index of Nursing and Allied Health Literature (CINAHL), Journals at Ovid, and PubMed. Key search terms used were evidence-based practice, best practice, nurse perception, nurse research, and nurse attitude.

Background

EBP has been recognized as the gold standard for providing care to patients, since the movement began in 2000 (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan,

2012). Despite numerous studies that have investigated EBP in nursing, there remains significant gaps between what is known and what is actually done (Saunders & Vehvilainen-Julkunen, 2016; Yoder et al., 2014). Development of research knowledge is a part of contemporary nursing education, and nurses are expected to contribute (International Council of Nurses, 2013). However, awareness of current research in practice is not widely known after graduation and, in fact, nurses persist in reliance on peer opinions and what was learned in school to guide their practice (Aboshaiqah et al., 2014; Estabrooks Chong, Brigidear, & Profetto-McGrath, 2005; Pravikoff, Tanner, & Pierce, 2005; Shafiel et al., 2014, Warren et al., 2016). Although research is now routinely taught in nursing curricula, nurses continue to cite a lack of skills, lack of time, and lack of interest in current research-based knowledge, as reasons why they do not use research evidence in their practice (Warren et al., 2016; Yoder et al., 2014).

Since the concept of EBP was first introduced by Sackett, Rosenberg, Gray, Haynes, & Richardson (1996), there have been numerous studies that have explored its attributes and identify ways to increase the use of EBP in health care. Barriers to EBP have been identified as environmental, personal, and behavioral factors. Examples of environmental factors include lack of institutional resources, lack of institutional support, and lack of research knowledgeable mentors (Aboshaiqah et al., 2014; Brown et al., 2009; Kaplan, Zeller, Damitio, Culbert, & Bayley, 2014; Warren et al., 2016). Whereas personal factors, which include a lack of time to access reliable information, lack of skills to identify whether information is reliable, and inability to see relevance of research-based resources in individual practice (Aboshaiqah et al., 2014; Majid et al., 2011;

Saunders & Vehvilainen-Julkunen, 2016; Shafiel et al., 2013; & Yoder et al., 2014) are also considered barriers to effective EBP. Theoretically, changes in environmental and personal factors should impact behavioral factors.

Research-Based Knowledge

Access to research-based knowledge, that is current and reliable, is an important aspect of EBP. There is a need for nurses to be able to access research-based knowledge for daily practice, in order to problem solve, especially in unfamiliar circumstances. Findings from multiple studies, regulatory bodies, and the IOM emphasize the importance of incorporating research-based knowledge into practice, rather than habitual or opinion-based nursing practice. Integration of research-based knowledge into nursing practice has been shown to improve patient outcomes, increase patient satisfaction, and reduce costs (IOM, 2010; Melnyk et al., 2012).

A cross-sectional descriptive study, using a sample of 210 nurses, in a teaching hospital, was conducted to identify barriers to application of research findings in nursing practice, from a nursing prospective (Bahadori et al., 2016). A researcher-made questionnaire, consisted of two parts: items concerning nurses' demographic characteristics, and 30 items of potential barriers to the application of research findings in nursing practice. Each participant was asked to identify his or her most significant barriers, using a Likert scale. The majority of the participants were female (94%). Less than 10 years of nursing experience was reported by 59% of the participants, and 85% held a bachelor's degree in nursing. Only 3% reported being a staff nurse and providing direct patient care, while the others reported being a supervisor or a charge nurse. The

mean scores for agreement of the perceived barrier items ranged from 3.1- 4.2, on a five-point Likert scale with answer choices ranging from 1 strongly disagree to 5 as strongly agree.

The most commonly cited barriers were:

- Lack of time to read studies (85%).
- Lack of time to implement new ideas (84.6%).
- Inadequate facilities to apply ideas (83.8%).
- Lack of interest in participating in research (83.4%).
- Lack of authority to change patient care (80.5%).

There is a commonality in studies that investigate barriers to implementation of research-based knowledge into practice. The barrier most often cited by nurses is a lack of time to find and implement new ideas (Chien, Bai, Wong, Wang, & Lu, 2013; Black, Balneaves, Garossino, Puyat, & Qian, 2015). This study correlates with older studies, which also found lack of time to find and implement new ideas, to be an important barrier to nursing application of research in practice (Estabrooks et al., 2005; Fink et al., 2005; Pravikoff et al., 2005).

A cross-sectional study by Yoder et al. (2014) was conducted to determine the extent to which direct-care registered nurses (RNs) used research findings in their practice, what types of knowledge RNs use in their practice, and what factors affect research-knowledge utilization. This descriptive study included an online survey. After completion of the survey, two open-ended questions were asked. The participants were conveniently drawn from a 10-hospital healthcare system ($n=1112$). Of these, 794

reported spending more than 50% of work time providing direct patient care. The majority of the nurses surveyed were female (88%), 49% held bachelor's degrees, and 66% had more than 6 years of nursing experience. Regarding knowledge about EBP, 54% said they learned about it in nursing school, 40% said they learned from hospital-based education, 34% were self-taught, and 11% said they did not know much about it. When asked about available resources, 30% said they were aware that there was a librarian to help with a literature search, and less than 50% used resources other than a computer and the search engine Google. More than two-thirds (71%) said they used Google, and 45% reported using CINAHL, MEDLINE, or both.

In light of the fact that the hospitals possessed the research resources necessary for EBP clinical decision-making, as with similar studies, the results of this study concluded that nurses relied mostly on personal experience, hospital policy, and physician and nurse colleagues for information upon which to base their clinical decisions (Brown et al., 2009; Kaplan et al., 2014; Majid et al., 2011). Again, the barriers that were cited were lack of time, lack of ability to access resources, and lack of knowledge about the resources.

Evidence-Based Practice

The concept of EBP was developed by Dr. David Sackett, who is known as its father. In 2000, he developed the concept of evidence-based medicine (EBM), which later evolved into the term, EBP, which encompassed all disciplines and circumstances in the health care setting in which health care is delivered (Thoma & Eaves, 2015). The key components of EBP are: (a) incorporating best research evidence available,

(b) recognizing clinician expertise, and (c) putting patient preferences and values into practice (Sackett et al., 2000), with the goal of ensuring that patients receive care that is appropriate and consistent with current evidence (Shafiel et al., 2014).

According to Dr. Sackett's obituary (Smith, 2015), he was always interested in incorporating the best and most current evidence into his practice. He was committed to becoming his best self and even returned to medical residency 20 years after he graduated because "I wasn't a good enough doctor." Dr Sackett holds the distinction of being the cofounding editor of the journal *Evidence Based Medicine*, and the first chair of the esteemed Cochrane Collaboration.

Evidenced-Based Practice in Nursing

Numerous studies identify personal and environmental barriers and facilitators to EBP. Bernadette Melnyk, a pioneer in translating EBP into nursing practice, and the Dean and Vice President of Health Promotion at The Ohio State University School of Nursing, has written three books and numerous articles about EBP. Incorporation of EBP into clinical practice is multifactorial, and includes personal belief and attitude factors, as well as influences, such as organizational culture, availability of resources, and access to EBP mentors (Melnyk, Fineout-Overholt, Giggelman, & Cruz, 2010; Melnyk & Fineout-Overholt, 2015; Squires, Estabrooks, Gustavsson, & Wallin, 2011).

Melnyk et al., (2012), conducted a descriptive survey to assess the perception of the current state of EBP among nurses in the United States and get their perspective on their current needs to implement EBP. There were 1015 nurse participants, who were drawn from a list from the American Nurses' Association membership. The survey was

composed of demographic questions and 18 questions that asked about nurses' perception of their educational readiness for EBP, their ability to implement EBP in practice, and the level of institutional support for EBP.

The mean age for the participants was 51.2 years and 93% were female, and 56% held master's degrees or higher, with 44% holding a baccalaureate degree, associate degree, or diploma. Mean years of nursing experience was 24 years. Approximately 37% of the participants described themselves as staff nurses, 25% as nurse educators, and with 16.3% of the nurse educators reporting working in an educational organization.

The 18 EBP questions were on a five-point Likert-scale, with responses scored from 1 (strongly disagree) to 5 (strongly agree). Higher responses indicated a more positive perception of EBP in practice. Response mean scores ranged from 3.03 to 4.39.

Two open-ended questions were included on the survey: (1) "What one thing most prevents you from implementing EBP in your daily clinical practice?" and (2) "What one thing would help you the most to implement EBP in your daily clinical practice?" Themes of perceived needs that emerged from this question were (in order of frequency):

- An online resource where best practice EBPs can be found
- EBP experts, who can be consulted.
- Processes for implementation of EBP.
- Online education modules in EBP.
- An online continuing education EBP.
- Access to EBP mentors.

- Regular seminars conducted by EBP experts.

Many of the barriers to implementation of EBP cited by the participants in this survey are similar to others that have been reported for more than 20 years, including lack of time, knowledge, mentors, and organizational support (Funk, Champagne, Wiese, Tornquist, 1991; Majid, Foo, Luyt, Zhang, Theng, Chang, & Mokhtar, 2011; Mallion & Brooke, 2016; Melnyk & Fineout-Overholt, 2002; Pravikoff et al., 2005).

Studies have been conducted to create interest, develop EBP skills, and engage nurses in research. One such study used research problems, such as which chocolate chip cookie tastes better (Walden, Cephas, Gordon, & Hagan, 2015). Nurses were invited to participate in research projects that were led by experienced nurse researchers. Doctoral prepared research leaders for these studies assisted nurses to conduct a research study in a fun and thought-provoking way. The goal of the studies was to create communities of practice that engaged nurses to develop a culture of research.

