

LEARNING ORGANIZATIONS AND EVIDENCE-BASED PRACTICE BY RNS

by

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## ABSTRACT

Evidence-based practice (EBP) is recognized as a means for providing safe, cost-effective, and quality healthcare. Registered Nurses (RNs), like other disciplines, are accountable for providing patient care based on the best evidence. The greatest majority of RNs are employed within the acute care setting. Unknown is what type of organizational infrastructure is necessary to support RNs in EBP. The business community reports positive performance outcomes through development of learning organizations (LO). LOs are reputed to be high functioning, supportive, adaptive, and continuously learning systems, compatible with the needs reflected in today's complex, turbulent healthcare.

This descriptive study used a survey methodology to identify relationships between the dimensions of a LO as perceived by RNs within the context of the acute care hospital and their beliefs about and implementation of EBP. Six hospitals, two magnet designated, two non-magnet, and two Veterans Administration Medical Centers in one southwestern state were invited to participate.

Three established instruments were used. Distribution of questionnaires to 1750 RNs resulted in a return of 592, for a 34% response rate. Instruments demonstrated adequate reliability and validity for this sample. Psychometrics on the EBP Beliefs Scale resulted in the identification of four subscales that were subsequently included in the analyses. Descriptive statistics indicated differences in characteristics of nurses from the different types organizations. The VA nurse's average age was 48 years, worked 19 years

as an RN and 64% reported their highest educational degree as bachelor or above. Nurses responding from the other two types of organizations, on the average, were 42 years old, had 14 years experience, and 52% reported an educational degree of bachelor or above.

Relationships were identified between RNs' perceived beliefs about EBP and their reported frequency of EBP implementation. Regressing beliefs on the dependent variable of implementation with the full sample (n=543) resulted in  $R^2=.23$ ,  $p \leq .05$ . Slight variation was noted in the analysis per organizational type. Relationships among the dimensions of the learning organization and the subscales of the Belief scale were analyzed using regression analysis. Significant relationships were noted but were demonstrated differently among the three different types of organizations.

## CHAPTER I: LITERATURE REVIEW

### Introduction

The purpose of this research was to identify the relationship between the dimensions of a learning organization as perceived by registered nurses within the context of the acute care hospital and their beliefs about and implementation of evidence-based practice. This chapter discusses definitions of evidence-based practice (EBP) and research utilization (RU), as well as the implications of EBP for healthcare organizations. Prior research related to organizational infrastructure to support EBP, including known barriers and facilitators, is reviewed. Learning organizations will be described, as well as their subsequent potential value within the context of healthcare organizations. The chapter will culminate with the purpose of the proposed study, research questions to be addressed, and the potential significance of the research.

### Background

#### *What is EBP?*

Healthcare literature of the 21<sup>st</sup> century is touting evidence-based practice (EBP) as the panacea for today's problems in the healthcare system. EBP is acclaimed as the solution to providing patients with safer, more cost-effective, and higher quality of health care. Not only are physicians accountable for providing evidence-based medical care, it is now the most recommended approach for every healthcare discipline involved in the provision of patient care.

There is no consensus on a definition or agreed upon conceptual model for EBP. The initial focus began in the early 1990's in medicine where it was coined as evidence-

based medicine (EBM). The most frequently used definition for evidence-based medicine describes it as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research” (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p. 71). Nurse authors exploring models for evidence-based nursing (EBN) or EBP initially referred to this definition (Goode, 2000; Kitson, 1997; Rosswurm & Larrabee, 1999; Titler, Steelman, Budreau, Buckwalter, & Goode, 2001).

A number of additional models and definitions of EBP have been suggested by nurse scientists and academicians. French (1999) suggested defining EBP as “the systematic interconnecting of scientifically generated evidence with the tacit knowledge of the expert practitioner to achieve a change in a particular practice for the benefit of a well defined client/patient group” (p. 74). Ingersoll (2000) proposed a specific definition for nursing stating “evidence based nursing practice is the conscientious, explicit and judicious use of theory-derived, research-based information in making decisions about care delivery to individual or groups of patients and in consideration of individual needs and preferences” (p.152). In 2005, Melnyk & Fineout-Overholt defined EBP as “a problem-solving approach to clinical practice that integrates a systematic search for and critical appraisal of the most relevant evidence to answer a burning clinical question; one’s own clinical expertise; and patient preference and values” (p.6).

An early model of EBN developed by DiCenso, Cullum, & Cilaska (1998) that was adapted from EBM (Haynes, 1996) incorporated four components influencing the

clinical decision making for patient care: clinical expertise, patient preferences, research evidence, and available resources. Most consistent throughout the literature is inclusion of three elements to determine healthcare decisions regarding patient care: 1) the application of empirical evidence, 2) clinician practice knowledge, and 3) patient preferences and values. The more comprehensive definition incorporates consideration of available resources. Synthesis of the best evidence, particularly current research findings, is a key component of EBP.

For purposes of this study, EBP is described as the provision of safe, quality patient healthcare based on the ongoing synthesis of the best empirical evidence, the patient's preferences and values, the clinician's expertise and experience, and awareness of available resources through a process of interdisciplinary collaboration and independent critical decision-making. This definition takes into account all the key elements recognized throughout the literature. In addition, consideration is provided for the importance of interdisciplinary collaboration, as well as the role of the individual's critical decision-making process.

Research has been recognized and promoted in nursing as the best evidence for the foundation of professional practice for the past 30 years through efforts frequently referred to as research utilization. Research utilization (RU) has been defined by nursing in several ways including: using the methods and products of research (Horsley, 1985); process of when a research base of two or more scientifically sound studies is available to solve a practice-related problem (Goode & Bulechek, 1992); applying research results in the solution of everyday nursing problems (Crane, 1995; Funk, Champagne, Tornquist, &

Wiese, 1995); the implementation and evaluation of a scientifically based innovation (Champagne, Tornquist, & Funk, 1997); and translating research findings into practice (Stetler, 2001).

Consistent with EBP, RU emphasizes the use of research as a scientific base for practice. Missing from RU is the emphasis intrinsic to EBP of synthesizing results from scientific research (preferably randomized controlled trials) plus consideration of resources, as well as incorporation of clinician expertise and the patient's values and preference. Nursing has promoted the use of research in practice but initially was limited by the amount of research findings upon which to base practice. The body of scientific nursing knowledge has grown exponentially due to the growing number of nurse scientists and concurrent increase in funding for nursing research. Information technology has added accessibility to data, broadening the capability to use increased sources of data for evidence upon which to base practice. However, despite advances, nurses continue to base their practice on tradition, intuition, and habit (Gerrish & Clayton, 2004; Estabrooks, 1998).

Research on conceptual and theoretical model development related to EBP in nursing has been minimal. Several EBP models have evolved from nursing work related to research utilization (Goode & Piedalue, 1999; Rosswurm & Larrabee, 1999; Stetler, 2001; Titler et al., 2001). Additional practice models and approaches for EBP have been primarily focused on the process of EBP (Melnyk & Fineout-Overholt, 2005; Rosswurm & Larrabee, 1999; Soukup, 2000; Stevens, 2004; Winch, Henderson, & Creedy, 2005). There is no consensus on a conceptual model or related support for nurses implementing

EBP. There have been suggestions about the importance of an organizational infrastructure that supports ongoing learning in order for EBP to be integrated into the nursing professional practice environment (Grigsby, Westmoreland, & Siparski, 2002; Kiefe & Sales, 2006; Udod & WD, 2004).

One body of scientific work contributing to conceptual knowledge in nursing EBP, which was reported by the research development team that originated in the Royal College of Nursing in the United Kingdom, ultimately culminated in the development of the Promoting Action on Research Implementation in Health Services (PARIHS) model (Harvey et al., 2002; Kitson, 2000, 2002; Kitson, Harvey, & McCormack, 1998; McCormack et al., 2002; Rycroft-Malone, Harvey et al., 2002; Rycroft-Malone, Harvey et al., 2004; Rycroft-Malone, Kitson et al., 2002; Rycroft-Malone, Seers et al., 2004; Wallin, Bostrom, Wikblad, & Ewald, 2003). The aforementioned team has identified successful implementation of evidence-based practice as a function of relationships among evidence, context, and facilitation. Several Australian research studies have utilized the framework (Brown & McCormack, 2005; Ellis, Howard, Larson, & Robertson, 2005). When comparing healthcare among the United States and other countries, differences in structure and process emerge, so it is not clear if this model or any other international model is applicable to the U.S. healthcare system. Several U.S. nursing leaders have acknowledged the framework in publications, but have not attempted to utilize the framework in research or practice (Donaldson, Rutledge, & Ashley, 2004; Stetler, 2003). The contributions of the PARIHS model research provide a basis upon which to develop additional research.

Refinement of the conceptual framework for the PARIHS model (Rycroft-Malone, 2004) reiterated the concepts of evidence, facilitation, and context and added clarification to the important components necessary for the successful implementation of EBP by nurses. The factors related to evidence were identified as research, clinical experience, patient experience, and local data/information. Facilitation factors were comprised of the purpose of role, skills, and attributes of the facilitator. Context, of particular interest in relation to this study, included culture, leadership and evaluation.

McCormack (2002) performed a concept analysis specifically on context as part of knowledge development regarding the PARIHS model of key elements. Described as the setting for which practice takes place, the themes of culture, leadership, and evaluation provided support to characterize the concept (McCormack et al., 2002). Each was described on a continuum from weak to strong. The analysis identified a strong context as one with boundaries clearly defined, transparent decision making processes, appropriate resources, and receptive to change. A strong culture was one that valued individual staff and clients, promoted a learning organization, and demonstrated consistency of values/beliefs. Characteristics of strong leadership were identified as transformational leadership, role clarity, effective organizational structures, and empowerment/enabling to teaching/learning/management. The final component, evaluation, was defined as strong when there was performance feedback on all levels using multiple sources of information and provided through multiple methods. Although McCormack (2002) acknowledged the need for further delineation and clarification, the concept analysis supported the importance of context for successful implementation of

EBP and provided insight into some of the needed components for infrastructure. However, there remains a knowledge gap to clearly define a supporting context for nursing EBP.

*Organizational Barriers and Support to Research Utilization and EBP*

Prior research studies have consistently identified barriers related to use of research, and subsequently, evidence by nurses. Funk et al. (1991) developed an instrument in 1991 based on Roger's Diffusion of Innovation theoretical framework with the aim of collecting data from nurses related to research utilization. The four factors identified included the nurse's research values, skills, and awareness; organizational barriers and limitations; quality of the research; and presentation and accessibility of the research. Eight of the top ten barriers rated by clinicians were identified as organizational: 1) perceived lack of authority by nurses to change patient care practices; 2) perceived lack of support for implementation by other staff; 3) insufficient time on the job to read research; 4) insufficient time on the job to implement new ideas; 5) physicians not cooperative with implementation; 6) administration not allowing implementation; 7) inadequate facilities for implementation; and 8) research results not generalizable to their own practice setting (Funk, Tornquist, & Champagne, 1995). The other top items were nurses' lack of awareness of research and lack of understandability of statistical analyses.

Similar findings have been reported in subsequent research including insufficient time on the job to implement new ideas, lack of knowledge of nursing research findings, lack of authority to change practice; and inaccessibility of relevant literature (Carroll et al., 1997; Fink, Thompson, & Bonnes, 2005; Parahoo, 2000). Time constraints continue

to be one of the biggest barriers identified, particularly given the effort and skills needed to access pertinent information from the immense volume of published literature that is added on a daily basis. Even with professional efforts to provide synthesized research reviews into searchable databases, it is noted that only about 10% of randomized trials has currently been incorporated into The Cochrane Database of Systematic Reviews (Glasziou & Haynes, 2005). The Cochrane Library, a highly regarded source for evidence, includes the online searchable database incorporating systematic reviews of the best available information about healthcare interventions. The evidence is evaluated for and against the effectiveness and appropriateness of treatments in specific circumstances (Starr & Chalmers, 2003). The electronically published reviews allow for quarterly updating as new information becomes available, providing users access to dynamic, current, systematically-reviewed evidence.

Previous studies targeting acute care nurses and their use of research suggest that contextual factors have an impact although findings have been varied. McCaughan, Thompson et al. (2002) conducted a study of acute care nurses looking at use of research in clinical decision making. Four of the perspectives of barriers identified by the acute care nurses were identified as individual, organizational, clinical credibility of research information, and environment. Nurses found problems in interpreting and using research findings, and those who did feel confident with research-based information perceived the lack of organizational support as a significant block (McCaughan, Thompson, Cullum, Sheldon, & Thompson, 2002). Organizational barriers included restricted local access to information, including lack of computer skills and technology and unsupportive

colleagues. Size of the hospital was found in one study to significantly affect nurses' perceptions of organizational support and their expectation to use research, that individual characteristics of acute care nurses may mediate the influence of organizational context (Varcoe & Hilton, 1995). A strategy for research utilization by acute care nurses focused on both individual development and organizational support was found to positively affect nurses' autonomy and job satisfaction (Tranmer, Kisilevsky, & Muir, 1995). Two unit level studies in the acute care arena have resulted in contradictory findings. One study identified unit culture as the main factor linking patterns of RU (Pepler et al., 2005), while another study suggested organizational support and culture as important, but found no unit effect (Tranmer, Lochhaus-Gerlach, & Lam, 2002). Despite the mixed findings, organizational support and context consistently are recognized as key factors in use of research in nursing practice.