The Great American Cookie Experiment (GACE) used a descriptive crossover, double-blinded study design. The mean age of the participants was 37.2 years, and the average time employed at the hospital was 8.7 years. During a 12-month research program, 14 nurses and Advanced Practice Registered Nurses (APRN) at a pediatric and obstetric hospital participated in an experiment that examined the perceived quality and general preference between two chocolate chip cookies that were identical, except that one cookie was sugar-free and the other cookie was contained sugar.

During the program, nurses learned how to conduct a literature review, write a research proposal, obtain IRB approval, conduct the study, collect and analyze data,

interpret the results, and disseminate the findings. The nurses who conducted the study recruited participants from the hospital. The participants tasted each of the two cookies and rated them on moistness and flavor. Wilcoxon Signed Ranks Test was used to determine if there was a significant difference in the texture and flavor ratings of the two cookies. The majority of participants (62%) preferred the regular chocolate chip cookies.

While there have been research interventions that claim statistical success, these interventions are expensive, time-consuming, and emphasize learning of research jargon and statistical designs. Furthermore, no evidence was found that these efforts have resulted in sustainable long-term use of EBP behaviors in nursing practice, or how nurses fundamentally translate research-based knowledge into practice. In order for behavior changes to take place, nurses should acknowledge that (a) the standard of patient care changes as new information becomes available, (b) it is the responsibility of nurses to seek sound research knowledge to guide their practice, (c) the individual nurse must support the concept of lifelong learning. This does not necessitate that nurses master statistical design, but that there is an understanding of how to incorporate research into everyday practice.

Only one study was found that used a smartphone app for clinical decision making at the point of care (Sedgwick, Awosoga, Grigg, & Durnin 2016). The purpose of the pretest-posttest quantitative study was perceptions of student nurses as to whether a smartphone app was helpful to them in their clinical decision-making. The educators chose a smartphone that did not require internet use and included clinical information for 2300 health conditions.

A convenience sample was used to recruit 30 fourth year baccalaureate nursing student participants, who were in their senior-precepted clinical experience. Two questionnaires were used with 65 questions. The questionnaires were completed during the orientation period of the precepted experience, and again at the end of the preceptorship. Questions were answered on a five-point Likert scale with responses ranging from never (1) to always (5).

There were no statistically significant differences found in participants' perception of their critical thinking or critical decision-making ability between the pre- and post-test ($p=.212$). The study points out, however, that in the pre- and post-test surveys, there were significant differences in four of the 65 questions that pertained to the students' ability to engage in EBP over time with pre-test mean scores ranging from 3.07 - 3.53 and post-test mean scores ranging from 3.50 - 3.77.

A phenomenological qualitative study by Branham, DelloStritto, and Hillard (2014) identified the need for EBP in the work of Acute Care Nurse Practitioners (ACNP), and the lack of studies that explore how EBP is integrated into ACNP practice. Ten ACNPs, who were actively engaged in clinical practice, were recruited for the study. Data were collected by audio recording.

Evidence-based practice was studied in terms of Clinical Practice Guidelines (CPG). ACNP participants in this study agreed that there were benefits to use of CPGs to integrate EBP in daily practice. However, they expressed reservations to CPS in the following themes:

- Balancing influencing factors of professional practice, institutional, safety and

collaborative practice issues.

- Whether the CPGs could be trustworthy, especially in light of new information frequently becoming available.
- Balance of clinician skill and knowledge and CPGs that do not take mitigating factors into account.
- Individual patient factors not always considered.

APRNs cited barriers to EBP in daily practice in similar themes to other studies that have researched barriers to EBP. Identified themes were lack of time to find and evaluate research-based knowledge, availability of resources, and not having the authority to change practice when they were working within a health care team and there were higher-ranking members.

Evidence-Based Practice Capability Belief Scale

The Evidence-Based Practice Capability Belief Scale (EBPCBS) was developed by Dr. Lars Wallin and was validated in a study conducted in 2012 (Wallin, Bostrom, & Gustavsson, 2012). This study was conducted to determine the concurrent validity and internal structure of the six item EBPCBS. The EBPCBS scale was conceptualized from the description of EBP by Sackett et al., (2000). The scale was designed to be one-dimensional and measure only capability beliefs, without measuring other attributes, such as attitudes or clinical subject knowledge. The study is underpinned by SCT. The SCT is concerned with capability beliefs stems from, which is defined as a person's belief in their ability to succeed in certain situations (Bandura, 2000).

Data for the Wallin et al. (2012) study was taken from the Longitudinal Analysis of Nursing Education and Entry into Worklife (LANE) study (Rudman, Gustavsson, Ehrenberg, Bostrom, & Wallin, 2012). The participants in this study were a cohort of RNs that graduated in 2004 and were followed for five years afterwards. The data in this study was collected in 2007. The participants were asked to rate the six EBPCBS items on a scale of 0 (cannot do) to 10 (can definitely do). A mean score across all six items was 7.48. Performance of EBP and research use was also collected in the same wave of LANE study data collection. Nurses self-reported use of research was assessed using three items that were representative of research use. The nurses were provided with definitions and examples of research use and asked to estimate their use of research over the last 4 weeks of working. Response choices ranged from (1) never, to (5) almost every shift, and (6) don't know. EBP performance was assessed by using the six items on the EBPCBS with answer choices ranging from (1) to a very great extent, to (4) to a very small extent. Nurses with the highest capability beliefs reported that they used research findings in practice more than twice as much as nurses with lower levels of capability beliefs. Participants were asked to rate their capability beliefs on the six items in the EBPCBS and concurrent validity was validated by EBP performance measures.

Data were evaluated by the Rasch method, which gives partial credit for tasks of differing difficulty. Chi-square statistics were used to investigate whether distributions of categorical variables differed from one another. Internal structure was analyzed by dividing the participants into two groups, so samples could be evaluated for explorative and confirmatory analysis. Results of this study showed that all six items had statistically

significant correlations between capability beliefs and different kinds of self-reported research use ($p < 0.001$ and odds ratios 0.16-0.20).

The LANE study established longitudinal cohorts and provided an opportunity to study personal and professional issues in RNs transitioning from education to work life. The LANE study was an observational longitudinal study, whose purpose was to study career pathways among nursing students and nurses after graduation in the first years of working as an RN. Three Swedish national cohorts were recruited from 24 of the 26 nursing schools in Sweden and were followed prospectively for the first three years of their working life as RNs. Data were collected from 2002- 2006. There were three cohorts in the study. The first graduated in 2002 ($n=1115$), the second graduated in 2004 ($n=1702$) and the third graduated in 2006 ($n=1459$).

Participants were given a 25-page questionnaire and two open-ended questions were asked. There was a decline in response rates among all three cohorts that followed a similar pattern. Females made up 89% of the total participants. The cohorts working one-year post graduation made up 92% of the participants. The most common reason for not working was maternity leave. It was reported in the first two cohorts that 10% of the nurses expressed frequent thoughts about leaving the profession were 10%, whereas 20% expressed the same thoughts in the third cohort. Similarly, the percentages of nurses actively seeking jobs outside the nursing profession were 1.9% in the first cohort, 1.5% in the second, and 3.0% in the third cohort. The desire to leave the profession immediately was 2% in the first cohort, 1.7% in the second, and 3% in the third.

Bandura's Social Cognitive Theory

SCT was developed by Dr. Albert Bandura and is concerned with a person's self-efficacy beliefs. Bandura (1997) defined self-efficacy as a person's belief that they could succeed in specific situations. Since self-efficacy is a modifiable factor, it is important to EBP uptake in nursing practice. Nurses need a problem-solving process, especially when faced with unfamiliar situations where they may not have specific knowledge about the clinical situation. Bandura did not consider self-efficacy as a personality trait, but rather how people approach challenging situations. In other words, people are willing to attempt a task, even if it is difficult, if they believe they have the capability to master the situation. Self-efficacy and observation of modeling behaviors by others are the cornerstones of SCT (Bandura, 1997).

Monagle and Doherty (2014) conducted a qualitative study to explore nursing student classroom learning for clinical situations. Nursing educators developed this study because they felt that student clinical experiences could not be controlled, and they wanted to ensure that students were exposed to selected high-risk situations. This study was influenced by the observational and modeling components of SCT. It was hypothesized that if salient nursing behaviors were modeled for selected clinical situations and debriefing occurred afterwards, that participants would have increased self-efficacy to effectively perform in unfamiliar situations. Study participants were focus groups of student nurses ($n=27$), ages 25- 43, and were recruited by convenience sample. Seven exemplars were chosen by the nursing faculty to be made into videos that modeled exemplary nursing behavior. The exemplars are as follows:

- End of life care.
- Pituitary postoperative care.
- Diabetic ketoacidosis.
- End-stage chronic obstructive pulmonary disease with acute pneumonia.
- Interacting with a blind person.
- Management of a patient with a new human immunodeficiency virus diagnosis.
- Stroke with aphasia.

The researchers were nurse educators who realized that it is not possible to have all the needed nursing experiences in the clinical setting. In addition, nursing students often lack confidence to believe that they can perform, especially in situations that are unfamiliar to them. Debriefing exercises were done by student interview after the videos, and cognitive, behavioral, and technical objectives were reviewed with the students.

Transcripts were analyzed by using the Colazzi method. Themes that emerged were:

- Videos reinforced the learning. Students were able to correlate what the class lectures with the modeled behaviors in the videos.
- Visual learning is valuable. Students felt that watching the scenario helped them remember and understand the concept better.
- Debriefing after the video is essential. Discussing the video afterwards made the students helped them better understand why the nurse did what she did.

Discussion

After reviewing the literature, it is the opinion of this author that one of the most consistent findings for research-based nursing practice is that a gap exists between scientific research evidence and consistent application in clinical practice. Nursing care that ignores scientific evidence may be excessive, expensive, and harmful to patients. It is important to acquire a good understanding of the concept of research-based nursing practice, the needs of the target population, and, barriers to change in order to develop strategies to support research-based nursing practice.