Other studies suggest that an organizational commitment to the use of research in practice may improve nurses' beliefs and attitudes about research, increasing the likelihood of their use of research in practice (Fink et al., 2005). A work environment encouraging critical thinking in nurses correlated positively with overall research utilization (Profetto-McGrath, J., Hesketh, K., Lang, S., & Estabrooks, C. A., 2003). Several studies in acute care found that participation in clinical research by acute care nurses positively affected individual job satisfaction and influenced professional practice (Tranmer et al., 1995; Tranmer et al., 2002). Engaging acute care nurses in research presents a challenge. In a study by McCaughan et al (2002), some acute care nurses preferred research messages passed on to them by a third party and sought to foster

others' involvement in research-based practice, rather than becoming directly involved themselves.

The literature suggests a supportive, organizational process as a key element in facilitating the use of research and subsequently evidence as part of professional practice (Estabrooks, 2003; Gerrish & Clayton, 2004; Goode & Bulechek, 1992; Goode & Piedalue, 1999; Horsley, Crane, & Bingle, 1978; Kitson, Ahmed, Harvey, Seers, & Thompson, 1996; Larrabee, 2004; Omery & Williams, 1999; Rosswurm & Larrabee, 1999; Rutledge & Donaldson, 1995; Scott-Findlay & Golden-Biddle, 2005; Stetler, 2003; Stetler et al., 1998; Titler et al., 2001; Wallin et al., 2003). Nurses providing patient care within the acute care setting are employees of the organization and thus, are more susceptible to constraints on their practice autonomy and their control over professional practice. Organizational infrastructure can be either a support or barrier to nurses' EBP.

Technology potentially provides additional organizational infrastructure support for accessing evidence and supporting EBP at the point of care. Limited research has been completed in this arena, but Bakken (2001, 2004) has provided an insightful framework to support the use of information technology. The five building blocks of an informatics infrastructure described as essential for evidence based practice are standardized terminologies and structures; digital sources of evidence; standards that facilitate health care data exchange; informatics processes that support the retrieval and application of evidence to specific clinical situations; and informatics competencies (Bakken, 2001). A patient safety focus was added in 2004 and the components refined to "standardized terminologies, healthcare standards, communication technologies, digital

sources of evidence, data acquisition methods, data repositories, rule repositories, clinical event monitors, and data mining techniques” (Bakken, Cimino, & Hripcsak, 2004).

Even with the aid of information technology, nurses in clinical settings are still unprepared for EBP and continue to identify organizational and individual barriers to use of research in practice (Pravikoff, Tanner & Pierce, 2005). Because lack of time is the most frequently cited barrier, it was intentionally omitted as a variable in the Pravikoff et al study. Primary organizational barriers identified included the presence of other goals with a higher priority in the institution, difficulty in recruiting and retaining nursing staff, lack of organizational budget for acquisition of information resources, inadequate budget for training in resource use, and the perception by the organization that nursing staff is not eager or prepared for EBP and that EBP or RU is not realistically achievable. The primary individual barrier identified in the study was nurses’ perception of the lack of value of research for practice.

Taken together, the literature suggests that an ideal organizational infrastructure to support nurses in EBP would be a culture that allows professional nurses to continuously learn, to have control over their practice with the authority to implement innovative practice, given time and support from administration, development of interdisciplinary collaboration and communication, and the provision of resources particularly through an informatics infrastructure. It appears that an informatics infrastructure must support nurses’ accessibility and usability of translated current research evidence and standards for patient-care at the point-of-care, incorporate preferences and values of the patient, include decision support services, enhance

interdisciplinary communication capabilities, incorporate mechanisms for error and adverse event prevention, and provide ongoing ability to monitor patient outcomes and cost.

### *Why EBP is Important to Healthcare Organizations?*

The Institute of Medicine directed the public's attention to safety and quality issues within the healthcare system in its 1999 publication "To Err is Human." Discussion of the issues continued in a follow-up document, "Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century," that included recommendations that healthcare professionals must ensure that patient care is evidence based (IOM, 2001). The IOM proposed that use of EBP would provide greater consistency of patient care, utilizing the most up-to-date and best research to obtain optimal outcomes, resulting in standardized care that is more cost-effective, equitable, and of higher quality.

Health care costs are a major concern. Expenditures for healthcare in the United States have continued to spiral upward. The per capita expenditures for total healthcare for 2004 were \$6,280, more than double the \$2,821 from 1990 (*Trends and Indicators in the Changing Health Care Marketplace*, 2006). Hospital care contributed over a quarter (26.4%) of the total growth in national health expenditures from 1994-2004. Evidence-based care may not provide the total answer to reducing costs. What it can offer is the provision of ethical, safe, quality patient care that is the most cost-effective based on best evidence with patient preferences and available resources taken into consideration. EBP offers future savings too because of the better healthcare provided, although this is harder to justify in a climate that only considers current fiscal balances.

The Center for Medicare and Medicaid Services (CMS) initiatives of pay-for-performance have brought the need for improved outcomes under even greater scrutiny within the acute care setting, as well as potentially affecting financial reimbursement (CMS, 2005). The need for patient care to be provided consistently, safely, and cost-effectively based on evidence appears to be a focus that will continue to evolve. Clearly, nurses must be at the forefront and take leadership of the professional practice of nursing. This can best be accomplished through nurses continuously developing practice knowledge based on the best evidence and demonstrating positive impacts on patient outcomes.

Nurses provide care to patients within hospitals on a 24 hour, seven day a week basis. There is no question that nursing plays a critical role in the care of patients, particularly in the hospital setting. Nursing is the one discipline that maintains constant vigilance and oversight of hospitalized patients. In reality, the only consistent purpose for admission of patients into the hospital is because there is 24/7 nursing surveillance and care.

A meta-analysis found that patients receiving research-based nursing interventions had 28% better outcomes for 72% of the patients (Heater, Becker, & Olson, 1988). Professional care provided through knowledge and skills of RNs influence patient outcomes. A growing body of published research literature links nurse-patient ratios, hours of professional nursing care, and professional skill mix to positive patient outcomes (L. Aiken, Clarke, Cheung, Sloane, & Silber, 2003; L. Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; L. H. Aiken, Smith, & Lake, 1994; Blegen, Goode, & Reed, 1998;

Blegen & Vaughn, 1998; Cho, Ketefian, Barkauskas, & Smith, 2003; Curtin, 2003; Hall et al., 2003; Lichtig, Knauf, & Milholland, 1999; Jack Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002; Ritter-Teitel, 2004; Sasichay-Akkadechanunt, Scalzi, & Jawad, 2003; Tourangeau, 2005; Unruh, 2003). A recent study found that raising the proportion of patient care hours provided by registered nurses (RNs) in the hospital setting resulted in reduced length of stay, adverse outcomes, and patient deaths producing a net reduction in costs (J Needleman, Buerhaus, Stewart, Zelevinsky, & Mattke, 2006). Healthcare organizations that provide for the evidence-based practice of nursing may potentially reap the benefits of cost savings and impact on improvement in measurable outcomes. The professional practice of nursing has demonstrated a pivotal role within the context of the acute care setting. Despite the evidence, acute care systems today continue to place emphasis on nurses “doing” and getting patients moved through the system (Scott-Findlay & Golden-Biddle, 2005).

#### *Organizational Infrastructure to Support Nurses in EBP*

Given EBP’s importance in healthcare, what organizational infrastructures best support its implementation by acute care nurses? An analysis of the literature was conducted through The Cochrane Database of Systematic Reviews in an attempt to answer this particular question (Foxcroft & Cole, 2003). For purposes of the review, infrastructure was defined as the underlying foundation or basic framework through which clinical care is delivered and supported. The review focused on the level of the organization, recognizing this as a strong influence on nursing care in the acute care setting, potentially limiting or facilitating nurses in making research-based changes to

practice. The Cochrane Reviews limit selection of studies to research obtained through randomized clinical trials and controlled methodology as the hierarchy for best evidence. Unfortunately, no studies were identified that met the criteria of scientific rigor to be included in the systematic review (Foxcroft & Cole, 2003). The review criteria were then modified to include any study that provided an evaluation of an organizational infrastructure intervention.

The seven studies identified under this relaxed criteria used a retrospective case study design and were appraised in order to provide some type of baseline evidence (Dufault, Bielecki, Collins, & Willey, 1995; Fitch, 1992; Greenwood & Gray, 1998; Martin & Forchuk, 1994; Robinson, 1997; Rutledge & Donaldson, 1995; Sperhac, Haas, & O'Malley, 1994). Each of the seven studies anecdotally reported a positive effect of an organizational infrastructure intervention to promote evidence based nursing practice. The methodological weaknesses of the studies prohibited making conclusions or implication from the reported findings, further demonstrating the gap in the scientific knowledge related to organizational infrastructure support for EBP. Although organizational infrastructure may be important in support of the EBP of nurses, the review emphasized the lack of evidence about implementation of EBP by nurses and any impact of organizational infrastructure.

### *The Learning Organization (LO)*

The practices and principles of the “learning organization” may offer the means to an organizational infrastructure supportive of nurses in the practice EBP. Chapter II defines and describes the theoretical framework of the learning organization used for this study. Chapter I concentrates on information related to the potential value and indications for learning organizations.

Learning Organizations (LO) have received growing recognition in the corporate and business literature in the past several decades. Although discussion and research on LO has been of interest to disciplines of business and organizational development (OD) for many years, the publication by Senge in 1990 of “The Fifth Discipline” popularized the terms of “system thinking” and “learning organization.” The publication highlights transformation of today’s society emerging from the industrial era to the knowledge era (Senge, 1990). The book has sold more than a million copies, and in 1997, was named by *Harvard Business Review* as one of the seminal management books of the past 75 years (M. K. Smith, 2001). Development of disciplines to build a learning organization has emerged from bodies of “actionable knowledge” encompassing a wide body of underlying theories from organizational, system, learning, and knowledge development research (Senge, Kleiner, Roberts, Ross, & Smith, 1994).

Interest in LOs continues to grow as businesses realize that human capital and intellectual property are among their most valued assets (Sussman, 2005). The LO engages organizational learners in a collaborative effort to incorporate the five major disciplines of shared vision, personal mastery, team learning, mental models and system

thinking to achieve superior performance (Senge, 1990). These have come to represent approaches to developing three core learning capabilities: 1) fostering aspiration, 2) developing reflective conversation, and 3) understanding complexity (Senge, 2006). To survive, organizations must continue to build capacity to learn at every level including individual, team, organization and even community.

Knowledge attainment and practice improvement require adopting new ideas. Garvin (1993) notes that the first step of the LO is to become “skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights” (Garvin, 1993). Organizations cannot become a LO overnight—“becoming a learning organization is a journey, not a destination” (Gephart, Marsick, Van Buren, & Spiro, 1996). Development of a LO requires commitment and long-term vision by the organization, or as making use of Noah’s principle, “one survives not by predicting rain but by building arks” (Redding & Catalanello, 1994). A learning organization has a capacity that is embedded and shared for changing and doing something new (Watkins & Marsick, 1993). Important to health care is the recognition by members of the LO that they belong to a collaborative community that depends on the collective capability of the organization to create new knowledge, change, and learn from experiences (Redding & Catalanello, 1994).

Although retaining intellectual property and advancing knowledge capacity are important to businesses, the driving force is to increase profits and remain competitive. Organizations that have made a commitment to becoming learning organizations have had measurable benefits as a result, including increased productivity, better financial

returns, and higher satisfied customers and employees (Bennett & O'Brien, 1994).

Research results have demonstrated that workers with a learning orientation achieve higher levels of productivity and are more satisfied than those with a performance orientation (Chalofsky, 2005).

The impetus to make changes in the healthcare system provides the most compelling reason for a healthcare organization to strive to become a LO. Change requires learning something new or else practices remain unchanged. This is no longer a feasible option. The complex and turbulent pace in today's society requires organizations to be continuously adapting, improving, and making changes. LOs have a strong commitment to continual change (Dowd, 1999). Non-delivery of continuous improvement is particularly detrimental in a knowledge-driven business such as healthcare in which the need to practice based on the current best evidence is paramount.

There is a growing interest in the potential for LO in healthcare. Baptist Hospital, Inc. in Florida was named one of the top 50 Learning Organizations by *Training Magazine* in 2003 (*Malcolm Baldrige National Quality Award 2003 Award Recipient, Health Care Category*, 2003). Baptist Hospital leadership demonstrated an effort for continuous improvement, resulting in increased retention of staff. The satisfaction rating on patients and staff surveys ranked in the 99<sup>th</sup> percentile. Reports of positive patient outcomes related to decreasing medication errors and pressure ulcers provided support for the proposition that LO may offer a systems approach to instilling a culture of patient safety and potential solution to decreasing medical errors and harm to patients (Eisenberg, 2000; Holden, 2006; Mohr, 2005).

Publications from the United Kingdom (UK) promote learning organizations as a potential solution for the significant change needed in the National Health Service (NHS) culture (Stinson, Pearson, & Lucas, 2006; Timpson, 1998). The call for strategies that encourage work-based, multi-disciplinary learning in 1999 by the NHS Chief Medical Officer (CMO) brought to the forefront the need for lifelong learning in not only hospitals, but also in the primary care setting (Cantle, 2000; Downey & Waters, 2005; Rushmer, Kelly, Lough, Wilkinson, & Davies, 2004; Stinson et al., 2006; Wilkinson, Rushmer, & Davies, 2004). Creating a systems thinking approach requires all members of a team to participate; however, a survey of clinical practices found that 80% had educational activities but only 15% reported them as multidisciplinary (Downey & Waters, 2005).