Summary

During the last 20 years, studies have been conducted that explored healthcare providers attitudes, knowledge, and skills to apply EBP in practice, and yet, gaps continue to exist between what is known and what is actually done (Bostrom, Sommerfeld, Stenhols, & Kiessling 2018). The literature is saturated with suggested reasons for the research knowledge and practice gap, and yet, it has been documented that it can take up to 17 years for research findings to be assimilated into regular practice (Mallion & Brooke, 2016).

It is the opinion of the author that accessing research-based knowledge in nursing practice is that it is not necessarily one single question at a point in time, but instead best nursing practice. It is a commitment to investigate common clinical situations regularly. For example, "I have cared for congestive heart failure (CHF) patients in the past, therefore, I am always competent to care for them" is not consistent with research-based nursing practice. However, if research relative to care of patients with CHF is woven into

regular practice, questions will naturally arise when research differs from actual practice, which provides scaffolding necessary for research-based nursing practice to occur. In addition, access to research-based knowledge should be readily available in user-friendly modalities to support nurse-based problem solving in routine practice, especially in situations that are unfamiliar to the nurse.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

SCT served as the theoretical underpinning for this experimental two-group randomized control study that looked at the capability beliefs of ED nurses and their confidence in their abilities to access research-based knowledge for their practice. A video that modeled accessing research-based knowledge to solve real time clinical problems was used for the intervention group.

Setting

The setting for data collection for this study was online via a web-based link to a survey in PsychDATA[®]. Participants were free to choose the location where they accessed the survey.

Population and Sample

Convenience sampling, using a peer-referral strategy, was used to recruit participants. Initially nurses who were known to the researcher, who were RNs or APRNs and provide bedside nursing care to patients in the ED, and expressed interest in participating in the study, were given or emailed a flyer that described the study. The flyer included an internet address embedded that allowed potential participants to access the study (See Appendix A). Flyers were posted in the break rooms of a large urban ED, a suburban ED, and in a rural ED. They were also placed on a closed group on the Facebook website for emergency nursing, and in the emergency nurses' section Allnurses, which is a web-based nursing site. Nurses who received the flyer were asked to pass it on to others;

either via email or in person who they thought might be interested in participating and met the criteria.

Protection of Human Subjects

Approval from the Texas Woman's University (TWU) Institutional Review Board (IRB) was obtained prior to data collection (see Appendix B). Data were collected using a survey that was uploaded into the secure electronic platform, PsychDATA[®]. IP addresses of the participants were not collected. The participants were required to have internet access in order to complete the survey but did not have to purchase or download any applications. The survey will be completed via the internet. Participants in the study included a warning concerning a risk of loss of anonymity, which exists in all internet transactions. The risk of loss of anonymity was minimized by not requesting any identifying information and by using a secure password protected internet data collection program. Participating in this study required use of the participants' time. The Primary Investigator made every effort to minimize the time required to watch the video and complete the questionnaire. In addition, the participant could stop participating in the study at any time they wished.

Instrument

EBPCBS, developed by Wallin, and validated in 2012, was used for data collection (see Appendix C). The instrument has six items that measure the latent variables of capability beliefs, personal factors, environmental factors, and behavior. Permission to use the instrument was obtained from Dr. Wallin via email (see Appendix D). EBPCBS is that specifically evaluates capability beliefs. The instrument aligns with

SCT, that measures self-efficacy, and not intent. The answer choices for the six items on the scale were designed to assess nurses' capability beliefs to incorporate EBP behaviors into practice. Response choices were a four-point Likert response format that ranged from 1 = *to a very low extent*, 2 = *to a low extent*, 3 = *to a high extent*, 4 = *to a very high extent*.

Demographic information was obtained following completion of the survey. Information gathered included information about the participants' personal nursing practice, including length of time in practice; whether the participant works in an ED environment and provides direct care to patients; the State that the individual practices in; employment status; and number of patient ED visits annually. Other personal information collected included age, gender, educational level, and race.

Data Collection

Following approval from TWU's IRB and agreement from website administrators, data collection began. The survey was uploaded onto a secure electronic platform, PsychDATA[®]. Participants remained anonymous to the researcher, and consent to participate in the study was implied by completion of the online survey. The survey was open until adequate sample size was reached. Adequate sample size for the full study was approximated using a power of .8 with an alpha of .05 and an effect size of .367. The total of participants needed was calculated to approximately 120 per group or 240 in total. In order to account for attrition, 10 percent was added for a total of 264 participants.

The participants accessed the survey by clicking on the link, or copy-and-pasting the link, from the recruitment letter, into their browser. Two weeks following the initial

placement on the discussion boards, a reminder letter was posted. The following statement was placed at the top of the questionnaire in lieu of an informed consent form: “The return of your completed questionnaire constitutes your informed consent to act as a participant in this research.”

Pilot Study

A pilot study was conducted in the Fall of 2017. The majority of nurses who responded were females (81.4%), while 16.3%, were males. One respondent did not answer this question. The age of nurses who participated in the study was primarily over 30 years old with 37.2% belonging to 30 - 40 age group, 27.9% to 40 - 50 age group and about one fifth (20.9%) were 51 years old and older. The majority of nurses described their education as bachelor prepared (51.2%) and about a third of the participants (34.9%) described their education as associate. Ethnicity was primarily white (58.1%). Almost equal shares of the nurses’ practice in urban (34.9%), suburban (34.9%) and rural (30.2%) locations. All participants in pilot study practice in Texas.

Nearly all participants of pilot study were RNs (95.3%) working full-time (97.7%). Equal shares of nurses worked in EDs that see 25,000 - 49,999 and over 50,000 patients annually (27.9% in each group) with another 23.3% working in EDs with 14,000 - 24,999 of patients.

Most participants (44.2%) had 2 to 10 years of RN experience, about a fifth (17.6%), who had from 10 to 20 years and another fourth (27.9%) of the nurses had more than 20 years. Only 9.3% of the participants mentioned less than two years of RN practice. Length of ED practice was overall shorter than overall RN experience. Only

18.6% of the participants stated they had more than 20 years of ED experience; one-fifth (20.9%) had been working in ED for 10 to 20 years, while almost a half (46.5%) of the participants mentioned 2 to 10 years of ED experience and 14.0% less than two years.

All differences between the control and intervention groups concerning sociodemographic characteristics of the participants were not significant ($p > 0.05$).

The research question guiding the pilot was:

Do Emergency Department (ED) nurses who provide direct patient care and participate in a Social Cognitive Theory (SCT) evidence-based practice video report higher beliefs in capability levels as measured by the belief capabilities scale, than comparable ED nurses who receive an unrelated video?

The intervention video was reviewed and validated by a four-person expert panel. All panel members were APRNs who provide direct care to ED patients. They self-identified that they were experts in accessing and implementing research-based knowledge in their own practice and further identified themselves as experts in all six EBP activities in the six-item instrument. In addition to providing direct care to ED patients, two of the four experts are employed as graduate nursing school faculty.

Participants in the intervention group watched a 3-part SCT based EBP exercise. The first part consisted of demonstrating to participants how to access research knowledge about the clinical problem of ST elevation myocardial infarction (STEMI). The computer app UpToDate© to access patient information about STEMI.

In the second part of the exercise, the process of looking up a medication for the same STEMI patient was demonstrated, the smart app, Epocrates. How to check the medication dosage that was ordered by the provider, as well as the overall appropriateness of the medication in the clinical situation of a STEMI patient was demonstrated. The third part of the video used the smartphone app, MedCalc© to demonstrate how to identify metabolic acidosis by computing the anion gap for a patient using the basic metabolic panel (BMP). The script for the intervention video can be found in Appendix E.

The attention-control video was reviewed and validated by a two-person panel. The panel was comprised of two RNs who practice emergency nursing and provide direct care to ED patients. Both agreed that the video represented promotion of effective communication.

The attention control group viewed an unrelated video about communication skills. The video was created by well-known communications expert and key-note speaker, Dan O’Conner. This video was unrelated to accessing research-based knowledge by RNs, and, instead, demonstrated tactics to improve communication skills when dealing with people from the United States. Following the video, the participants were asked to complete the EBPCBS and the demographic data form. The attention control video can be accessed by clicking the following link: <https://youtu.be/OveLaVLityw>.

The instrument and questionnaire were uploaded into the secure electronic platform, PsychDATA©. The survey was open for two weeks. The participants were recruited via flyers posted in breakrooms of two ED facilities. Participants accessed the

study via link that they entered into their computers at the time and place of their choosing. A peer-referred sampling was encouraged in the recruitment flyers.

There were 51 participants who accessed the link. Of the 51, 43 answered the questionnaire/posttest in full. Of the 51, 27 were randomized to the control group and 24 to the intervention group. Three participants answered that they did not provide direct patient care, so those surveys were eliminated. As a result, there were 40 useable surveys, 17 of which were randomized to the intervention group, and 23 to the attention control group.

The completed surveys were exported into the Statistical Package for the Social Sciences (SPSS), Version 25 for analysis. Parametric and nonparametric tests were employed to answer the research question. Descriptive statistics and p-values were used to compare the two randomly assigned groups on selected demographic variables. Chi-square statistics were used to report these findings (see Table 2).

The majority of nurses who responded were females (81.4%), while 16.3% were males. One respondent did not answer this question. The age of nurses who participated in the pilot study was primarily over 30 years old with 37.2% belonging to 30 - 40 age group, 27.9% to 40 - 50 age group and about one fifth (20.9%) were 51 years old and older. The majority of nurses described their education as bachelor prepared (51.2%) and about a third of the participants (34.9%) described their education as associate. Ethnicity was primarily white (58.1%). Almost equal shares of the nurses practice in urban (34.9%), suburban (34.9%) and rural (30.2%) locations. All participants in pilot study practice in Texas.