Nursing has recognized the potential value of learning organizations for bringing positive changes to the nursing professional practice (Cowley, 1995; Fagin, 1996; Holden, 2006; Ingersoll, Witzel, & Smith, 2005; Neubauer, 1995; Reineck, 2002), encouraging leadership (Kerfoot, 2003) and affecting patient outcomes (Mohr, 2005; Wallace, 1998). The majority of authors cite Senge (1990, 1994) indicating that the philosophical underpinning of the learning organization theory is appealing to nursing epistemology. The LO integrates the value of being human and the enhancement of the human potential. There is aspiration to a collectiveness and interrelatedness among people where the whole can be greater than its parts. It promotes a vision of a holistic, positive system; one that nurtures creativeness and recognizes the meaningfulness of

experiences; is flexible and adaptive; and is responsive to change with feedback and delays for ongoing system productivity.

Healthcare may already have organizations that exemplify dimensions of a LO. Hospitals designated as “magnet” have become known as outstanding examples of quality health care environments (Kramer, & Schmalenberg, 1988a; Kramer and Schmalenberg, 1988b; Kramer & Schmalenberg, 2005a). Magnet hospitals are recognized as good places for nurses to work, provide a professional practice environment and have demonstrated good patient outcomes. The premise for “magnet” hospitals originated through reviewing recommendations from the business literature. Kramer & Schmalenberg (1988) found that the 16 magnet hospitals they analyzed compared favorably with “best run” companies in the corporate community based on 8 characteristics identified by Peters and Waterman (1982) in their book entitled *In Search for Excellence*.

Since 1990, hospitals can apply to be formally designated as having “Magnet” status through the Magnet Recognition Program sponsored by the American Nurses Credentialing Center (ANCC) by demonstrating: 1) excellence in nursing services, 2) an environment that promotes and sustains professional nursing practice, and 3) an organizational system that supports the professional development of nursing personnel (Lash & Munroe, 2005). Attainment of Magnet designation translates into a financial return for the institution by improving nurse recruitment and retention, increasing staff and patient satisfaction, attracting consumers, and leading to better business results (DeSilets & Pinkerton, 2005). Better patient outcomes consistently have been linked with

magnet hospitals and the quality of the nursing care but to date, there is no research to indicate whether the nursing care is evidence-based.

Hospitals that are part of the Department of Veteran Affairs (VA) have also become known for their demonstrated improvement in the past ten years. In the mid-1990s, Dr. Kenneth W. Kizer, then the VA's Health Under Secretary, initiated a drastic overhaul of the system by decentralizing decision-making, closing underused hospitals, reallocating resources, and instituting a culture of accountability and quality measurements (Arnst, 2006). The annual consumer survey conducted by the National Quality Research Center at the University of Michigan found that the VA outranked private-sector hospitals on patient satisfaction for the past six years, even though the VA spends an average of \$5,000 per patient vs. the national average of \$6,300.

The VA places a strong emphasis on learning opportunities and leadership development for employees. Employee function and competency development is based on the High Performance Model, which includes elements identified with "learning organizations," specifically Personal Mastery and Team Learning. All patient care providers are employees of the organization and subject to mandated annual education (e.g. in 2007 40 hours of continuing education is required). Another unique aspect of the system is that it is a nationwide healthcare structure financed by a single payer, the federal government. The integrated network has become known for its electronic medical records system that allows for computer access to patient data at the point of care, and at the same time captures the information in its database, providing for evidence-based

practice monitoring and quality management. Thus, VA hospitals exhibit many of the characteristics of LOs.

Integrating principles of LO may provide the ability for healthcare to develop, not only high quality professional nursing practice, but an interdisciplinary EBP patient care environment. LO fosters an environment conducive to learning at all levels within the organization and into the community. An ability to adapt to change is instilled so that even though there may already be the presence of a positive culture, the organization continues to learn and adapt. This is an important response to the increasing complexity of healthcare and enables a paradigm shift from a mental model of approaching patient care in the way we always have, to instead allowing the healthcare organization to learn and evolve at all levels, including individuals, teams, organization and community.

#### Purpose and Research Questions

##### *Purpose*

The purpose of this research was to identify (a) the relationship between the dimensions of a learning organization as perceived by registered nurses within the context of the acute care hospital and (b) their beliefs about and implementation of evidence-based practice. Different organizational contexts were explored including magnet-designated, non-magnet, and VA medical centers. The literature suggests that before nurses can be expected to practice evidence-based practice, organizations must be able to provide support. The type of organizational infrastructure support needed to further nurses' beliefs about and implementation of EBP is not clear. The turbulent, chaotic healthcare system, plus the rapid advances in technology and knowledge

development, create the need for ongoing change and adaptation by professional care providers. Industry and corporations have found solutions through development of “learning organizations.” Healthcare organizations may also derive benefits from implementation of LO philosophy and principles. Hospitals that have been awarded magnet status may already demonstrate some of the attributes of a learning organization as well as those hospitals within the Department of Veteran Affairs healthcare system.

It is believed that registered nurses that rate their organization as higher on the Dimensions of Learning Organization Questionnaire (DLOQ) will also score higher on the EBP beliefs scale, which may directly or indirectly affect implementation of EBP.

#### *Research Questions*

Research Questions:

1. What is the relationship of the characteristics of the learning organization to registered nurses beliefs regarding EBP?
2. Is there an impact of EBP beliefs on RN implementation of EBP?
3. Is there a significant difference in nurses’ perception of learning organizations based on their employment in magnet, non-magnet, or VA hospital?
4. Are the relationships of the dimensions of the LO, RN’s EBP beliefs and RN EBP implementation the same within each organizational type?

#### *Potential Significance of the Research*

The research adds to the body of scientific knowledge development related to organizational infrastructure support needed for registered nurses in the acute care health setting related to EBP beliefs and implementation. Currently, we have only retrospective

and anecdotal evidence regarding the need for organizations to provide infrastructure support related to EBP. There is no current research describing the organizational infrastructure important to nurses related to their beliefs and implementation of EBP. This research addresses the aforementioned gap in the nursing knowledge, as well as exploring relationship associated with different organizational infrastructures.

This study offers some exploratory information related to the dimensions of learning organizations and the health care context. Currently, there is minimal research exploring the dimensions of a learning organization associated with the healthcare setting. Potential differences are explored between different types of hospitals and their relationship to dimensions of learning organizations, offering beginning exploratory data in an area of prior healthcare research that is so far quite limited..

The utility of an established instrument (Dimensions of Learning Organizations Questionnaire) that has been used previously by other business organizations to measure learning organization dimensions is assessed in this study. The potential applicability of an established instrument to measure outcomes in healthcare settings may offer an additional resource for future research.

### Summary

This chapter has provided an introduction to evidence-based practice and its importance to the healthcare system. There is an identified lack of scientific studies providing information on what organizational infrastructure is needed to support acute care registered nurses in their beliefs about and implementation of evidence-based practice. It is believed that dimensions of a learning organization may provide the needed

infrastructure to support nurses' beliefs and implementation of EBP and subsequently, affect or improve patient outcomes. The LO may offer the greatest benefit through development of capacity for change and continuous improvement, which undeniably is needed to develop an EBP environment within the acute care setting.

From a pragmatic view, LOs offer a supportive infrastructure for the learning culture necessary to support nursing in their ongoing development of patient care based on evidence. The philosophy and principles of learning organizations provide for heuristically exemplary models for healthcare organizations and the supportive contextual infrastructure needed for evidence-based practice. Magnet hospitals are recognized as the current benchmark for positive professional nursing environment and quality patient care. Potentially, nurses working in certain types of hospitals may rate their organization different on the dimensions of the learning organization. There also is the prospect of identifying areas to improve and strengthen so that all hospital infrastructures may progress to become learning organizations.

## CHAPTER II: CONCEPTUAL FRAMEWORK

### Introduction

This chapter discusses the conceptual framework for the study. The model that guided data collection and analysis is described. The Learning Organization (LO) provided the theoretical underpinning of the study and the Dimensions of Learning Organization presented by Marsick & Watkins (1993, 1999) provided the conceptual model. Information on the definition and theoretical perspective related to the construct of the “learning organization” is presented.

### Learning Organization Definition and Theories

Organizational learning and learning organizations have been of interest to the business and management disciplines for almost forty years. There has been growing recognition of their importance and value but continued debate regarding definition (Argyris & Schon, 1996). There are five different types of definitions in the literature—philosophical, mechanistic, educational, adaptive, and organic (Wonacott, 2000).

The terms organizational learning and learning organizations were often used interchangeably in the literature until the mid-1990’s when some differentiation appears (Sun & Scott, 2003). Organizational learning became recognized as the more descriptive, developing from social and cognitive psychology and dealing mostly with learning process in the organization. The LO was viewed from a more practical focus and seen as prescriptive with the intent to change the behavior of the organization with the ability to learn.

Goh (2001) defines “organizational learning” from a capability perspective, as something inherent to all organizations and something that takes place in that organization. “Learning organization,” as viewed from a normative perspective, defines a particular type or form of organization that has certain characteristics that reflect the ability to adapt and survive in the competitive environment. LOs have the ability to transfer knowledge and the structures and strategies that encourage learning. Senge (1994) defined LO as organizations where people continually expand their capacity to create results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (p.3). Yeo (2005) differentiated between the two such that “organizational learning” is used to describe the process of learning and “learning organizations” refers to a type of organization rather than a process.

Besides different definitions, there are also a number of different theoretical views. The literature vacillates between labeling the “learning organization” as a concept or a construct. A single theoretical framework for either organizational learning or learning organizations is probably not feasible due to the different perspectives provided by the various disciplines that have each provided their own distinct ontological view (Easterby-Smith, 1997). The most dominant have been management science and organizational development, with some influence from strategic, production management, and cultural perspectives, and very minimally from the sociological perspective. The diversity and difficulty in operationally defining learning organizations provide some explanation as to why there continues to be a call for empirical, data-based

research particularly to determine impact on outcomes (Easterby-Smith, 1997; Ellinger, Watkins, & Bostrom, 1999; Starkey, 1998).

Various attributes and characteristics are used in conceptual discussions of learning organizations. Goh (2001) suggests five attributes of a learning organization: 1) clarity of mission and purpose, 2) shared leadership and involvement, 3) experimentation, 4) transfer of knowledge, and 5) teamwork and cooperation. Others have cited the characteristics of tension, systems, and culture as emerging concepts of the LO (Luthans, Rubach, & Marsnik, 1995). An inductively created typology included four distinct types of learning organizations: 1) organizational learning, 2) learning at work, 3) learning climate, and 4) learning structure (Ortenblad, 2002). Senge (1990, 1994, 2006) incorporates areas of: 1) shared vision, 2) mental models, 3) team learning, 4) personal mastery, and 5) system thinking.

Learning organization theory has been criticized for its lack of empirical research and development of adequate measuring instruments (Easterby-Smith, 1997; Goh, 2001; P.A.C. Smith & Tosey, 1999; Wonacott, 2000). Related to the measurement issue is the dilemma presented by level of analysis. The LO primarily is measured by individual members' perceptions of the learning culture in relation to an organizations' outcome variables. But it may be problematic not to take into account the theoretical perspective of the organizational context (Maria & Watkins, 2003). Thus, there is an indication for research using multi-organizational methodology.

LO theorists appear to agree on several points. One is that the learning organization has mechanisms to monitor the environment, demonstrate a capability to

respond and adapt to both internal and external stimuli, and have a culture that is not only result orientated, but also values learning and rewards progress (Lundberg, 1995). Many learning organization theorists liken learning organizations to organic systems (Lundberg, 1995; Yeo, 2005), a comparison that might appeal to healthcare system scientists. In fact, Senge (1999) suggests that the only way to sustain change is to think less like managers and more like biologists, viewing change as a generic life cycle. As in nature, all growth arises out of reinforcing both growth processes and limiting processes (Senge et al., 1999), another fitting analogy for healthcare.

#### Theoretical Framework

Senge's theory of learning organizations is the most popular, based on references found when reviewing literature on learning organizations. Further confirmation comes from the number of sales of *The Fifth Discipline*, as well as the updating and reprint of the book in 2006. Although the theory is logically appealing and developed based on research evidence, there has been minimal empirical work on the applicability and performance of Senge's theoretical framework.

The conceptual model for the proposed study is based on the theoretical framework for learning organizations developed by Watkins & Marsick (1993, 1999, 2003). The framework, which is based on research findings and academic discourse, discusses the learning organization as one that fosters "learning as a continuous, strategically used process—integrated with, and running parallel to, work. Learning results in changes in knowledge, beliefs, and behaviors. Learning also enhances organizational capacity for innovation and growth. The learning organization has

embedded systems to capture and share learning” (p.8-9). The level of learning is individual, team, and organization. The seven dimensions of the theory are: 1) Create continuous learning opportunities, 2) Promote inquiry and dialogue, 3) Encourage collaboration and team learning, 4) Establish systems to capture and share learning, 5) Empower people toward a collective vision, 6) Connect the organization to its environment, and 7) Use leaders who model and support learning at the individual, team, and organizational levels (Table 1).

TABLE 1: Definitions of Constructs for the Dimensions of the Learning Organization Questionnaire (Marsick & Watkins, 2003, p. 139).

Dimension	Definition
Create continuous learning opportunities	Learning is designed into work so that people can learn on the job; opportunities are provided for ongoing education and growth.
Promote inquiry and dialogue	People gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others; the culture is changed to support questioning, feedback, and experimentation.
Encourage collaboration and team learning	Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded.
Create systems to capture and share learning	Both high- and low-technology systems to share learning are created and integrated with work; access is provided; systems are maintained.
Empower people toward a collective vision	People are involved in setting, owning, and implementing a joint vision; responsibility is distributed close to decision making so that people are motivated to learn toward what they are held accountable to do.
Connect the organization to its environment	People are helped to see the effect of their work on the entire enterprise; people scan the environment and use information to adjust work practices; the organization is linked to its Communities
Provide strategic leadership for learning	Leaders model, champion, and support learning; leadership uses learning strategically for business results.

The theoretical framework was selected primarily because of its intuitive applicability to healthcare. There is comparative similarity of the seven elements included in the Dimensions of LO to the eight characteristics considered essentials of a magnet environment: (1) support for education, (2) working with other nurse who are clinically competent, (3) positive nurse-physician relationships, (4) autonomous nursing practice, (5) culture of concern for patients, (6) control of and over nursing practice, (7) perceived adequacy of staffing, and (8) nurse manager support (Kramer & Schmalenberg, 2004, 2005a, 2005b). (Table 2). EOM measures the conditions, attributes, and traits of a hospital organization that nurses working in Magnet hospitals identify as essential to quality patient care and nurse job satisfaction.

Watkins and Marsick's (1993, 1996) framework is described as one of the few that covers all levels of learning (individual, team, organizational) and system areas. The main dimensions of the LO are identified from the literature and integrated into a theoretical framework specifying relationships, and provide an action focus for practical implications (Yang, Watkins, & Marsick, 2004). In a typology of the learning organization, Watkins & Marsick's was found to be the only theoretical framework that incorporated all the current important aspects of the learning organization as a primary focus among twelve that were examined (Ortenblad, 2002). The theoretical framework resulted in the development of the Dimensions of Learning Organization Questionnaire (DLOQ) (Yang, Watkins, & Marsick, 2004) that was used in this study.

TABLE 2: Comparison of Dimensions of Learning Organizations and Essentials of Magnetism

Seven Dimension of LO	Eight Essentials of Magnetism
Create continuous learning opportunities	Support for education
Promote inquiry and dialogue	
Encourage collaboration and team learning	Working with other nurse who are clinically competent
	Positive nurse-physician relationships
	Perceived adequacy of staffing
Create systems to capture and share learning	
Empower people toward a collective vision	Autonomous nursing practice
Connect the organization to its environment	Culture of concern for patients
	Control of and over nursing practice
Provide strategic leadership for learning	Nurse manager support

#### Conceptual Model

The conceptual model for the study, based on the theoretical framework, proposes that the more positive the RNs' perception regarding their organizations' dimensions of a learning organization, the more positive their beliefs about evidence-based practice. Subsequently there would be an effect on their implementation of EBP. It was believed that the type of organization employing the acute care RN would affect their perception of the dimensions of the learning organization (Figure 1).

Learning organizations, magnet and VA hospitals appear to have some of the required elements for infrastructure support for evidence-based practice. In comparing some of the major organizational barriers related to RU and EBP, the LOs and Magnet hospitals evidence strong support for continuous learning, empowering staff, support from leadership, and team collaboration. The LO emphasizes a more system-wide approach, focusing on an interdisciplinary versus essentials of magnetism specific focus on nursing professional practice. The LO's include inquiry and dialogue described as encouraging questioning and experimentation, both necessary for research and an EBP

culture which is not mentioned as part of the essentials of magnetism. Technology systems are mentioned as important to share learning integrated with the work environment in learning organizations, but technology is not addressed as part of essentials of magnetism. VA hospitals are known to have a strong information technology system, support for continuous learning, and have an integrated approach to patient care. Thus, all types of organizations share some commonality, yet demonstrate differences.

Dependent variables proposed for the study model include acute care nurses' beliefs about EBP based on their responses to the EBP Beliefs Scale and implementation practice over the past 8 weeks based on their responses on an EBP Implementation Scale. Acute care nurses that rate their organization higher in the dimensions of a LO are hypothesized to have more positive beliefs regarding EBP and potentially, may report higher numbers related to their implementation of EBP.

The conceptual relationships in the study are described through individual perceptions but allow for inferring some descriptions regarding the organizational types. Organizations can only learn from and through individuals and therefore organizational learning is embedded and based on individual learning (Luthans et al., 1995). Paradoxically, organizational learning occurs through retaining learning by the system and culture of the organization to enable transfer of ideas to individuals. Consequently, it would seem that nurses with clinical embedded knowledge and expertise have greater potential of advancing professional nursing practice within the learning organization, promoting the ability of nursing to develop novices to experts (Benner, 1984). However,

the organization needs to have an infrastructure to develop and retain the learning to support transfer of ideas to individuals.

### Summary

Different definitions, perspectives, and theories regarding learning organizations and organizational learning were presented in this chapter. Learning organization theory is heuristically compatible and applicable to healthcare organizations. The theoretical approach developed by Watkins & Marsick (1993, 1996, 2004) was described, as well as support and rationale presented for use of the conceptual framework for this study. Support was presented to explore the relationships among the nurses' responses regarding EBP beliefs and implementation to their perceptions of the learning organization and their employment in different types of hospitals. Different types of organizations and their potential relationship to the study were compared and contrasted.

## CHAPTER III: METHODOLOGY

### Introduction

The proposed study was a descriptive survey design using established questionnaires. Variables related to dimensions of a learning organization were explored in relation to the registered nurses' beliefs about and implementation of EBP within the acute care setting. The impact of the type of hospital (magnet-designated, non-magnet, or Veterans Administration (VA)) was explored as well as the fit of the data. Data were examined using both descriptive and inferential statistical analysis.

### Methods

#### *Setting and Sample*

The setting for the study included six acute care hospitals located in a southwestern state. Two hospitals with magnet status, two with non-magnet status and two Department of Veterans Affairs Medical Centers (VAMCs) were invited to participate. Five sites were located in the one city. One VA from a neighboring city was invited to participate to meet the inclusion criteria for two VAMC sites.

The target sample for the study was registered nurses involved directly and indirectly in the acute care of hospitalized adult patients. Inclusion criteria included individuals actively employed by the organization as a registered nurse, either full or part-time, and willing to complete the questionnaires. Nurses not employed by the organization (e.g. agency nurses, traveling, and student nurses) were excluded. All nurses employed in the adult acute care setting were invited to participate. Since VAMCs do not provide obstetrical, neonatal, and pediatric services, nurses from these areas were

purposely omitted in recruitment at the other four hospitals. A question in the survey asked respondents to differentiate those who were in direct patient care versus those who had other job responsibilities such as managerial or supportive functions.

#### *Data Collection Plan*

A request was submitted to each organization seeking permission to utilize the organization as a study site. The request asked for the name of a contact within the organization that could serve as a facilitator to assist with distribution of questionnaires, and information about the organizational process to obtain approval for Human Subjects Protection. Upon receipt of letters of support, an application was made to the University of Arizona's Institutional Review Board (IRB) to obtain approval for human subject use. Application and approval for human subject participation was subsequently obtained from each facility as directed per each individual site requirement.

Upon receipt of IRB approvals, arrangements were made with each site to allow the PI to distribute the questionnaires as outlined per their sites IRB approval. Boxes were made available in common nursing areas to allow nurses to deposit the completed questionnaires. The boxes remained in each area for approximately 2 weeks, with a reminder call placed to the site liaison to encourage staff to participate during the interim. Staff was encouraged to complete the questionnaire during their work time and informed that the expected time for completion would be approximately 10-15 minutes.

Recruitment strategies included offering a coupon to be completed by each participant for entry into a drawing for a \$50 gift certificate. Each facility had one individual drawn from the pool of responders. The coupon was provided separate from

the questionnaire to avoid linkage in any way to the respondent. Individuals who refused to complete the questionnaire were also invited to participate in the drawing to avoid any appearance of coercion. No effort or plan was made to screen entrants and limit drawing to only those who completed the questionnaire. The coupon stated “Thank you for your participation.”

Data collection procedures were completed over a 12 week time period. Response rates were calculated for each facility based on the number of nurses provided with the questionnaires, total number of respondents and the number of eligible respondents. The goal was for a  $\geq 25$ -30% response rate from each organization. Facilities that did not meet the response rate goal had the recruitment phase extended although this was found to not significantly increase the number of returns. As data were collected, they were entered into a SPSS database and original questionnaires maintained in a secure, locked file cabinet with access restricted to the PI.

### *Instrumentation*

The three instruments used for data collection included the Dimensions of Learning Organization Questionnaire (DLOQ)(Yang, Watkins, & Marsick, 2003), Evidence-Based Practice (EBP) Beliefs Scale (Melnyk & Fineout-Overholt, 2003), and the Evidence-Based Practice (EBP) Implementation Scale (Melnyk & Fineout-Overholt, 2003). (Appendix A). Following is a description of each instrument.

The “Dimensions of Learning Organization Questionnaire” (DLOQ) (Watkins & Marsick 1993, 1996) previously was applied by business management and human resources in research to link organizational performance and financial and knowledge

outcomes (Ellinger, Ellinger, Yang, & Howton, 2002). Analysis of seven studies that have used the DLOQ, with a total N=3253, provided support for the proposed relationship between performance and dimensions of the learning organization (Marsick & Watkins, 2003). The instrument offered the potential means for measuring the relationship of learning organizations to nurses' beliefs about, and their implementation of EBP.

DLOQ is a self-administered instrument developed based on Watkins and Marsick's (1993, 1996) theoretical framework of the learning organization (Marsick & Watkins, 2003). The learning organization is abstract and cannot be directly measured but the evidence indicated that the DLOQ produced an adequate measurement of the construct of LO (Yang, 2003). Originally, the DLOQ was designed with 43 questions, but a shorter version of 21 questions was evaluated as psychometrically sound and applicable for exploratory research. The questions are rated on a 6-point Likert scale with (1) for almost never to (6) as almost always. Three questions measured each of the seven variables: 1) continuous learning; 2) inquiry and dialogue; 3) collaboration and team learning; 4) create systems; 5) empower people; 6) connect the organization; and 7) strategic leadership (Table 2).

The shorter version has been shown to have better psychometric properties than the 43-question version (Yang, 2003). Reliability estimates for the seven dimensions range from .68 to .83 for coefficient alpha and .83 to .93 under the congeneric model. A reliability estimate for the 21-item scale is .93. A factor analysis found adequate loading for the seven specified variables.

The EBP Beliefs Scale includes 16 statements about their individual beliefs regarding EBP. Respondents are asked to indicate their level of agreement with each statement. The five-point Likert response scale ranges from strongly disagree to strongly agree.

The EBP Implementation Scale includes 18 questions related to the respondents' personal implementation of nursing EBP. Respondents were asked to respond to the best description of how often each item has applied to them in the past 8 weeks. Response selections were: 0 times, <3 times, 5 times, >5<8 times, and >8 times.

Both of the aforementioned scales were developed by Melnyk & Fineout-Overholt (2003). Preliminary use of the instruments found that both are single-factor scales. The Beliefs Scale (n=333) had a single factor with an eigenvalue of 6.44 that accounted for 40% of the variance. Factor loadings were <.5 except for the reverse scored items, which are now being investigated. The Implementation Scale (n=319) had a single factor with an eigenvalue of 10.53, which accounted for 58% of the variance. All the factors loaded >.6. Both questionnaires have alpha's of greater than .80 (Fineout-Overholt, 2006).

Demographic questions were included as part of the questionnaire to elicit information related to characteristics of the RN participants including age, gender, education, race, nurse experience, type of job position, years of nurse experience, years employed at the facility and in current work setting, employment and position status and kinds of exposure to EBP. Information that is available to the public regarding each

hospital was not included. The characteristics included for this variables included hospital designation of magnet, non-magnet or VA.

### *Data Analysis*

Data were entered into a SPSS database, cleaned and verified, and descriptive statistics performed to evaluate for skewness, outliers, and issues with distribution. Missing data were evaluated for frequency and type. Data were examined for applicability to the assumptions of the planned data analysis techniques.

The questionnaire data were examined for reliability using Cronbach's alpha. Confirmatory factor analysis was conducted to examine validity. A comparison was made of responses of nurses employed in the three different types of hospitals: magnet-designated, non-magnet, and VA. The following is a description of analyses based on the four research questions:

Research Question 1 (RQ1): What is the relationship of the characteristics of the learning organization to registered nurses beliefs regarding EBP?

Research Question 2 (RQ2): Is there an impact of EBP beliefs on RN implementation of EBP? Each was analyzed using multiple regressions. Significance for beta entry was set at  $\leq .05$ .

Research Question 3 (RQ3): Is there a significant difference in nurses' perception of learning organizations based on their hospital employment in either magnet-designated, non-magnet or VA? Data were analyzed using ANOVA with the dimensions of learning organizations as the dependent variable and the type of hospitals as the independent variables.

Research Question 4 (RQ4): Are the relationships of the dimensions of the LO, EBO beliefs and EBP implementation the same within each organization type? Data were analyzed using multiple regression and beta weight significance  $\leq .05$  using the type of hospital as the grouping variable.

#### Human Subjects Protection

Human subjects protection was approved through the University of Arizona Institutional Review Board (IRB). (Appendix C.). Approval for human subjects' participation was obtained from each of the six study sites per their organizations' specific requirements. A slight modification was made to the demographics and removal of DLOQ introductory information based on site requests. IRB approval of the revised questionnaire was obtained prior to study initiation. Since VA employees are unionized, approval from the American Federation of Government Employee (AFGE) representatives was obtained. Data were stored in a secured and locked location. Cards, with employee names submitted for the drawing, were maintained separate from questionnaires and shredded upon deliverance of the gift certificate. Participation was volunteer based. Each participant was provided with a disclaimer letter describing the risks and benefits of participation, their rights as research participants, and contact information for further questions or concerns.