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Table 2

Demographics of Pilot Study

		Total		Attention Control		Intervention Group		Chi-square Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Gender	Male	7	16.3%	3	12.5%	4	21.1%	1.99	.370
	Female	35	81.4%	21	87.5%	14	73.7%		
	No answer	1	2.3%	0	0.0%	1	5.3%		
Age (in years)	< 30	6	14.0%	2	8.3%	4	21.1%	1.55	.671
	30 - 40	16	37.2%	10	41.7%	6	31.6%		
	41 - 50	12	27.9%	7	29.2%	5	26.3%		
	> 50	9	20.9%	5	20.8%	4	21.1%		

		Total		Attention		Intervention		Chi-square	
				Control		Group		Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Practice location	Rural	13	30.2%	7	29.2%	6	31.6%	1.25	0.536
	Urban	15	34.9%	10	41.7%	5	26.3%		
	Suburban	15	34.9%	7	29.2%	8	42.1%		
Race or ethnicity	White*	25	58.1%	17	70.8%	8	42.1%	5.85	.211
	Hispanic	9	20.9%	4	16.7%	5	26.3%		
	Black	2	4.7%	1	4.2%	1	5.3%		
	Asian or Pacific Islander	4	9.3%	2	8.3%	2	10.5%		
	Other	3	7.0%	0	0.0%	3	15.8%		
Education	Associate	15	34.9%	8	33.3%	7	36.8%	0.22	.898
	Baccalaureate	22	51.2%	13	54.2%	9	47.4%		
	Masters	6	14.0%	3	12.5%	3	15.8%		
Length of practice as an RN (in years)	0 - 2	4	9.3%	0	0.0%	4	21.1%	5.84	.322
	2 - 5	7	16.3%	4	16.7%	3	15.8%		
	5 - 10	12	27.9%	8	33.3%	4	21.1%		
	10 - 15	5	11.6%	3	12.5%	2	10.5%		
	15 - 20	3	7.0%	2	8.3%	1	5.3%		
	> 20	12	27.9%	7	29.2%	5	26.3%		
Length of practice in an ED setting (in years)	0 - 2	6	14.0%	2	8.3%	4	21.1%	3.13	.680
	2 - 5	9	20.9%	5	20.8%	4	21.1%		
	5 - 10	11	25.6%	6	25.0%	5	26.3%		
	10 - 15	5	11.6%	4	16.7%	1	5.3%		
	15 - 20	4	9.3%	3	12.5%	1	5.3%		
	> 20	8	18.6%	4	16.7%	4	21.1%		
Current position	Primary practitioner/APRN	2	4.7%	0	0.0%	2	10.5%	2.65	.104
	Clinical nurse/RN	41	95.3%	24	100.0%	17	89.5%		
Employment status	Full-time	42	97.7%	23	95.8%	19	100.0%	0.81	.368
	Part-time	1	2.3%	1	4.2%	0	0.0%		

		Total		Attention Control		Intervention Group		Chi-square Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Number of ED patient visits annually	< 14,000 ED visits	6	14.0%	4	16.7%	2	10.5%	1.78	.777
	14,000 - 24,999	10	23.3%	5	20.8%	5	26.3%		
	25,000 - 49,999	12	27.9%	8	33.3%	4	21.1%		
	≥ 50,000	12	27.9%	6	25.0%	6	31.6%		
	No answer	3	7.0%	1	4.2%	2	10.5%		

Note: RN = registered nurse; ED = emergency department; APRN = advanced practice registered nurse. *White race of Non-Hispanic ethnicity

Discussion of the Pilot Study

From the six questions in the instrument that describe confidence to use EBP behaviors, only one question regarding the level of confidence in “formulating questions about clinical practice to search for current research-based knowledge” showed a significant difference between groups (see Table 3). However, the remaining p-values come close to a significant value. It is, therefore, possible that concluding that the other questions are not statistically significant could represent a type II error, whereby we fail to reject a false null hypothesis. A larger sample may produce significant results.

Table 3

Confidence Level Comparison of Pilot Study

Rate your confidence in ...	Attention Control		Intervention Group		t-test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Q1. ... formulating questions about clinical practice to search for current research-based knowledge	2.43	1.12	3.18	0.81	-2.43	.020

Q2. ... using databases to search for knowledge.	2.61	1.20	3.24	0.75	-2.03	.050
Q3. ... using other information sources (e.g. books, journals, or asking colleagues).	2.57	1.20	3.06	0.75	-1.60	.119
Q4. ... appraising research reports.	2.30	1.13	2.69	0.95	-1.10	.280
Q5. ... contributing to change in clinical practice by implementing current knowledge.	2.52	1.12	3.06	0.75	-1.81	.078
Q6. ... participating in evaluating whether clinical practice reflects current knowledge.	2.52	1.16	3.13	0.72	-2.00	.053

Note: Questions correspond to the 6 items on the EBPCBS

Conclusions from the Pilot Study

The small sample size was a limitation of the pilot study; however, 84% of the participants who began the survey completed it, indicating that the use of the survey would be a reasonable method to collect data regarding the knowledge, attitudes, and self-efficacy of nurses working in emergency care.

CHAPTER IV

ANALYSIS OF DATA

Preventable medical errors have been shown to be a burden on the quality of life of those impacted. Health care that is grounded in research-based knowledge is critical to safe and cost-effective patient care. Nurses have a significant role in the provision of quality patient care, particularly given the complexity of contemporary patient problems, and the rate and amount that new information is being generated. Often, the nurse is the last person on the healthcare delivery team that has the ability to prevent the medical error. There is a need for nurses to have practice-friendly ways to access reliable research-based knowledge for problem solving at the point of patient care. Emergency nurses have a wide range of work experiences because they provide care to patients across age and system spectrums. Because of the expanse of knowledge needed to provide care to ED patients, engaging nurses who work in ED settings is a pragmatic option to highlight the need for research-based knowledge that is easily accessible for use in daily practice. This study was completed to study nurses' capability beliefs to access research-based knowledge upon which to base their practice.

This chapter provides the data analyses with narrative and tables. The description of the sample is provided first, followed by the findings for the research question. Then, a brief summary of the findings is presented.

Description of the Sample

A total of 340 individuals opened the survey, with 62 choosing not to participate. Of the 278 participants who completed the surveys, 18 stated they did not provide direct patient care; therefore, they were disqualified because they did not meet the inclusion criteria for “ED nurses who provide direct patient care.” This resulted in a total sample size of 260 participants who meet all of the inclusion criteria. Of the 260 surveys that were completed, 114 were randomly assigned to the attention control group and 146 to the intervention group. Some of the respondents missed single questions about their sociodemographic and professional characteristics. Taking into account that there were only few cases of such missing information, and all other questions had valid answers, these records were included in the analysis and their missing answers were coded as “no answer” to keep the total sample size consistent.

Following completion of data collection, the data was uploaded into the Statistical Package for the Social Sciences (SPSS) Version 25.0. The demographic information was used to describe the study participants. First, groups were compared on the categorical demographic variables. Frequency and cross-tabulation statistics were run on categorical demographic variables to describe the sample.

Table 4 describes the demographic variables of the participants. The majority of nurses who responded were females (82.7%, $n = 215$), while 14.2% ($n = 37$), were males. Three respondents described their gender as other and five did not answer this question. Their age was primarily over 30 years old with 38.8% ($n = 101$) belonging to 30 - 40 age group, 24.6% ($n = 64$) to 40 - 50 age group, and about one fourth (25.8%, $n = 67$) were

51 years old and older. The majority of nurses described their education as bachelor prepared (46.9%, $n = 122$), while approximately one-third of the participants (31.9%, $n = 83$) held an associate degree. Ethnicity was primarily Non-Hispanic white (72.3%, $n = 188$). Most of the nurses' practice in urban (44.2%, $n = 115$) or suburban (35.4%, $n = 92$) locations.

Table 4

Sociodemographic Characteristics of Participants

		Total		Attention Control		Intervention Group		Chi-square Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Gender	Male	37	14.2%	14	12.3%	23	15.8%	3.56	0.314
	Female	215	82.7%	97	85.1%	118	80.8%		
	Other	3	1.2%	0	0.0%	3	2.1%		
	No answer	5	1.9%	3	2.6%	2	1.4%		
Age (in years)	< 30	28	10.8%	10	8.8%	18	12.3%	0.93	0.818
	30 - 40	101	38.8%	45	39.5%	56	38.4%		
	41 - 50	64	24.6%	28	24.6%	36	24.7%		
	> 50	67	25.8%	31	27.2%	36	24.7%		
Practice location	Rural	49	18.8%	24	21.1%	25	17.1%	1.68	0.641
	Urban	115	44.2%	52	45.6%	63	43.2%		
	Suburban	92	35.4%	37	32.5%	55	37.7%		
	No answer	4	1.5%	1	0.9%	3	2.1%		
Practice state	TX	160	61.5%	74	64.9%	86	58.9%	0.98	0.323
	Other	100	38.5%	40	35.1%	60	41.1%		
Race or ethnicity	White	188	72.3%	80	70.2%	108	74.0%	2.42	0.789
	Hispanic	21	8.1%	11	9.6%	10	6.8%		
	Black	15	5.8%	6	5.3%	9	6.2%		
	Asian or Pacific Islander	16	6.2%	7	6.1%	9	6.2%		

		Total		Attention Control		Intervention Group		Chi-square Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
	American Indian, Alaska Native	4	1.5%	3	2.6%	1	0.7%		
	Other	16	6.2%	7	6.1%	9	6.2%		
Highest level of nursing education	Associate	83	31.9%	37	32.5%	46	31.5%	1.91	0.753
	Baccalaureate	122	46.9%	52	45.6%	70	47.9%		
	Masters	47	18.1%	20	17.5%	27	18.5%		
	Doctorate	7	2.7%	4	3.5%	3	2.1%		
	No answer	1	0.4%	1	0.9%	0	0.0%		

*Note: *White race of Non-Hispanic ethnicity*

Table 5 presents an overview of participants' professional characteristics. The majority of study sample were RNs (89.2%, $n = 232$). Advanced Practice Registered Nurses surveyed comprised 10.8% ($n = 28$) of the nurses surveyed. Employment status was 10.4% ($n = 27$) for part time and 88.8% ($n = 231$) for full time. Most nurses worked in EDs with an annual patient volume greater than 50,000 patients annually (40.0%, $n = 104$), with another 30.0% ($n = 78$) working in EDs with 25,000 - 49,999 of patients. The diversity of professional experience is rather high among the participants. About one fourth (23.5%, $n = 61$) of the nurses have more than 20 years of RN practice, about a third ($n = 89$, $n = 34.2%$) have from 10 to 20 years, as did those with two to 10 years of RN experience, whereas only 8.1% ($n = 21$) of the participants mentioned less than two years of RN practice. Length of ED practice was overall shorter than overall RN experience. Only 14.2% ($n = 37$) of the participants stated they had more than 20 years of ED experience, over one fourth (28.1%, $n = 73$) had been working in ED for 10 to 20

years, while almost a half (44.6%, $n = 116$) of the participants mentioned two to 10 years of ED experience, and 13.1% ($n = 34$) less than two years.

Table 5

Professional Characteristics of Participants

		Total		Attention Control		Intervention Group		Chi-square Test	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Current position	Primary practitioner/APRN	28	10.8%	12	10.5%	16	11.0%	0.01	0.911
	Clinical nurse/RN	232	89.2%	102	89.5%	130	89.0%		
Employment status	Full-time	231	88.8%	100	87.7%	131	89.7%	0.26	0.877
	Part-time	27	10.4%	13	11.4%	14	9.6%		
	No answer	2	0.8%	1	0.9%	1	0.7%		
Number of ED patient visits annually	< 14,000 ED visits	24	9.2%	9	7.9%	15	10.3%	3.39	0.494
	14,000 - 24,999	47	18.1%	20	17.5%	27	18.5%		
	25,000 - 49,999	78	30.0%	37	32.5%	41	28.1%		
	50,000 or more	104	40.0%	47	41.2%	57	39.0%		
	No answer	7	2.7%	1	0.9%	6	4.1%		
Length of practice as RN (in years)	0 - 2	21	8.1%	3	2.6%	18	12.3%	16.73	0.005
	2 - 5	37	14.2%	16	14.0%	21	14.4%		
	5 - 10	52	20.0%	33	28.9%	19	13.0%		
	10 - 15	47	18.1%	17	14.9%	30	20.5%		
	15 - 20	42	16.2%	18	15.8%	24	16.4%		
	> 20	61	23.5%	27	23.7%	34	23.3%		
Length of practice in an ED setting (in years)	0 - 2	34	13.1%	9	7.9%	25	17.1%	6.31	0.277
	2 - 5	58	22.3%	30	26.3%	28	19.2%		
	5 - 10	58	22.3%	26	22.8%	32	21.9%		
	10 - 15	41	15.8%	18	15.8%	23	15.8%		
	15 - 20	32	12.3%	16	14.0%	16	11.0%		
	> 20	37	14.2%	15	13.2%	22	15.1%		

Note: APRN = advanced practice registered nurse; RN = registered nurse; ED = emergency department

The distribution of the demographic and professional characteristics of the participants was compared between groups using a Chi-square test to identify whether there were statistically significant differences in the participants answers. The comparison showed no difference (p -values for Chi-square test were greater than 0.05) for all characteristics except length of practice as an RN ($\chi^2(5) = 16.730, p = .005$). A pairwise comparison for each answer was done using z -test. The results showed that the proportion of nurses with zero to two years of experience is statistically significantly higher ($p = 0.005$) in intervention group than in control (12.3% compared to 2.6%). The proportion of nurses with 5 to 10 years of experience was higher in the control group when compared to the intervention group (28.9% compared to 13.0%). In order to ensure that the difference was not systematic, comparisons were made for broader groups of experience – the answers for this question were recoded into three groups: 0 to 10 years of RN working, 10- 20 years of RN working and more than 20 years. A Chi-square tests was performed to compare the answers for this grouped variable. The results showed no statistically significant difference ($\chi^2(2) = 1.267, p = .531$). This may show that the differences in survey questions between control and intervention groups, regarding the confidence of the nurses, was affected by the intervention video and not by systematic difference between participants in the two groups.

Research Question

The research question of this study was “Do Emergency Department (ED) nurses, who provide direct patient care, and who view an evidence-based practice (EBP)/Social Cognitive Theory (SCT) based video, report higher beliefs in capability to access research-based knowledge, as measured by the Evidence Based Practice Capability Scale (EBPCBS) compared to ED nurses who view an attention control video?”

To answer this question, a comparison of six survey questions measuring the confidence of the nurses, using a four-point Likert scale was made. As the measurement tool to assess the variables was only recently developed, with limited testing to determine the psychometric properties, the comparison was made using the six individual questions and the overall confidence score calculated as mean value of the six survey questions. The reliability of the overall score was tested by Cronbach’s alpha and the results showed that there was a high reliability, with an alpha = .949, which indicates a very good internal consistency of the scale.

The means for Questions 1 - 6 (the EBPCBS) ranged from 2.28 to 2.71 in the control group and were higher for all questions in intervention group – ranging from 2.67 to 3.23 (see Table 6). Similarly, the overall confidence score, calculated as the mean score for the six questions, was higher in the intervention ($M = 3.00, SD = 0.63$) than in the control group ($M = 2.51, SD = 0.98$).

Table 6

Descriptive Statistics Reflecting Confidence of Participants

Rate your confidence in ...	Attention Control		Intervention Group	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Q1. ... formulating questions about clinical practice to search for current research-based knowledge	2.43	1.00	3.02	0.78
Q2. ... using databases to search for knowledge.	2.60	1.09	3.19	0.75
Q3. ... using other information sources (e.g. books, journals, or asking colleagues).	2.71	1.04	3.23	0.72
Q4. ... appraising research reports.	2.28	1.03	2.67	0.87
Q5. ... contributing to change in clinical practice by implementing current knowledge.	2.53	1.06	2.90	0.75
Q6. ... participating in evaluating whether clinical practice reflects current knowledge.	2.49	1.09	2.96	0.74
Overall confidence score	2.51	0.98	3.00	0.63

Note: Questions correspond to the 6 items on the EBPCBS

To test whether this difference is statistically significant, an independent *t*-test is the most appropriate method (if the underlying assumptions are satisfied). This test has two main assumptions: first, the normality of the distribution of dependent variable should be satisfied for each group. Second, equality of the variances of the dependent variable between groups should be tested. The first assumption was tested using Shapiro-Wilk test for normality. This test proved this assumption is violated both for each separate survey question (EBPCBS), and for overall confidence score, meaning that the distribution of the data is not normally distributed. All *p*-values of Shapiro-Wilk test were less than .05 borderline, and this can be seen in Table 7. The results of Levene's test also showed violation of *t*-test assumption, as the variances of the survey questions and

overall confidence score were statistically significant (p - value < .05) different between control and intervention groups.

Independent samples t -test is considered fairly robust to violation of normality assumption in cases where the sample sizes are large enough (Kang, Haring, & Li, 2015). However, violation of homogeneity of variance assumption can be overcome by using a robust version of t -test (Welch t -test). The decision was made to use a non-parametric analogue of independent samples t -test – an independent samples Mann-Whitney U test to confirm the results of t -test.

Table 7

Statistical Comparison of Control and Intervention Groups

Rate your confidence in ...	Welch Test			Mann-Whitney U Test	
	t	df	p	U	p
Q1. ... formulating questions about clinical practice to search for current research-based knowledge	-5.172	209	< .001	10979.5	< .001
Q2. ... using databases to search for knowledge.	-5.001	191	< .001	10759.0	< .001
Q3. ... in using other information sources	-4.527	194	< .001	10486.0	< .001
Q4. ... appraising research reports.	-3.171	205	.002	9343.5	.003
Q5. ... contributing to change in clinical practice by implementing current knowledge.	-3.203	192	.002	9583.5	.008
Q6. ... participating in evaluating whether clinical practice reflects current knowledge.	-3.945	189	< .001	9926.0	.001
Overall confidence score	-4.666	183	.000	10286.5	.001

Note: Questions correspond to the 6 items on the EBPCBS

Results of statistical analysis showed that the level of confidence, of nurses from the intervention group, is statistically significantly higher for all individual survey questions and for the overall mean score (all *p*-values are < .05 borderline). The results from both t tests and Mann-Whitney U test were the same, leading to the same conclusions. The results provide a positive answer to the main research question and proves the participant ED nurses who provide direct patient care, and view an EBP/SCT based video, have higher beliefs in capability levels to access research-based knowledge as measured by the belief capabilities scale, when compared to ED nurses who received a video about effective communication.

Summary of Findings

The study question was focused on whether ED nurses who watched an intervention video reported higher confidence levels to access research-based knowledge for use in their practice. The intervention video emphasized the importance of using reliable and current research-based knowledge in practice and demonstrated practice-friendly ways for nurses to access research-based knowledge for their practice in real time situations. There were statistically significant differences between the randomized groups, both for each survey question and for the overall confidence level measured as a mean score for six questions, with the intervention group consistently scoring higher on the EBPCBS.

This finding is strengthened by the descriptive statistics for the sample that found no significant differences between the randomized groups for age, gender, ethnicity, education, profession, employment status, practice location, and number of yearly ED

visits. The number of the states represented in the sample was quite large: respondents in this study practice in 40 different states (see Appendix F), with the majority in Texas (61.5%, $n = 160$).