#### Summary

This chapter outlined the methodological approach used for the study to research the relationship between dimensions of the LO and the RN EBP beliefs and implementation, as well as relationships of different types of hospitals to dimensions of

LOs. Site selection, target population, recruitment plan, data collection procedures, and data analysis are described. Information on the instruments for data collection is provided, along with the available psychometrics from previous studies. Human subject protection procedures were described.

## CHAPTER IV: RESULTS

### Introduction

The purpose of this chapter is to describe the results of the study. Descriptive and inferential statistical techniques were applied to examine the data. Demographic data are provided to describe the sample. The psychometric analysis of the reliability and validity are presented for the three separate instruments. Each of the four research questions are addressed, including statistical analyses and findings.

### Results

#### *Sample*

The sample and the results of the descriptive analysis related to responses to the demographic portion of the questionnaire (Appendix A) are described in this section. Questionnaires were distributed to 1750 registered nurses employed within six participating hospitals located in one southwestern state. Return from all sites totaled 592 questionnaires for an overall average of 34%, range of 27-46% across the six hospitals. Hospitals were purposely selected in order to have two hospitals representing each of three different organizational types: VA, magnet-designated, and non-magnet.

Of those who responded to the demographic questions regarding gender, 519 (89.9%) were female and 58 (10.1%) were males, 328 (57.7%) indicated they were married and 240 (42.3%) were currently not married. The majority of the participants 476 (84.7%) that responded to racial/ethnicity background indicated white, followed distantly by 34 (6%) indicating Hispanic/Latino. The mean age of respondents was 43.64 years (S.D.=10.83, range= 20-75), had worked as a nurse for a mean of 15.42 years

(S.D.=11.74, range=.17-53) and had worked at their current hospital for a mean of 7.04 years (S.D. 7.70, range=.01-39). The majority reported working full-time 509 (88.4%), indicated their highest education degree as Baccalaureate (44.1%) and three quarters (76.3%) were employed as a staff nurse. Table. 3 displays the sociodemographic characteristics by the three different organization type. Note the differences among the participants who responded based on the type of organization. The only two areas found to not be significant were years of employment at their current hospital and marital status.

The demographic section in the questionnaire asked respondents to choose a title from the provided list that best corresponded to their principal nursing position. The 26-item list, which also included a selection for “no position title” and “other” was modified from the list included in the National Sample Survey of Registered Nurses (Spratley, Johnson, Sochalski, Fritz, & Spencer, 2000). Responses were diverse with some titles selected by a small number. Further review of the responses indicated that the titles could be collapsed into seven different categories to better describe the sample. Three quarters of the respondents 432 (76.3%) indicated their title as staff nurse, followed by those indicating titles of charge nurse/team leader 49 (8.7%). There was a significant difference in selection of category of title among the three different organizational types  $\chi^2=22.847$ ,  $df=12$ ,  $p\leq.05$  (Table. 4). The majority indicated they spent more than 50% of their time in direct patient care 484 (81.8%), which was not significantly different among the hospital types. A third (30.4%), 170 of the nurses reported they worked in general/specialty units, a quarter (25.2%) 141 nurses reported working in intensive care units and 75 (13.4%) reported OR/PACU as their patient care unit.

TABLE 3: Sociodemographic Characteristic of Study Participants

	Magnet- Designated Hospitals	Non-Magnet Hospitals	VA Hospitals	*Analysis of Differences
Age, M ± SD (N=514)	43.46 ± 11.04 (n=197)	41.21 ± 10.53 (n=197)	47.93 ± 9.66 (n=120)	F=15.237 p≤.01
Years worked as RN M ± SD (N=556)	15.49 ± 12.20 (n=217)	13.26 ± 10.86 (n=209)	18.78 ± 11.61 (n=130)	F=9.119 p≤.01
Years employed at current hospital M ± SD (N=562)	7.23 ± 7.77 (n=223)	6.20 ± 7.37 (n=209)	8.05 ± 8.02 (n=130)	ns
Gender n (%)				$\chi^2=12.888$ , df=2, p≤.01
Female	214 (93.9)	194 (90.7)	111 (82.2)	
Male	14 (6.1)	20 (9.3)	24 (17.8)	
Marital Status n (%)				ns
Married	138 (61.9)	114 (53.8)	76 (57.1)	
Not Married	85 (38.1)	98 (46.2)	57 (42.9)	
Ethnic/Racial n (%)				$\chi^2=24.698$ , df=10, p≤.05
Am. Indian or Alaskan	2 (.9)	2 (.9)	2 (1.5)	
Asian	7 (3.2)	20 (9.5)	5 (3.8)	
Black or Afro-Am	5 (2.3)	3 (1.4)	3 (2.3)	
Hawaiian/ Pacific Islander	0 (.0)	2 (.9)	1 (.8)	
White	203 (91.9)	165 (78.2)	108 (83.1)	
Hispanic/Latino	4 (1.8)	19 (9.0)	11 (8.5)	
Highest Ed Degree n (%)				$\chi^2=32.499$ , df=6, p≤.01
Diploma	21 (9.2)	19 (8.9)	6 (4.5)	
Associate Degree	98 (42.8)	73 (34.3)	42 (31.8)	
Baccalaureate Degree	91 (39.7)	108 (50.7)	54 (40.9)	
Master's Degree	19 (8.3)	13 (6.1)	30 (22.7)	
Work Status n (%)				$\chi^2=21.975$ , df=2, p≤.01
Full-time	183 (81.0)	195 (91.1)	131 (96.3)	
Part-time	43 (19.0)	19 (8.9)	5 (3.7)	

\*Chi-square value comparison on nominal and ordinal variables, ANOVA test for continuous variables

TABLE 4: Categories of Position Titles Per Type of Organization

	Magnet-Designated Hospitals		Non-Magnet Hospitals		VA Hospitals	
	n	(%)	n	(%)	n	(%)
Administrator	12	(5.4%)	5	(2.4%)	5	(3.7%)
Manager	8	(3.6%)	6	(2.9%)	7	(5.2%)
Charge nurse/Team leader	24	(10.8%)	10	(4.8%)	15	(11.2%)
Staff Nurse	167	(75.2%)	174	(82.9%)	91	(67.9%)
Specialty: CNS, Infection Control, QI, clinician, care coordinators, case managers	8	(3.6%)	11	(5.2%)	11	(8.2%)
Education	3	(1.4%)	2	(1.0%)	1	(.7%)
Other	0	(.0%)	2	(1.0%)	3	(3.0%)

The demographic section requested participants to respond to what types of exposure they have previously had to the concept of evidence-based practice including a response that they “do not know much about EBP.” Of those responding, 246 (41.6%) reported learning about EBP in nursing school, Sixty-five (11%) noted they had taken a continuing education course in EBP, a third (29.4%) 174 had attended a hospital EBP program/session and a quarter (24.7%) 146 self-taught EBP by reading articles, books and from peers. A quarter (24.8%), 147 noted they do not know much about EBP. Comparison of responses to exposure to the concept of EBP was made across the three organizational types (Table 5). Significant differences among the organizations in those who responded to having attended a hospital EBP program/session  $\chi^2=41.288$ ,  $df=4$ ,

$p \leq .01$ , self-taught EBP  $\chi^2 = 20.060$ ,  $df = 4$ ,  $p \leq .01$ , and those who reported that they did not know much about EBP  $\chi^2 = 15.248$ ,  $df = 4$ ,  $p \leq .01$ . There was no significant difference found among organizations in responses regarding those that learned about EBP in nursing school and those who took a continuing education in EBP.

TABLE 5: Exposures to the Concept of EBP per Organization Type

	<b>Magnet- Designated Hospitals</b> n (%)	<b>Non-Magnet Hospitals</b> n (%)	<b>VA Hospitals</b> n (%)
Learned about EBP in nursing school	92 (39.1%)	105 (47.7%)	49 (35.8%)
Took a continuing education course in EBP	26 (11.1%)	18 (8.2%)	21 (15.3%)
Attended a hospital EBP program/session	97 (41.3%)	32 (14.5%)	45 (32.8%)
Self-taught EBP (books/articles/peers)	44 (18.7%)	49 (22.3%)	53 (38.7%)
Do not know much about EBP	55 (23.4%)	71 (32.3%)	21 (15.3%)

#### *Instrument Reliability and Validity*

Three instruments (Appendix A) were used in this study. The Dimensions of Learning Organization Questionnaire (DLOQ) (Watkins & Marsick, 1993, 1996, 2003), the EBP Beliefs Scale (Melnik & Fineout-Overholt, 2003) and the EBP Implementation Scale (Melnik & Fineout-Overholt, 2003) reported psychometric results obtained from past use of the instruments. The EBP Implementation and EBP Beliefs Scale were

previously administered to nurses and reported adequate psychometric properties. The DLOQ has been used to measure learning organization dimensions in the business community, has demonstrated validity and reliability, but there was no reported use of the instrument with nurses. This section presents the reliability and validity testing conducted on each instrument. Calculations were accomplished using the statistical analytical computer software program, SPSS v. 12. Among the three questionnaires, some staff chose to omit responses to various items and sometimes, an entire instrument. Analysis was conducted using list wise deletion on the variables, resulting in the different  $n$  reported in the following description of the reliability and validity of each instrument.

*Dimensions of the Learning Organization Questionnaire (DLOQ)*

The DLOQ, a 21-item instrument was used to measure the seven dimensions of a learning organization (Marsick & Watkins, 2003; Yang et al., 2004). Reliability for the instrument was examined using Cronbach's alpha, item analysis, and inter-item correlations as well as subscale reliability. Cronbach's  $\alpha$  for the entire instrument ( $n=530$ ) was .96, slightly higher than the .93 reported previously (Yang, 2003), Ninety-eight percent of the inter-item correlations were between .30-.70, indicating substantive relationship without redundancy for internal consistency of items ((Ferketich, 1990). Corrected item-total correlations were  $>.5$  indicating acceptable reliability of the instrument for this sample. The recommended criterion (Nunnally, 1978) is for 50% of inter-item correlations within subscales and total scales range from 0.30-0.70 and item-to-total and subscale-to-total correlations range between .50 and .70.

Mean scores were computed for each of the seven subscales. Likert-type responses were on a scale of 1 indicating almost never up to 6 indicating almost always, thus higher scores suggested a more positive perception of the hospital as a learning organization. Reliability statistics were applied to the subscales. Cronbach  $\alpha$  for the combined instrument subscales (n=561) was .93, scales resulted in inter-item correlations  $>.3$  and corrected item-total correlations all  $>.6$ . Cronbach's  $\alpha$  for the seven separate subscales ranged from .77 for "Continuous Learning" to .92 for "Leadership." The results suggest that the DLOQ performed reliably for the current study. Factor analysis was undertaken to assess the validity of the instrument. A principal component analysis resulted in 2 factors with eigenvalues  $>1$ , with 11.78 on component 1 and 1.52 on Component 2 explaining 63% of the variance. This may reflect the underlying structure of the instrument related to the univariate construct of learning organizations. Extraction commonalities were all  $>.5$ . Since there was a strong theoretical basis and previous psychometrics to support the seven subscales of the DLOQ, each was tested separately using principal component factor analysis, subsequently explaining a variance of 69% or greater for each subscale.

#### *EBP Implementation Scale*

The EBP Implementation Scale is comprised of 18 questions asking respondents to self-report their use of EBP within the last 8 weeks. Choice of responses are on a scale of 0 to 4 with responses indicating 0 times,  $< 3$  times, 5 times,  $>5<8$  times and  $>8$  times, thus higher numbers indicate more frequent implementation of EBP. Previous results with the instrument reported it as a single factor with an eigenvalue of 10.53, accounting

for 58% of the variance and Cronbach  $\alpha$  of  $>.8$  (Fineout-Overholt, 2006). Cronbach's  $\alpha$  for this sample ( $n=493$ ) was  $.94$ , all but 6 inter-item correlations met the criteria of  $.30-.70$  and all corrected item-total correlations were between  $.30$  and  $.70$  evidencing adequate reliability for this study. Principal component analysis resulted in loading on one factor, eigenvalue = $9.16$ , explaining 51% variance.

### *EBP Beliefs Scale*

The EBP Beliefs Scale is made up of 16 statements about EBP to which participants are asked to report their level of agreement. The Likert scale is from 1 to 5 relating to strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree with a higher score indicating a more positive indication in beliefs related to EBP. Two negatively worded items, 11 and 13, required reverse scoring to achieve consistency with higher numbers indicating positive beliefs. A previous report about the instrument's psychometrics indicated a Cronbach's  $\alpha$  of  $>.8$ , a single factor scale with an eigenvalue of  $6.44$  accounting for 40% of the variance and ongoing investigation related to results of factor loadings  $<.5$  except for the reverse scored items (Fineout-Overholt, 2006).

The initial reliability statistics for this study ( $n=556$ ) resulted in a Cronbach's  $\alpha$  of  $.89$ . The inter-item correlations matrix indicated 84% met the criteria of  $.30-.70$ . Items 3, 11, and 13 had  $>50\%$  that did not meet this criteria. These three items were also  $<.5$  on the corrected item-total correlation. The principal component factor analysis indicated one factor with an eigenvalue of  $6.614$  explaining a total variance of 41%. Three other factors had eigenvalues of  $>1.00$ . Additional analysis was conducted after removal of the problematic items, 11 and 13. There was a modest change with loading on one factor

resulting in an eigenvalue =6.5 to explain 47% of the variance. Cronbach's  $\alpha$ =.90 with the 14 item scale. An exploratory factor analysis was performed on the 16-item scale to further explore and interpret the underlying factors. Using a varimax rotation, loading was obtained for four factors with adequate loadings to identify four subscales in the instrument (Table 6.) The subscales were labeled: 1) Knowledge beliefs, 2) Value beliefs, 3) Resource beliefs and, 4) Time and difficulty beliefs. Inter-item correlation and corrected inter total correlation was adequate for each of the four subscales. Cronbach's  $\alpha$  were a little lower for the subscales  $\alpha$ = .79, .87, .84 and .78 respectively but still demonstrated adequate reliability for the study. Subsequently, the four subscales were utilized in analyses of the research questions.

#### *Research Question 1*

The first question explored relationships of the characteristics of the learning organization to registered nurses beliefs regarding EBP. RNs' responses to the EBP Beliefs Scale were analyzed using the four subscales identified during psychometrics analysis of the instrument. Using the seven subscales of the LO, a multiple regression analyses was performed entering all the variables simultaneously, to examine its relationship with each of the four newly identified EBP Beliefs subscales. Co linearity diagnostics did not indicate any significant issue with multicollinearity. LO perceptions were noted to be significant predictors although with relatively small  $R^2$  on Knowledge

TABLE 6: Rotated Factor Loadings for EBP Beliefs Scale

Subscales	Factor Loadings			
	1	2	3	4
Items				
<i>Knowledge Beliefs</i>				
2. I am clear about steps of EBP	.738			
3. I am sure I can implement EBP	.513			
10. I am sure about how to measure the outcomes of clinical care	.727			
14. I know how to implement EBP sufficiently enough to make practice changes	.790			
15. I am confident about my ability to implement EBP where I work.	.720			
<i>Value Beliefs</i>				
1. I believe EBP result in the best clinical care for patients	.803			
4. I believe critically appraising evidence is an important step in the EBP process	.740			
5. I am sure EB guidelines can improve clinical care	.848			
9. I am sure that implementing EBP will improve the care that I deliver to my patients	.819			
16. I believe the care I deliver is evidence-based	.451			
<i>Resource Beliefs</i>				
6. I believe that I can search for the best evidence to answer clinical questions in a time efficient way			.673	
7. I believe that I can overcome barriers in implementing EBP			.828	
8. I am sure I can implement EBP in a time efficient way			.857	
12. I am sure that I can access the best resources in order to implement EBP			.500	
<i>Difficulty and Time Beliefs</i>				
11. I believe that EBP does not take too much time				.879
13. I do not believe that EBP is difficult				.908

Beliefs ( $n=549$ )  $R^2$  of .06 ( $F=4.71$ ,  $p \leq .01$ ), Value Beliefs ( $n=550$ )  $R^2$  of .11 ( $F=9.26$ ,  $p \leq .01$ ), and Resource Beliefs ( $n=550$ )  $R^2$  of .14 ( $F=12.04$ ,  $p \leq .01$ ). The only significant standardized coefficient in these variables was for “connect the organization” regressing onto value beliefs ( $Beta = .22$ ,  $p \leq .01$ ). Regression of LO on nurses responses to on the EBP subscale, EBP difficulty ( $n=542$ ) was not significant although the standardized coefficient for “connect the organization” ( $Beta = .22$ ,  $p \leq .01$ ) was significant (Table 7).

### *Research Question 2*

The analysis for question 2 was conducted similar to that for question 1. Data were explored to determine if there was an impact of EBP beliefs on RN implementation of EBP. A multiple regression was performed entering all variables simultaneously using the four subscales of the EBP Beliefs scale as predictors on the dependent variable of EBP implementation ( $n=543$ ). This yielded significant results, with an  $R^2$  of .23 ( $F=40.14$ ,  $p \leq .01$ ) which indicates that EBP beliefs may contribute some impact on RN EBP implementation. Significant standardized coefficients were demonstrated for the subscales labeled Knowledge ( $Beta = .32$ ,  $p \leq .01$ ), Resources ( $Beta = .13$ ,  $p \leq .01$ ) and Difficulty ( $Beta = .10$ ,  $p \leq .01$ ). Beta weights for Belief Values were not statistically significant (Table 7).

### *Research Question 3*

The third question asked if there were significant differences in nurses' perceptions of learning organizations based on their employment in either magnet, non-magnet, or VA hospitals. To answer this question, a one-way ANOVA was performed. The results indicated a significant difference among the three organizational types in all

seven dimensions of the learning organization (Table 7). It is important to note that the Levene Statistic was significant ( $p < .05$ ) in every dimension except for “inquiry and dialogue” and “team learning” indicating violation of the assumption of homogeneity of variance raising some question as to the accuracy of these results. This was not an unexpected finding based on the difference in sample size for the VA compared to the two other organizational types and early indication of sample differences when analyzing the descriptive statistics of the sample.

TABLE 7: Regressions Analyses Results for Research Question 1 and Question 2.

Dependent Variable	Independent Variable	n	R <sup>2</sup>	RNs		Beta
				p		
Knowledge Values	LO	549	.06	.01		
	LO	550	.11	.01		
	<i>Org connect</i>			.01		.22
Resources	LO	550	.14	.01		
Difficulty	LO	542	ns	ns		
	<i>Org connect</i>			.01		.22
Implementation	Beliefs	543	.23	.01		
	<i>Knowledge</i>			.01		.32
	<i>Values</i>			ns		ns
	<i>Resources</i>			.01		.13
	<i>Difficulty</i>			.01		.10

Scheffe post-hoc analysis was run to assess where the significant differences were located. There was a significant difference ( $p < .05$ ) between the VA hospitals and both the magnet and non-magnet in all seven dimensions. The only dimension in which all three types differed significantly ( $p < .05$ ) was in “connect the organization to its environment.” To determine if there was a difference between the magnet and non-magnet when VA organizations were excluded, a two-tailed  $t$ -test for independent groups was performed. The two tailed  $t$ -test again indicated a significant difference in the dimension of “connect

the organization to its environment” ( $t = -2.89, df=447, p \leq .01$ ) but in addition, there was a significant differences in the dimensions of “continuous learning” ( $t = -2.09, df=452, p \leq .05$ ).

#### *Research Question 4*

The final research question explored whether the relationships of the dimensions of the LO, RN’s EBP beliefs and RN EBP implementation were the same within each organizational type. Multiple regressions were performed on the data for each of the three different organizational types. The regressions that were significant  $p < .05$  are presented in Table 8. EBP Beliefs and EBP Implementation were consistent in both the total model and the different organizations types.

TABLE 8: Results of One-Way ANOVA

Dimensions of LO	Magnet- designated		Non-Magnet		VA		<i>F</i>	$\rho$
	<i>n</i>	<i>M</i> ± <i>SD</i>	<i>n</i>	<i>M</i> ± <i>SD</i>	<i>n</i>	<i>M</i> ± <i>SD</i>		
Continuous Learning	235	4.66 ± .86	219	4.48 ± .89	137	4.18 ± 1.00	11.73	.01
Inquiry and Dialogue	235	4.09 ± .90	218	4.03 ± .99	136	3.61 ± 1.04	11.20	.01
Team Learning	233	4.32 ± .97	208	4.09 ± .94	135	3.57 ± 1.10	24.69	.01
Systems	230	4.21 ± .89	215	4.07 ± 1.05	136	3.56 ± 1.12	18.35	.01
Empowerment	233	4.10 ± 1.00	218	3.99 ± 1.07	136	3.31 ± 1.29	24.36	.01
Organizational Connection	232	4.42 ± .98	217	4.14 ± 1.07	135	3.48 ± 1.25	32.35	.01
Leadership	235	4.51 ± .96	218	4.39 ± 1.13	134	3.89 ± 1.29	13.88	.01

TABLE 9: Regression Analyses Results for Different Organizational Types

Dependent Variable	Independent Variable	Magnet Designated				Non-Magnet				VA			
		n	R <sup>2</sup>	p	Beta	n	R <sup>2</sup>	p	Beta	n	R <sup>2</sup>	p	Beta
Implement	Beliefs	215	.20	.01		202	.30	.01		126	.25	.01	
	<i>Knowledge</i>			.01	.34			.01	.41			ns	
	<i>Difficulty</i>			ns				ns				.01	.27
Knowledge	LO	222	.17	.01		198	ns	ns		129	.16	.01	
	<i>Dialogue</i>			ns				ns				.01	-.34
	<i>System</i>			.01	.26			ns				ns	
	<i>Empower</i>			.01	.41			ns				ns	
Values	LO	222	.19	.01		197	.09	.01		131	.12	.01	
	<i>Org connect</i>			.02	.29			.01	.32			.01	.47
Resources	LO	222	.12	.01		198	.13	.01		130	.29	.01	
	<i>Dialogue</i>			ns				ns				.03	-.24
	<i>Team</i>			ns				ns				.04	.26
	<i>Empower</i>			.01	.33			ns				ns	
	<i>Leadership</i>			ns				ns				.01	.31
Difficulty	LO	220	.12	.01		195		ns		127		ns	
	<i>Org connect</i>			.01	.48			ns				ns	
	<i>Leadership</i>			.02	-.23			ns				ns	

Regression of Beliefs on Implementation explained 23% for all the nurses but varied slightly across the different hospital types, Magnet-designated 20%, Non-Magnet 30% and VA 25%. In the full model analysis, the independent variables of knowledge, resources and difficulty had significant beta weights. Individual type analysis resulted in only knowledge being significant for magnet-designated and non-magnet, while difficulty was significant for the VA.

Learning Organization variables regressed onto Knowledge Beliefs presented only a slight influence of 6% in the full model. It was not a predictor in the non-magnet organizations but demonstrated similar results in the Magnet ( $R^2=.17$ ) and VA ( $R^2=.16$ ) organizations. Different variables of the LO were found to be different amongst the two. In the Magnet-designated, System and Empowerment were significant but in the VA it was Inquiry and Dialogue (Beta= -0.34,  $p \leq .00$ ).

Regression of LO variables on Value Beliefs presented a small but similar results in both the full model and the individual organization analysis. In the full model, 11% of Value Beliefs were explained by LO variables with again variation across the three different types of organizations with 19% explained in Magnet-designated 12% in VA hospitals and 9% in non-magnet. The independent variable of “connect the organization” was significant in all three and in the full model analyses.

The regression of LO variables with Resource Beliefs was significant in both the full model and the individual organization analyses. In the full model analysis, 14% of the variance was explained by the LO with similar results in both Magnet 12% and non-

magnet 13% but VA organizations resulted 29%. In magnet hospitals, Empower had a significant beta coefficient but in the VA it was Inquiry and Dialogue with a inverse relationship, plus positive relationships with team learning and leadership.

Regression of the LO variables with EBP Difficulty Beliefs was not significant in the full model analysis. In the analysis of the different organizational types, there was significance for the Magnet-designated hospitals, explaining 12% of the variation. The full model indicated significance for the variable of “connect the organization” which was also demonstrated in the magnet-hospital, as well as an inverse relationship with leadership.

Data analysis resulted in some similarities in the full analysis and the different organizational types in overall presentation. Examining data results from each individual organizational type demonstrates some emerging differences. The most pronounced disparity was noted related to influence of the LO regressed on nurses EBP Beliefs.

### Summary

This chapter presented the results of the study. Focus was on three areas, the sociodemographics of the participants, reliability and validity of the data collection instruments, and results specific to each of the four research questions. Descriptions were provided on the statistical analysis, as well as the detailed findings.

## CHAPTER V: CONCLUSION

### Introduction

This chapter discusses findings and implications of the study. First, a brief discourse is presented on the findings related to analysis of the sample and psychometrics of the instruments. Each of the four research questions is discussed. Following, limitations of the study are presented. The chapter concludes with suggestions for future research.

The purpose of this research was to identify the relationship between the dimensions of a learning organization as perceived by registered nurses within the context of the acute care hospital and their beliefs and implementation of evidence-based practice. Different organizational contexts were explored, including magnet-designated, non-magnet, and VA medical centers. The four research questions addressed in the study were:

1. What is the relationship of the characteristics of the learning organization to registered nurses beliefs regarding EBP?
2. Is there an impact of EBP beliefs on RN implementation of EBP?
3. Is there a significant difference in nurses' perception of learning organizations based on their employment in either magnet, non-magnet, or VA hospital?
4. Are the relationships of the dimensions of the LO, RN's EBP beliefs and RN EBP implementation the same within each organizational type?

## Discussion of Findings

### *Sample*

Differences among the sample of nurses responding from the specific type of organizations emerged in the descriptive statistical analyses. The VA nurse on the average was older ( $47.9 \pm 9.7$ ), had worked more years as an RN ( $18 \pm 11.6$ ) and had obtained a baccalaureate or higher degree (64%). A larger proportion of males responded (18%) and the majority of the nurses worked full-time (96%). This was in significant contrast to those responding from the other two types of organizations, where the average age was 42 years with 14 years of RN experience. A smaller percentage of males responded (7%) and on the average, a fewer proportion reported they had a baccalaureate degree or higher (52%).

Because the sample was smaller from the combined VA organizations, further investigation was done to determine the representativeness of the sample to the VA nursing workforce. Information from the VA Office of Nursing Services reported VA RNs on the average are 49 years of age, 63% have a bachelor degree or higher, and 15% are males (Weston, 2007) confirming the VA study sample as comparative. The sample from the other two types of organizations was compared to the reported data from the year 2000 survey of nurses. The report indicated that 5% of the nursing population was male, 28% worked part-time and the average age of nurses working in the hospital was 42 years of age (Spratley et al., 2000). Only an average of 14% of the nurses worked part-time in the current study.

Clearly, difference in the workforce characteristics need to be taken into consideration for different types of organizations. The larger number of higher educated and more experienced RNs provide the VA an opportunity to benefit and gain from acquired professional intellectual capital. However, the aging VA nursing workforce raises concerns and has implications for the future healthcare of a complex, veteran population.