Although demographic data was diverse, there were no statistically significant differences that were found in the demographics that were measured. Chi-square comparative analysis of sociodemographic and professional characteristics can be found in Table 8. The comparative analysis of control and intervention groups using the Shapiro-Wilk test for normality and Levene's test of equality of variances can be found in Table 9.

Table 8.

Chi-square Comparative Analysis of Sociodemographic and Professional Characteristics

	Chi-square	df	p
What is your gender?	3.556	3	0.314
What is your age?	0.933	3	0.818
What is the highest level of nursing education?	1.907	4	0.753
What is your race/ethnicity?	2.416	5	0.789
Please describe your practice location	1.681	3	0.641
What state do you practice in? (grouped)	0.976	1	0.323
What is your current position?	0.012	1	0.911
Employment status	0.263	2	0.877
How may ED patient visits annually?	3.394	4	0.494
How long have you practiced as an RN?	16.730	5	0.005*
How long have you practiced as an RN? (merged into three groups)	1.267	2	0.531
How long have you practiced in an ED setting?	6.310	5	0.277

Note: ED = emergency department; RN = registered nurse. * p -value < .05

Table 9.

Comparative Analysis of Control and Intervention Groups: Shapiro-Wilk Test for Normality and Levene's Test of Equality of Variances

Rate your confidence in ...	Attention Control		Intervention Group		Levene's Test	
	Shapiro-Wilk test	<i>p</i>	Shapiro-Wilk test	<i>p</i>	<i>F</i>	<i>p</i>
Q1. ... formulating questions about clinical practice to search for current research-based knowledge	.846	< .001	.832	< .001	28.21	< .001
Q2. ... using databases to search for knowledge.	.807	< .001	.805	< .001	31.07	< .001
Q3. ... in using other information sources (e.g. books, journals, or asking colleagues).	.842	< .001	.786	< .001	20.50	< .001
Q4. ... appraising research reports.	.841	< .001	.867	< .001	10.93	.001
Q5. ... contributing to change in clinical practice by implementing current knowledge.	.841	< .001	.831	< .001	36.32	< .001
Q6. ... participating in evaluating whether clinical practice reflects current knowledge.	.836	< .001	.817	< .001	50.79	< .001
Overall confidence score	.878	< .001	.937	< .001	40.71	< .001

Note: Questions correspond to the 6 items on the EBPCBS

CHAPTER V

SUMMARY OF THE STUDY

A large part of patient safety is dependent on the care that nurses provide. EBP is needed to ensure that patients receive quality health care that is safe and appropriate. (Shafiel, Baratimarnani, Goharinezhad, Kallhor, & Azmal, 2014). This study focused on the acquisition of research-based knowledge for use in real-time nursing practice situations. Research-based knowledge acquisition is not synonymous with EBP and differs in that it is only one behavior in the EBP process. It also differs from research utilization, which is access and use of research.

There is a dearth of research that has studied barriers to EBP in nursing practice (Melnyk et al., 2012). Significantly less research consideration has been given to specific EBP nursing behaviors (Titler, 2008). Despite efforts to move EBP behaviors into regular nursing practice, the scholarship of research remains primarily in academia (Rolfe, 2014). EBP is the globally accepted gold standard for the delivery of safe patient care. However, the problem of poor translation of current evidence into practice is well known, and patients continue to receive care that is not consistent with current scientific evidence principles. A report by the IOM (2000) reported that major gaps in research-based knowledge and healthcare delivery existed and was resulting in significant preventable harm to patients. In 2001, this gap was identified as a quality chasm (IOM, 2001).

The demand for safe and high-quality patient care has never been higher. The IOM has recommended that by 2020, all patient care should be guided by EBP

(IOM, 2009). Patient consumers have become more involved in their own healthcare, and demand better outcomes. Patient satisfaction is a major goal for health care institutions and they can rate their experiences of care provided to them by filling out Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) questionnaires. These ratings are not only shared with the public, the HCAHPS results directly impact Medicare payments to institutions (HCAHPS, n.d.). However, despite EBP being foundational to safe care, clinical nurses still do not frequently access research-based knowledge or incorporate it into daily practice (Renolen, Hoye, Hjalmlhult, Danbolt, & Kirkevold, 2018).

Despite the extensive amount of research conducted to evaluate EBP in nursing practice, barriers and facilitators to EBP have not changed in the last two decades (Melnik et al., 2012). Previous studies have identified common barriers to EBP in terms of personal factors, behavioral factors, and beliefs (Chiu et al., 2010; Melnik et al, 2012). However, no studies were found that described specific EBP behaviors that have been helpful in daily clinical nursing practice. This study proposes to introduce novel approaches to bridge the research-based knowledge gap using smart-phone and internet technology to develop nurse confidence in the specific EBP behavior of acquisition of research-based knowledge in practice friendly ways that can be easily used at the point of care. This study has the potential to change the concept of research knowledge in nursing practice by assessing capability beliefs of emergency nurses to access research-based evidence into regular practice.

Discussion of the Findings

The problem this study aimed to address the confidence levels of nurses who deliver patient care in their ability to access reliable research-based knowledge for their own practice. Emergency nurses were chosen as study participants primarily because of the diversity and complexity of their work experiences.

To answer the research question, “Do Emergency Department (ED) nurses who provide direct EBP exercise report higher beliefs in capability levels to access research-based knowledge as measured by the Evidence Based Practice Belief Capabilities Scale (EBPCBS), than comparable ED nurses who receive a video about effective communication?” A comparison of six survey questions measuring the confidence of the nurses on a four-point Likert scale was used. The reliability of the overall score was tested by Cronbach’s alpha and the results showed that high reliability with $\alpha = .949$ which indicates a very good internal consistency of the scale.

Results indicated that first, the normality of the distribution of dependent variable should be satisfied for each group. Second, the equality of the variances of the dependent variable between groups should be tested. Results of statistical analysis showed that the level of confidence of nurses from intervention group is statistically significantly higher for all individual survey questions as well as for the overall mean score (all p -values are $< .05$ borderline). The results from both the t test and the Mann-Whitney U test were the same, and therefore, they lead to the same conclusions. As such, all results positively confirmed that ED nurses who provide direct patient care and view a EBP/SCT video demonstrating user-friendly ways to access research-based information have higher

beliefs in their capability levels to access research-based knowledge (as measured by the EBPCBS) than comparable ED nurses who receive a video about effective communication.

The findings relate to similar studies insofar as demographic data were collected with regard to professional role and education, whether the nurse practiced as an RN or an APRN, and what level of education the nurse had. Previous studies were found that suggested that APRNs could be used to help other nurses to achieve EBP, because of their research education and expertise (Fencil & Matthews, 2017). It was also surmised that APRNs are significantly more likely to have higher levels of beliefs in their abilities to implement EBP in practice (Melnyk et al., 2012). The findings here found that study participants education varied from associate RN degree to PhD but there were no significant statistical differences in professional role or level of education either between or among groups, which expounded upon prior research and confirmed that APRNs did not have a statistically higher belief.

Age, years in nursing practice, and years practicing in ED, and whether the nurse worked at full or part time status data were collected. Melnyk, Fineout-Overholt and Mays (2008), and Melnyk et al., (2012) found that as the number of years in nursing practice increased, interest in EBP decreased in terms of practicing with it or learning about it. By contrast, Bogdan-Lovis and Sousa (2006) found no correlation between years of nursing service and EBP in practice. Given ED nursing complexity of clinical experiences, and the full-time nurse spending more time in the ED, the possibility existed that they might be more receptive to EBP use in practice. However, there were no

statistically significant differences in or between groups for age, years in nursing service, years practiced in ED, or full versus part time status.

Urban hospitals who have more than 50,000 annual visits are likely to have more educational and institutional support. However, the findings of this study revealed no statistically significant differences between or among groups regardless of number of annual ED visits or whether the hospitals in which the ED nurses practiced were in rural, suburban, or urban locations. Likewise, there was no statistical significance between or among groups relative to gender or ethnicity.

Accessing research-based knowledge for practice has been well established as a barrier to regular use of EBP in practice. A lack of time and lack of knowledge to find reliable research-based knowledge is listed as barriers in many studies (Warren et al., 2016; Yoder et al., 2014). Age has been identified as a barrier as well. A study by Melnyk et al. (2012) reported the average age of nurses in the United States as 47, and nursing education at that time did not integrate EBP into nursing curricula. As a result, many nurses are practicing according to what they learned in school (Melnyk et al., 2012). The same study suggested that EBP that is taught in contemporary nursing education is more focused on teaching research methods and statistical procedures, rather than how EBP might be implemented and incorporated into practice (Melnyk et al., 2012). There were recurrent themes of barriers to EBP behaviors in the literature that was reviewed. Barriers related to accessing research-based knowledge were lack of time, lack of skill to find reliable information, and inability to access hospital computers to search for information (Warren et al., 2016; Yoder et al., 2014).

Limitations

The first limitation to the study was that the survey was distributed throughout the United States and out of the 340 people who opened it; only 278 completed it, resulting in a small sample size for each State. A small sample size makes it difficult to identify significant relationships from the data, as statistical tests typically require larger groups to ensure a representative distribution of the target population and to be representative of a group of people to whom said results could be generalized. A secondary limitation identified is that the majority of respondents lived and practiced in the State of Texas. As a result, these findings cannot be generalized outside of this area. In addition, the participants in this study were all volunteers, which may have also provided a biased sample group.

Tangentially, due to the data set being self-reported, responses had to be taken at face value. Self-reported data can contain many sources of bias, such as selective memory, whereby participants incorrectly remember events. Telescoping may also occur, where participants recall events that took place at one time, as though they were separate events. Other limitations of self-reported responses include attributions, where participants attributed negative events to external forces, or exaggeration, where participants embellished events to be more significant than they were in reality (Polit & Beck, 2012).