#### *Instruments*

Three previously developed instruments were utilized in this study. The DLOQ has been used in the business community with a specific focus on relation of dimensions of learning organization to outcomes of knowledge and financial performance. To date, there are no published reports on use of the DLOQ with RNs and, as related specifically, to EBP beliefs and implementation. The psychometric analysis demonstrated reliable and valid use of the instrument with this population. The instrument can be used as a diagnostic tool to develop prescriptive recommendations (Marsick & Watkins 1993, 1996) for the development of learning organization. The adequate performance on the instrument in this population offers organizations an additional tool in evaluation and strategizing for organization improvement and quality development.

The EBP Implementation Scale demonstrated adequate psychometric properties in this study. The number of those who chose not to fully complete (99 out of 592) this instrument was a concern. Although a quarter of the nurses responded in the demographics section that they “did not know much” about EBP, many of those did respond to the implementation questions. Many of the respondents ( $n=72$ ) did not

complete question 3 about how often in the last 8 weeks they, “generated a PICO question.” “PICO” question refers to a specific approach used to construct and develop an EBP question incorporated into the EBP method advocated by Melnyk & Fineout-Overholt, developers of the instrument. Nurses who use other processes to implement EBP most likely would not understand this wording and may have chosen to skip this question. This question may need to be either better clarified or omitted to optimize responses in future use of the instrument.

The psychometric analysis of the EBP Beliefs Scale produced some interesting results. Instead of one scale, four subscales were identified and labeled as EBP Knowledge, EBP Values, EBP Resources, and EBP Difficulty. Theoretically, it provided for better delineation of specific areas related to EBP beliefs by nurses, allowing a more defined approach for data analysis. Use of the four subscales provided a more focused approach in evaluating relationships to both dimensions of the learning organization and nurses’ implementation of EBP. Further testing and exploration is needed to see if similar results can be replicated in future use of the instrument.

#### *Research Question 1*

The first research question explored the relationship of the dimensions of the learning organization to registered nurses beliefs regarding EBP. Three of the subscales had significant but rather small relationships with the dimensions of the learning organization, expressly, Knowledge Beliefs 6%, Value Beliefs 11%, and Resource Beliefs 14%. There was no significant effect related to the LO on nurses’ perceptions of EBP Difficulty Beliefs. In this study, the RNs’ higher perception of the learning

organization provided nurses with greater EBP resource beliefs. Learning organizations provide a supportive, continuous learning culture which the literature has indicated as important to support nurses in research utilization and EBP. This correlates well with the literature because even though nurses may know how to do EBP, and believe in its value, nurses must believe the organizations are providing them support for EBP, time to implement EBP, and ability to overcome barriers. There is some indication that the LO may be considered as a supportive infrastructure for nurses and EBP.

### *Research Question 2*

The impact of EBP beliefs on RN EBP implementation was explored in the second research question. EBP Beliefs were demonstrated to be significant in contributing to nurses implementation of EBP ( $R^2 = .23$   $p \leq .00$ ). It was not surprising to find that RNs indicating a higher score on the EBP Beliefs Scale, also report a higher frequency of EBP implementation. The findings, in combination with those from question 1, give support to other literature findings that a supportive culture is needed to encourage beliefs in EBP and facilitate implementation into practice.

### *Research Question 3*

Data were analyzed to answer the third question that asked if there were significant differences in nurses' perception of their organization as a learning organization based on their employment in either magnet-designated, non-magnet, or VA hospital. A one-way ANOVA indicated a significant difference among all three types of organizations in all seven dimensions of the learning organization. A post-hoc analysis demonstrated the VA organization was significantly different from both magnet and non-

magnet. As noted previously, the nurses who responded from the VA were found to exhibit significant sociodemographic differences. It is not clear if one or any of these affect nurses' perceptions of the learning organization. Potentially, non-magnet hospitals may have implemented strategies in preparation for application for Magnet status, making an unclear delineation between magnet-designated and non-magnet in LO dimensions. Comparison of magnet and non-magnet without the influence of the VA organizations, indicated differences in two dimensions, "connect the organization to its environment" and "continuous learning."

All three types of organizations were significantly different in the dimension of "connect the organization." This area is described as people scanning the environment and using information to adjust work practice (Watkins & Marsick, 1993). Nurses in magnet-designated hospitals are more likely to have control over their nursing practice, possibly contributing to their more positive responses related to this dimension.

#### *Research Question 4*

The last research question explored whether the relationships of the dimensions of the LO, RN EBP Beliefs, and RN EBP Implementation were the same within each type of organization. These data were compared and contrasted to the full model data to appraise the fit of the data overall. A number of variables indicated congruent relationships although differences were exhibited across the organizations and in strength of the relationships magnitude

A relationship among EBP Beliefs and EBP Implementation was indicated in both the full and individual types of organization data analysis. In both magnet and non-

magnet hospitals, Knowledge Beliefs demonstrated a relationship with implementation, while in the VA, it was Difficulty Belief. This area requires additional investigation. The VA sample indicated a greater percentage with a baccalaureate or higher degree so it is possible that their “Knowledge Beliefs” were not as much of a factor but instead, perceived time and difficulty as greater factors. Both magnet and non-magnet had higher percentage that reported they had been introduced to EBP in nursing school. Possibly the introduction to EBP influenced their beliefs recognizing knowledge as important to implementation of EBP.

The dimensions of the LO and relationship to EBP Beliefs was explored, and compared again, using both the full and the individual type of organization data. The VA and Magnet hospitals indicated a relationship with EBP “Knowledge Beliefs” which is consistent with the full model. Although both had similar percent of variance explained, 16% and 17%, respectively, differences were noted in different dimensions. Magnet hospitals indicated the more positive relationship in two dimensions, “create systems to capture and share learning” and “empower people toward a collective vision.” The area of empowerment is consistent with the magnet hospital philosophy of nursing autonomy as well as the support for education relating to creating systems to capture learning. Somewhat surprising, the VA organization did not indicate a significant relationship in this dimension, although it is an organization that has become known for an integrated information technology system. The nurses may not perceive the information system as related to their knowledge beliefs. Significant for the VA was the inverse relationship indicated in the dimension of inquiry and dialogue. Watkins & Marsick (1993) describe

this dimension as an indication of a supportive culture for questioning and feedback. VA nurses may not feel able to question and change culture, possibly reflective of stereotypically government bureaucracy.

Value Beliefs demonstrated consistent relationship with dimensions of the LO. Similar relationships were demonstrated across all three types of organizations in the dimension “connect the organization to its environment.” The magnitude of relationships varied with magnet 19%, then VA 12%, followed by non-magnet 9% indicating variations in relationships of values to organizational types.

Dimensions of LO and Resource Beliefs demonstrated relationship across all three organizational types. Results from magnet and non-magnet were very similar to each other and to the full data analyses. Magnet organizations demonstrated a strong relationship with “empowerment” suggesting resource beliefs are affected by the ability for decision making and accountability. The VA data indicated some interesting variance from the other two types of organizations. Resource Beliefs were explained by 29% of dimensions of the learning organization. Three dimensions were significant and in actuality, seem to again indicate a bureaucratic infrastructure. There was an inverse relationship with “Dialogue and Inquiry,” similar to the finding with “Knowledge Beliefs.” This may be an indication that the VA nurses have a negative perception regarding being able to question and experiment in relationship to resources, not surprising with a budget regulated by a government body. The other two dimensions, “Collaboration and Team Learning” and “Leadership” had positive relationships. RN

EBP Resource Beliefs may be affected by the perceived effectiveness of their leadership and ability to collaborate and function as a team.

A relationship between Difficulty Beliefs and LO was noted only in Magnet hospitals. The strongest relationship was with the dimension “connect the organization.” An inverse relationship was indicated, with leadership indicating that with a perceived higher level of leadership, EBP is perceived to be more difficult and take more time.

Data from the magnet-designated and the VA organizations most closely aligned with the dimensions of the learning organizations, although all the data results are theoretically congruent and pragmatically make sense. Clearly, organizations will change and employees will have different perceptions at different points of time. This type of research does not provide answers but instead is a snapshot indicating organizational areas of strengths and weakness. The implications can be used to strategize and improve practice.

#### Limitations of the Study

The primary limitation in this study is related to the sampling. First, a convenience sample was used which limits the generalizability of the findings. Site selection was based on the designation of the organization into a specific category and the hospitals selected in each category were those in which the nursing administration expressed a willingness to participate. The category of non-magnet is vague. In this study, non-magnet was any organization that had not been formally designated as magnet status by AACN. Potentially, the two non-magnet hospitals that participated may be in the process of moving toward magnet status, blurring the delineation between magnet and

non-magnet type of organizations. Hospitals within each category may present a stronger influence individually than as a reflection of the type of organization, further confounding the generalizability of the findings.

Another limitation related to the sample was the difference in numbers in the VA sample versus the other two types of organizations. Although the response rate in this type of organization was similar to the others, the lesser number of nurses employed by the VA hospitals was not taken into consideration. One VA was located in another city, where the other five participating facilities were located in one metropolitan area. There were a number of differences in the sample of nurses that responded from the VA compared to the other two type of organizations, potentially influencing results of the data analyses.

The study was limited by the missing data from the number of RNs who chose not to complete all three of the research instruments. This was most notable in the responses to the EBP Implementation Scale. There may be differences in nurses who opted not to fully complete some or all of the instruments.

#### Recommendations for Future Research

Potential for future research can be explicated from limitations of the study. Although the sample size for the study had close to 600 respondents, the VA workforce had some significant differences when compared to RNs employed by the other two types of organizations. The sample was regionally limited to organizations located within one state and within 200 miles of each other. The early research on the model appeared to provide information related to this sample; but a larger, multi-state, and multi-site study

is necessary to see how the data would fit with the model. VA hospitals that have become Magnet-designated may provide data to help discern how both characteristics fit with the model and potentially add information regarding relationships among the LO, EBP Beliefs, and EBP Implementation.

The current study was limited to RNs but EBP is expected to be interdisciplinary and practiced by all health care providers. The DLOQ has been used with other populations. The adequate reliability and validity with nurses suggest the possibility for its use with other members of the healthcare organization. The EBP Beliefs and EBP implementation are directed at healthcare providers but not specifically nurses. Additional research is needed to study the impact related to interaction of the interdisciplinary team approach, ability to affect EBP implementation, and consequently, the impact on patient outcomes.

More research is needed to examine relationships of individual organizational characteristics, and subsequently the impact of the unit and organization. Multi-level analysis techniques, including factors at the level of the patient care unit and the organization, can better detect emergent phenomena not demonstrated at the individual level. Moderators or mediators related to an outcome of nurses implementing EBP also need to be explored.

The model appeared to indicate relationships between learning organizations, RN EBP Beliefs and EBP implementation; however, no causation can be inferred. Intervention studies are needed to attain data to help nursing better understand what will encourage nurses EBP beliefs, as well as motivate and support nurses in the

implementation of EBP. Randomized controlled trials are time consuming, presenting a challenge within hospitals, especially with employees, and particularly nurses. It may be possible to use a time series methodology to gain credible data to evaluate RN EBP implementation strategies that can be supported scientifically.

The DLOQ offers leaders a means to diagnose the organizations areas of strengths and weakness. Many prescriptive methods are available to develop organizations into learning organizations (Senge et al., 1999; Senge et al., 1994; Watkins & Marsick, 1993). Measures need to be incorporated to monitor the effects on patient outcomes and the level of effectiveness, potentially providing a strategy in the effort to provide quality, safe, cost-effective patient care.

#### Summary

This final chapter discussed the findings from the research. The discourse incorporated information related to the sample, instruments, and four research questions. Limitations of the study were outlined, concluding with suggestions for future research.

APPENDIX A  
DATA COLLECTION INSTRUMENT

Title of Project: Learning Organizations and Evidence-Based Practice by RNs

You are being invited to voluntarily participate in the above-titled research study. The purpose of the study is to determine the relationship of dimensions of a learning organization and evidence-based practice by RNs. You are eligible to participate because you are a registered nurse employed by this organization, either full-time or part-time. If you agree to participate, you are asked to complete the attached survey. The survey can be completed in a location convenient for you and will take about 15-20 minutes. You may choose not to answer some or all of the questions. Your name does not appear on the survey.

Any questions you have will be answered and you may withdraw from the study at any time. There are no known risks from your participation and no direct benefit from your participation is expected. There is no cost to you except for your time and you will not be compensated for your participation. You may submit your name to be part of a drawing for a \$50 money order. Please detach the coupon, add your name and contact information and place it separately into the box. At the end of data completion, all the names from each facility will be placed into a container and one name will be drawn. You may enter even if you decide not complete the questionnaire.

Only the principal investigator will have access to the information that you provide. In order to maintain your confidentiality, your name will not be revealed in any reports that result from this project. Survey information will be locked in a cabinet in a secure place.

You can obtain further information from the principal investigator, Nicolette Estrada, RN, MS, MAOM, FNP, a doctoral student at the University of Arizona, at [nestrada@nursing.arizona.edu](mailto:nestrada@nursing.arizona.edu) or (602) 330-6981. If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721.

By completing the survey, you are giving permission for the investigator to use your information for research purposes.

Thank you,

Nicolette Estrada

## Dimensions of the Learning Organization Questionnaire

For each item, determine the degree to which this is something that is or is not true of your organization. If the item refers to a practice that rarely or never occurs, score it a one [1]. If it is almost always true of your department or work group, score the item as six [6]. There are no right or wrong answers. Your honest opinion will help us improve learning behaviors in nonprofit organizations. Please answer every question. Thank you.