Finally, the instrument that was used was the EBPCBS, developed by Dr. Lars Wallin. The survey has six questions that are specific to having confidence to perform the following EBP behaviors:

- Formulating questions about clinical practice to search for current research-related knowledge.
- Using databases to search for knowledge.
- Using other information sources (books, journals, or asking colleagues).
- Appraising research reports.
- Contributing to change in clinical practice by implementing current knowledge.
- Participating on evaluating whether clinical practice reflects current knowledge.

The brevity of the six-question survey minimized the time required of the participant to complete the study, which had the potential of encouraging higher participation rates. Additionally, a shorter survey facilitates a timelier analysis of the data, which is ideal for situations where there are time constraints, but the way in which the data was gathered could have inhibited the ability to conduct a thorough analysis by only asking six questions instead of more. This deficiency may encourage future researchers to revise the data gathering method and expand the survey.

Possible limitations of the researcher include the lack of longitudinal effects. The time constraints associated with this research make it impossible to measure change or stability, long term. Previous studies (Aboshaiqah et al., 2014; Melnyk et al., 2012; Yoder et al., 2014) may have been subject to cultural bias, particularly where they only conducted studies with female nurse participants or only reviewed data from one

geographical area. Statistically, a larger number of nurse respondents for this study were white females, which could beget bias.

Future Research

Research is saturated with studies that highlight barriers and facilitators to EBP. It may be helpful to study how nurses who deliver bedside care solve clinical problems and make decisions, especially in situations they are unfamiliar with. Making nurses stakeholders in their own practice and such that they are empowered to become active participants in the safety of the care provided to their patients may be a motivational factor to adopt more EBP behaviors.

In the future, further research would benefit from expanding the six-question survey into a longer survey with more precise questions, especially if time constraints were not an issue. In order to overcome the time constraints of the research, a longitudinal study could be conducted in future to map responses from the same set of participants at various intervals throughout their respective careers, in order to measure any changes. Moreover, future researchers could set up participants in equal numbers to represent different genders, age groups, and races equally in an effort to combat the potential for cultural bias.

To address the geographic constraints, future researchers can repeat this study and its survey in other areas of the world, comparing the findings to those of the United States and assessing any noticeable differences. Moreover, an assessment could be implemented in a few hospitals where participants are required to respond to the self-reporting tool, therefore potentially negating the limitation of a biased volunteer-based sample.

Conclusions and Implications

There exists a significant gap in research-based knowledge being produced and its application in daily nursing practice. Nurses who provide direct care to patients have unique challenges to EBP, which include simply accessing reliable information (Tacia, Biskupski, Pheley, & Lehto, 2015). Since EBP is a concept and EBP behaviors are a process, it is important to learn more about the processes nurses use to approach unfamiliar situations so that practice-friendly solutions can be designed and supported.

To that end, this study addressed the gap by assessing whether ED nurses who reviewed an EBP video reported higher beliefs in their capability to assess research-based knowledge compared to those who did not view the same video.

The goal of EBP is to ensure that best scientific evidence, clinician expertise, and patient advocacy are used in health care delivery. These three areas are conceptual ideas that can have many behavioral processes to succeed in safe patient care that is cost effective and increases patient satisfaction. Unpacking these concepts into EBP behaviors can be helpful in understanding and supporting EBP based problem solving in nurses. A focus group studied barriers to EBP adoption and some of the findings included nurse practitioners and nurse managers did not feel that not only did nurses not have an understanding of EBP; they were not ready for EBP because they lacked the education (Tacia et al., 2015). These findings have been present in other studies; however, if the concepts of EBP were broken down into processes, the nurses might have answered differently. Nurses may not be interested in EBP processes that involve complex

statistical analysis, but they might be amenable to processes that allow them to be proactive in their own practice to improve patient care.

Nurses face incredible challenges to accessing research-based knowledge. Many times, nurses carry a full patient load with high clinical acuities, admissions and discharges, as well as unexpected situations that might occur during the course of a shift. They may feel overwhelmed when they are faced with unfamiliar situations, particularly when decisions must be made quickly. This study demonstrated some user-friendly ways for nurses to access research-based information quickly and be confident of its accuracy and safety for the patients they care for.

The research question for this study was: “Do Emergency Department (ED) nurses, who provide direct patient care, and who view an evidence-based practice (EBP) /Social Cognitive Theory (SCT) based video report higher capability beliefs to access research-based knowledge, as measured by the Evidence Based Practice Capability Scale (EBPCBS) compared to ED nurses who view an unrelated video?” The study showed that there were statistically significant differences between the randomized groups, both for each survey question and for the overall confidence level measured as a mean score for six questions, with the intervention group consistently scoring higher on the EBPCBS, regardless of demographic differences.

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APPENDIX A

Flyer and Email Invitation to Participate

Flyer and E-mail Invitation to Participate

Subject Line: An invitation to Emergency Nurses to participate in a study

Hello!

My name is Ivy McKinney, APRN. I am a PhD student in nursing science at Texas Woman's University.

I am conducting a study about emergency room nurses accessing and implementing research-based knowledge into practice.

Your decision to take part is voluntary and you may refuse to take part, or you may choose to stop taking part at any time. You may refuse to answer any question at any time for any reason.

The Institutional Review Board of Texas Woman's University approved this research project.

If you participate you will watch a video and then complete a short survey.

Procedure

If you agree to take part in this study:

Click on the provided link and your browser will be directed to PsychDATA©, an online survey service.

You will watch an educational video

Pictures of the smart phone apps and UpToDate© will be used in the video presentation so there will be no need for the participants download or purchase any program.

First you will complete a short survey

Next you will answer a series of questions about yourself.

No questions will be asked that could identify you.

The IP information for your computer will not be collected.

Your answers will be combined with the other responses received and will only be presented in summary form.

Time Commitment

Watching the video and completing the questionnaire will take up to 20 minutes.

Benefits

You will not be paid to participate in this study. However, you can benefit from the satisfaction of providing your opinion from your own unique perspective, and knowing you have contributed to future nursing practice decisions.

Risks

There is a very small risk of a breach of confidentiality. However, steps to provide complete confidentiality have been taken. PsychDATA encrypts the hyperlink connection. This means that your name will not be connected with your answers.

Withdrawal

Taking part in this study is completely voluntary. If you choose to take part, you may refuse to answer any particular question at any time for any reason.

Compensation

You will not be paid to participate in the study.

Questions or concerns

I will be happy to answer any questions or concerns you may have about this study, or the concept in general. Please contact me by email at ivymckinney02@yahoo.com or by telephone at 832-483-3065.

Consent to Participate

Click below only if you understand the information given to you about this research and choose to take part. Make sure that any questions have been answered and that you understand the study. If you have any questions or concerns about your rights as a research subject, call the Texas Woman's University Institutional Research Review Board at 713-794-2480.

Texas Woman's University Statement

Your participation is voluntary. You may choose not to participate, or you may discontinue your participation at any time without penalty. Your decision whether or not to participate will not affect your current or future relations with Texas Woman's University.

Here is the link to the study_____. If the direct link does not work, please copy and paste it in your browser.

If you know of any RNs who provide direct patient care in an emergency department setting, please share this flyer with them.

Thank you for your valuable input.
Ivy McKinney, RN, MSN, APRN
Texas Woman's University
PhD student

APPENDIX B

IRB Approval Letter



Institutional Review Board
Office of Research
6700 Fannin, Houston, TX 77030
713-794-2480
irb-houston@twu.edu
<http://www.twu.edu/irb.html>

DATE: July 26, 2017

TO: Ms. Ivy McKinney
Nursing - Houston

FROM: Institutional Review Board (IRB) - Houston

Re: Exemption for Capability beliefs to access and implement research-based knowledge into practice in Emergency Department RNs who provide direct patient care: A two-group RCT (Protocol #: 19672)

The above referenced study has been reviewed by the TWU IRB (operating under FWA00000178) and was determined to be exempt from further review.

If applicable, agency approval letters must be submitted to the IRB upon receipt PRIOR to any data collection at that agency. Because a signed consent form is not required for exempt studies, the filing of signatures of participants with the TWU IRB is not necessary.

Although your protocol has been exempted from further IRB review and your protocol file has been closed, any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Ainslie Nibert, Nursing - Houston
Dr. Rita A. DelloStritto, Nursing - Houston
Graduate School

APPENDIX C

Evidence-Based Practice Capability Belief Scale

Evidence-Based Practice Capability Belief Scale

The return of your completed questionnaire constitutes your informed consent to act as a participant in this research.

Rate your confidence to practice the EBP activities using a four-point response format (1 = to a very low extent, 2 = to a low extent, 3 = to a high extent, 4 = to a very high extent).

	1=To a very low extent	2 = to a low extent	3 = to a high extent	4 = to a very high extent
Formulating questions about clinical practice to search for current research-related knowledge				
Using databases to search for knowledge				
Using other information source (books, journals, or asking colleagues)				
Appraising research reports				
Contributing to change in clinical practice by implementing current knowledge				

APPENDIX D

Request and Permission from Dr. Wallin for use of the
Evidence-Based Practice Capability Belief Scale

Request to Dr. Wallin and Permission Letter to Use Instrument

July 8, 2016

Dear Dr. Wallin,

I am a doctoral student from Texas Woman's University in Houston, Texas and am writing my dissertation tentatively titled Use of research-based knowledge in regular practice by emergency department nurses who provide direct patient care.

I would like your permission to reproduce to use your EBP capability scale survey instrument in my research study. I would like to use and print your survey under the following conditions:

- I will use this survey only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send my research study and one copy of reports, articles, and the like that make use of these survey data promptly to your attention.

If these are acceptable terms and conditions, please indicate so by signing one copy of this letter and returning it to me either through postal mail, or e-mail:

5114 White Manor Dr

Pasadena, Texas 77505

imckinney@twu.edu

Sincerely,

Ivy McKinney, MSN ,RN, APRN, FNP, ENP, CEN, RNC
Doctoral Candidate Texas Women's University

Expected date of completion 12/2018

APPENDIX E

Script for Intervention Video

Script for Intervention Video

Hello. My name is Ivy McKinney. I am a Nurse Practitioner and am also a PhD student at Texas Women's University. Thank you for clicking on the link and agreeing to be a part of this study. My interest is in nursing practice and the use of research-based knowledge in regular nursing practice. Nurses who care for patients have a unique perspective of issues surrounding care delivery. Understanding how nurses deliver care is important in order to develop interventions to support clinical decision making in practice.

As you may already know, a PhD in nursing is a research degree. For a large part of my nursing career, I did not think research had very much value to me personally in my practice, and many of you may feel the same way. I did not really understand statistical procedures and was unable to find their relevance to patient care. However, research does have an important place in nursing because it is a way of looking at things as they are currently done and compares them to new knowledge as it emerges.

I think we can all agree that patient care is constantly changing. Sadly, for nursing, the time lag between scientific evidence of an identified best practice and incorporation into regular practice has been reported as 17 years. I'll give you an example. Years ago, we used to check nasogastric tube placement by putting air into the tube and listening at the stomach. This has not been best practice for more than 20 years- possibly before a lot of you entered into practice. Yet, you still see people putting air into nasogastric tubes and listening around where they think the stomach is.

Development of research knowledge is a part of contemporary nursing education, and nurses are expected to contribute. However, accessing and incorporating research-based knowledge into your daily practice does not necessitate you being able to master statistical operations.

Although evidence-based-practice (EBP) results in safer patient care, decreased health care costs, and increased patient satisfaction, its use in nursing practice remains inconsistent. That inconsistency contributes to the 98,000 annual patient deaths that occur in United States healthcare facilities as a result of preventable medical errors. Preventable medical errors impact at least five million Americans annually, costing more than \$17 billion. As the largest health care workforce, the care that nurses provide to patients can determine the quality and safety of patient care. A large part of patient care is centered around the work of nurses. The use of research-based knowledge in nursing practice is positively associated with safe patient care, and is an expectation of nursing practice.

Traditionally, patient safety research has concentrated primarily on data analyses to identify patient safety issues and to demonstrate that a new practice will lead to improved quality and patient safety. For example, the Agency for Healthcare Research and Quality has developed safety strategies to prevent adverse drug events which address medication safety at the stages of

prescribing, transcribing, dispensing, and administration. The administration stage relates to nursing practice; the five rights of medication administration (i.e., administering the right medication, in the right dose, at the right time, by the right route, to the right patient) can be implemented to improve safety at this stage. Although these five rights are important, simply administering the medication, as written by the provider and dispensed by the pharmacy does not ensure the right medication is administered by the nurse. The focus of nursing action on rules rather than knowledge impedes the development of a culture of safety. Nurses have a professional duty to ensure that the medication is administered correctly and whether the prescribed medication is safe to administer in the specific clinical situation. Many times, it is the nurse that stands between the error and the patient. Medication administration is a salient example of a problem that must be solved with on the spot reflective practice supported by current research-based

Nurses have been encouraged to develop EBP expertise by participating in research operations and statistical design to answer research questions such as which chocolate chip cookie tastes better, or which potato chip tastes healthier. However, there is a paucity of research related to studies about the acquisition and implementation of research-based knowledge in nursing practice in the context of real time problems that must be solved with on the spot reflective practice. Nurses' ability to make logical and accurate decisions and influence patient safety is associated with complex factors, including their knowledge base and systems factors, availability of essential information, workload, and barriers to innovation. In other words, nurses must make important decisions every day and need a way to access and incorporate research-based knowledge at the place where care happens...at the bedside.

I will give you some real examples from my own practice. A nurse working night shift has a psychotic patient that is escalating at 0630. She calls the attending provider who orders Geodon to be given IV. The nurse gives it and the patient dies. Before you judge this nurse, consider her situation. She is a floor nurse who is not used to managing psychotic patients. She has been working all night and is trying to get everything buttoned-up for the oncoming day shift. In addition, remember that the provider did order the drug to be given IV. The nurse, being unfamiliar with Geodon, does not know that Geodon cannot be given IV, so she trusts the provider. This nurse needed user-friendly access to research-based information. Instead, she lost her career and the patient lost their life.

Another example just this week. Pediatric patient comes in with complaint ear pain and drainage. The provider does not have a lot of experience with pediatrics and sees blood in the canal and orders the nurse to irrigate the ear, which the nurse does. The tympanic membrane was ruptured. You may already know that irrigation of an ear with a ruptured tympanic membrane is contraindicated because of the risk of infection, hearing loss, and vertigo. You may think that you know everything there is to know about otitis media because you see it every day. What we need to be aware of, however, is that health care

changes, and we need to periodically look for new research-based knowledge about routine things that we see and do every day.

You can see how valuable research-based information can be, especially, given that we, as nurses, are the last line of defense for the patient. I will give you some quick, easy ways to incorporate research-based knowledge into your practice, and hopefully help you to make quick

decisions and have the confidence that you are doing the right thing, even when the situation is unfamiliar. Then, I will ask you some questions about your confidence levels to access and incorporate research-based knowledge into your own practice.

First, let's imagine that we have a patient who presents to our emergency department with STEMI. You may think you know all you need to know about STEMI patients but let's make sure. Here is a resource I use all the time called "UpToDate". UpToDate is a peer-reviewed evidence-based clinical decision support resource that is authored and peer-reviewed by physicians who are recognized experts in their medical specialties. You can type in STEMI in the search bar and see all the topics related to STEMI. We will choose the first one, which is the overview of STEMI. If you look at the top of the page, you can see that this topic was written on October 10, 2016, and is good through May 2017. You can see the different categories: General Principles, Initial Assessment, and the others here. Here is a category about cocaine associated MI. Do you know how the 2 are treated differently and why? Here is another thing. You see

here, under "General Principles", that the American Heart Association recommends each community have a plan for STEMI care and continuous quality improvement of emergency services. Do you tailor your patient care according to which provider is on? If you are caring for the patient and have to stop and say I need X or Y because this provider likes that, it is easy to understand how this situation could be a land-mine for errors. Good to know.

Now, let's suppose you are given an order for a medication for the STEMI patient. The order is for a Nitroglycerine IV drip to control the patient's chest pain. The order reads "5 mcg/min IV. Is this drug safe to give to your patient? Here is a smart phone app called Epocrates. Epocrates is gives current, peer reviewed information about medications and has a free version that is available for iPhone and Androids. After we type Nitroglycerine in the search bar, we can see, under adult dosing, that the starting does is 5 mcg/min/IV, so that's good, but look under the contraindications. Is the patient anemic, or hypotensive? It alerts us to use caution with MI, CHF. This drug, although the dosage is correct, at the very least warrants a discussion with the provider and a more thorough history than what we might have gotten so far.

Next, let's prepare for complications. Metabolic acidosis is known to occur in the early stages of STEMI and contributes to dysrhythmias and poor outcomes and is frequently

missed until later on. MedCalc is a medical calculator smart phone app, that has a free version, and computes complicated medical formulas, scores, scales and classifications by entering information into a calculator. Values from the BMP can be used to find the anion gap for a patient. If the anion gap is high, the nurse can easily tell if the patient is in metabolic acidosis.

Clicking here [___](#) will take you to a questionnaire about your comfort level in accessing and incorporating evidence-based knowledge into your own practice. There are no right or wrong answers, and it is fine if research still does not interest you. Thank you for participating in my study.

APPENDIX F

Descriptive Statistics of Participants' Home States

Descriptive Statistics of Participants' Home States

	Attention Control		Intervention Group	
	<i>n</i>	%	<i>n</i>	%
No answer	0	0.0%	1	0.7%
AK	0	0.0%	1	0.7%
AR	2	1.8%	2	1.4%
AZ	1	0.9%	3	2.1%
CA	8	7.0%	2	1.4%
CO	1	0.9%	0	0.0%
FL	5	4.4%	4	2.7%
GA	1	0.9%	1	0.7%
IA	0	0.0%	1	0.7%
ID	2	1.8%	1	0.7%
IL	1	0.9%	0	0.0%
KY	0	0.0%	1	0.7%
LA	1	0.9%	2	1.4%
MA	1	0.9%	2	1.4%
MD	0	0.0%	2	1.4%
ME	2	1.8%	0	0.0%
MI	3	2.6%	3	2.1%
MN	0	0.0%	3	2.1%
MO	2	1.8%	1	0.7%
MS	0	0.0%	1	0.7%
MT	1	0.9%	1	0.7%
NE	0	0.0%	4	2.7%
NJ	1	0.9%	1	0.7%
NV	0	0.0%	2	1.4%
NY	1	0.9%	2	1.4%
OH	0	0.0%	3	2.1%
OK	1	0.9%	1	0.7%
ON	1	0.9%	1	0.7%
OR	0	0.0%	2	1.4%
PA	3	2.6%	2	1.4%

	Attention Control		Intervention Group	
	<i>n</i>	%	<i>n</i>	%
SD	0	0.0%	1	0.7%
TN	0	0.0%	1	0.7%
TX	74	64.9%	86	58.9%
VA	0	0.0%	1	0.7%
VT	0	0.0%	2	1.4%
WI	1	0.9%	2	1.4%
WV	0	0.0%	1	0.7%
WW	0	0.0%	1	0.7%
WY	1	0.9%	0	0.0%

Note: 2-letter state abbreviations are shown.