### **Part I: Dimensions of the Learning Organization**

In this section, you are asked to think about how your local organization supports and uses learning at an individual, team, and organizational level.

**Circle only one response number for each question.**

To what extent is each statement accurate?

#### **Individual Level**

Almost Never ←-----Almost Always

#### **In my organization:**

- | 1. People help each other learn.                                       | 1 | 2 | 3 | 4 | 5 | 6 |  |
|--|---|---|---|---|---|---|--|
| 2. People are given time to support learning.                          | 1 | 2 | 3 | 4 | 5 | 6 |  |
| 3. People are rewarded for learning.                                   | 1 | 2 | 3 | 4 | 5 | 6 |  |
| 4. People give open and honest feedback to each other.                 | 1 | 2 | 3 | 4 | 5 | 6 |  |
| 5. Whenever people state their views, they also ask what others think. | 1 | 2 | 3 | 4 | 5 | 6 |  |
| 6. People spend time building trust with each other.                   | 1 | 2 | 3 | 4 | 5 | 6 |  |



To what extent is each statement accurate?

Almost Never ----- Almost Always

**In my organization:**

- |     |  |   |   |   |   |   |   |
|-----|--|---|---|---|---|---|---|
| 19. | Leaders mentor and coach those they lead.                                      | 1 | 2 | 3 | 4 | 5 | 6 |
| 20. | Leaders continually look for opportunities to learn.                           | 1 | 2 | 3 | 4 | 5 | 6 |
| 21. | Leaders ensure that the organization's actions are consistent with its values. | 1 | 2 | 3 | 4 | 5 | 6 |

Copyright Karen E. Watkins & Victoria J. Marsick. All rights reserved. This questionnaire is based on books by Karen Watkins and Victoria Marsick: *Sculpting the Learning Organization*, San Francisco: Jossey-Bass, Inc., 1993; and *In Action: Creating the Learning Organization*, Alexandria, VA: ASTD Press, 1996. Used with permission 7/2006

### EBP Implementation Scale

Melnik & Fineout-Overholt, Copyright, 2003

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

In the past 8 weeks, I have:

	0 times	<3 times	5 times	>5<8 times	>8 times
1. Used evidence to change my clinical practice...	0	1	2	3	4
2. Critically appraised evidence from a research study...	0	1	2	3	4
3. Generated a PICO question about my clinical practice...	0	1	2	3	4
4. Informally discussed evidence from a research study with a colleague...	0	1	2	3	4
5. Collected data on a patient problem...	0	1	2	3	4
6. Shared evidence from a study or studies in the form of a report or presentation to more than 2 colleagues...	0	1	2	3	4
7. Evaluated the outcomes of a practice change...	0	1	2	3	4
8. Shared an EBP guideline with a colleague...	0	1	2	3	4
9. Shared evidence from a research study with a patient/family member...	0	1	2	3	4
10. Shared evidenced from a research study with a multi-disciplinary team member...	0	1	2	3	4
11. Read and critically appraised a clinical research study...	0	1	2	3	4
12. Accessed the Cochrane database of systematic reviews...	0	1	2	3	4
13. Accessed the National Guidelines Clearinghouse...	0	1	2	3	4
14. Used an EBP guideline or systematic review to change clinical practice where I work...	0	1	2	3	4
15. Evaluated a care initiative by collecting patient outcome data...	0	1	2	3	4
16. Shared the outcome data collected with colleagues...	0	1	2	3	4
17. Changed practice based on patient outcome data...	0	1	2	3	4
18. Promoted the use of EBP to my colleagues...	0	1	2	3	4

**EBP Beliefs Scale**  
Melnyk & Fineout-Overholt, Copyright, 2003

Below are 16 statements about evidence-based practice (EBP). Please circle the number that best describes your agreement or disagreement with each statement. There are no right or wrong answers.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I believe that EBP results in the best clinical care for patients.	1	2	3	4	5
2. I am clear about the steps of EBP.	1	2	3	4	5
3. I am sure that I can implement EBP.	1	2	3	4	5
4. I believe that critically appraising evidence is an important step in the EBP process.	1	2	3	4	5
5. I am sure that evidence-based guidelines can improve clinical care	1	2	3	4	5
6. I believe that I can search for the best evidence to answer clinical questions in a time efficient way.	1	2	3	4	5
7. I believe that I can overcome barriers in implementing EBP.	1	2	3	4	5
8. I am sure that I can implement EBP in a time efficient way.	1	2	3	4	5
9. I am sure that implementing EBP will improve the care that I deliver to my patients.	1	2	3	4	5
10. I am sure about how to measure the outcomes of clinical care.	1	2	3	4	5
11. I believe that EBP takes too much time.	1	2	3	4	5
12. I am sure that I can access the best resources in order to implement EBP.	1	2	3	4	5
13. I believe EBP is difficult.	1	2	3	4	5
14. I know how to implement EBP sufficiently enough to make practice changes.	1	2	3	4	5
15. I am confident about my ability to implement EBP where I work.	1	2	3	4	5
16. I believe the care that I deliver is evidence-based.	1	2	3	4	5

The following is personal information about you and your nursing education and employment.

1. What is your gender?  
 Female....   
 Male.....
2. What is your year of birth?  
 19\_\_\_\_\_
3. What is your ethnic background?  
 Hispanic or Latino.....   
 Not Hispanic or Latino.....
4. What is your racial background?  
 American Indian or Alaska.....   
 Asian.....   
 Black or African American.....   
 Native Hawaiian or Other Pacific Islander.....   
 White .....
5. What is your current marital status?  
 Now married.....   
 Widowed, divorced, separated.....   
 Never Married.....
6. In what type of basic nursing education program were you prepared to become a registered nurse?  
 (Mark an  in one box only.)  
 Diploma.....   
 Associate Degree.....   
 Baccalaureate Degree.....   
 Master's Degree.....   
 Doctorate (N.D.) .....
7. In what year did you graduate from this program?  
 \_\_\_\_\_(year)
8. How long have you worked as a registered nurse?  
 \_\_\_\_\_years    \_\_\_\_\_months (*if less than one year*)
10. Please mark any additional academic degrees you have earned since graduating from your basic nursing program?  
 Associate Degree in nursing.....   
 Associate Degree in another field.....   
 Baccalaureate Degree in nursing.....   
 Baccalaureate Degree in another field ....   
 Master's Degree in nursing.....   
 Master's Degree in another field .....   
 Doctorate in nursing.....   
 Doctorate in another field .....   
 Other (*specify*) \_\_\_\_\_
11. What is your work status?  
 (Check one)  
 Full time.....   
 Part time.....   
 PRN/per diem .....   
 (please specify number of hours/week \_\_\_\_\_)
12. How long have you worked in this hospital?  
 \_\_\_\_\_years    \_\_\_\_\_months (*if less than one year*)
13. How long have you worked on this unit?  
 \_\_\_\_\_years    \_\_\_\_\_months (*if less than one year*)
14. What has been your exposure to the concept of evidence-based practice (EBP)?  
 Learned about EBP in nursing school.....   
 Took a continuing education course in EBP...   
 Attended hospital EBP program/session.....   
 Self-taught about EBP (book/articles/peers.....   
 Do not know much about EBP.....
15. Do you spend at least 50% of your time providing direct patient care?

9. Since graduating from the basic nursing program you described in Question 6, have you earned any additional degrees?

Yes...   
 No..... → Skip to question 11

16. What type of unit do you work most of your patient care time during your usual workweek? (Mark an  in one box only.)

- Intensive care bed unit .....
- Step-down, transitional bed unit .....
- General/specialty (other than intensive care or step-down bed unit) .....
- \_\_\_\_\_ Outpatient department .....
- (If any above checked, Please go to Q. 16)
- Operating room.....
- Post anesthesia recovery unit .....
- Labor/delivery room.....
- Emergency department.....
- Home health care.....
- Hospice unit .....
- Other specific area .....
- (Specify) \_\_\_\_\_
- No specific assigned type of area.....

17. If you marked one of the first 4 on Q.15 please mark what types of patients are **primarily** treated in the hospital unit in which you work?

- (Mark only **one**)
- Chronic care.....
  - Coronary care.....
  - Neurological.....
  - Newborn .....
  - Obstetrics/gynecologic .....
  - Orthopedic .....
  - Pediatric.....
  - Psychiatric .....

Yes...   
 No..... → Skip to question 17

18. Which one of these titles **best** corresponds to the position title for your principal nursing position? (Mark an  in one box only.)

- Administrator.....
- Case manager .....
- Certified nurse anesthetist (CRNA) .....
- Charge nurse .....
- Clinical nurse specialist .....
- Director, or assistant/associate director of nursing education.....
- Discharge planner .....
- Head nurse or assistant head nurse.....
- Infection control nurse .....
- Informatics nurse.....
- In-service education director .....
- In-service instructor.....
- Nurse clinician.....
- Nurse coordinator.....
- Nurse manager .....
- Nurse-midwife.....
- Nurse practitioner.....
- Outcomes manager .....
- Patient care coordinator.....
- Quality improvement nurse.....
- Researcher .....
- Staff nurse.....
- Supervisor or assistant supervisor .....
- Team leader.....
- No position title .....
- Other (Specify) .....

- Rehabilitation.....
- Basic medical/surgical (or specialty areas  
not specified above) ....
- Work in multiple units not specifically  
Specialized.....



*Thank you very much for your help!*

**Please return the questionnaire in the enclosed envelope and drop it in the survey box. If you have received more than one copy of the questionnaire, please return the extra copies along with the completed questionnaire. (Complete, detach coupon and add to survey box to enter the drawing).**

Please return the completed questionnaire provided by **insert date** to: Attn: Nicolette Estrada

APPENDIX B  
RESEARCH MODELS

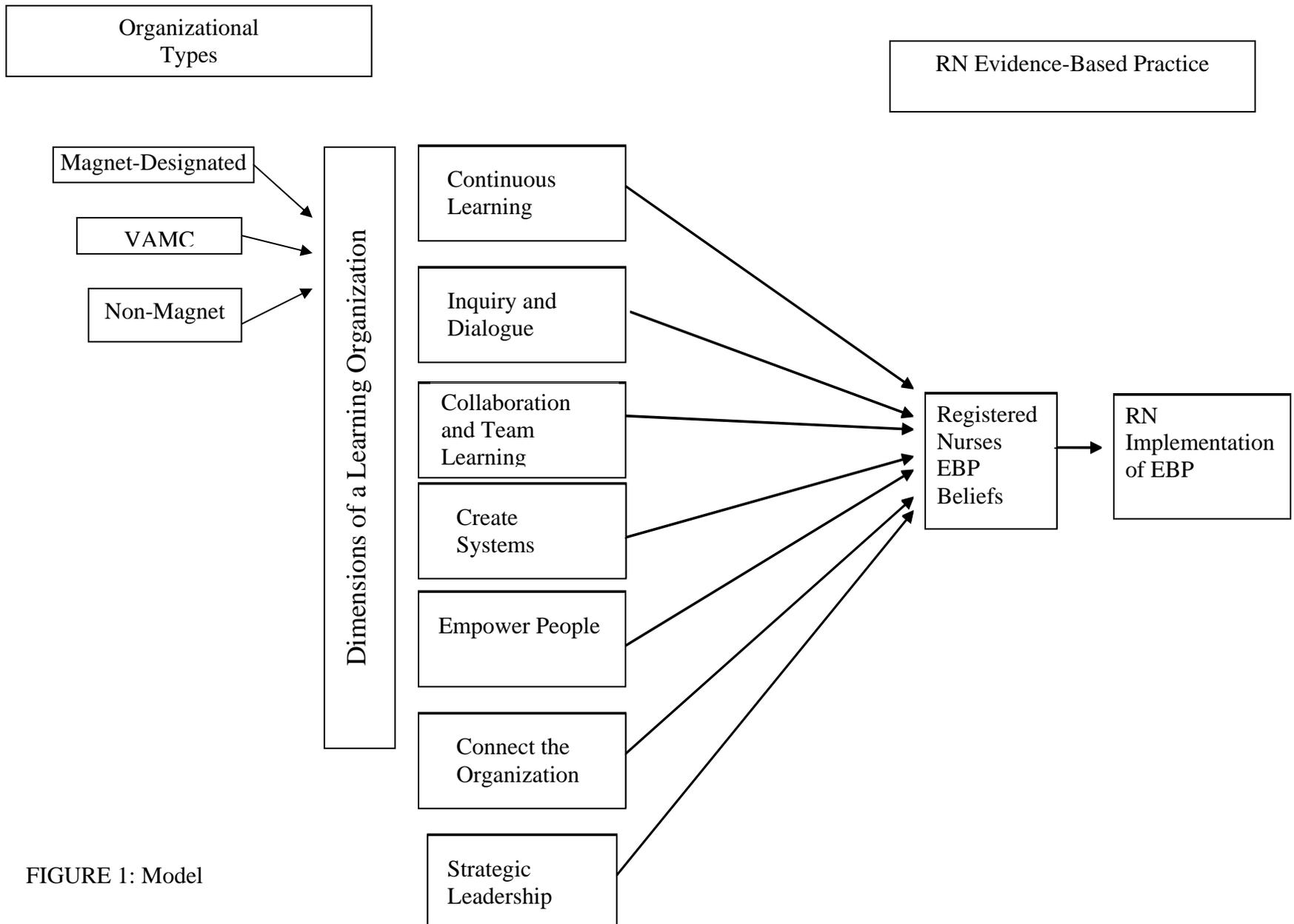


FIGURE 1: Model

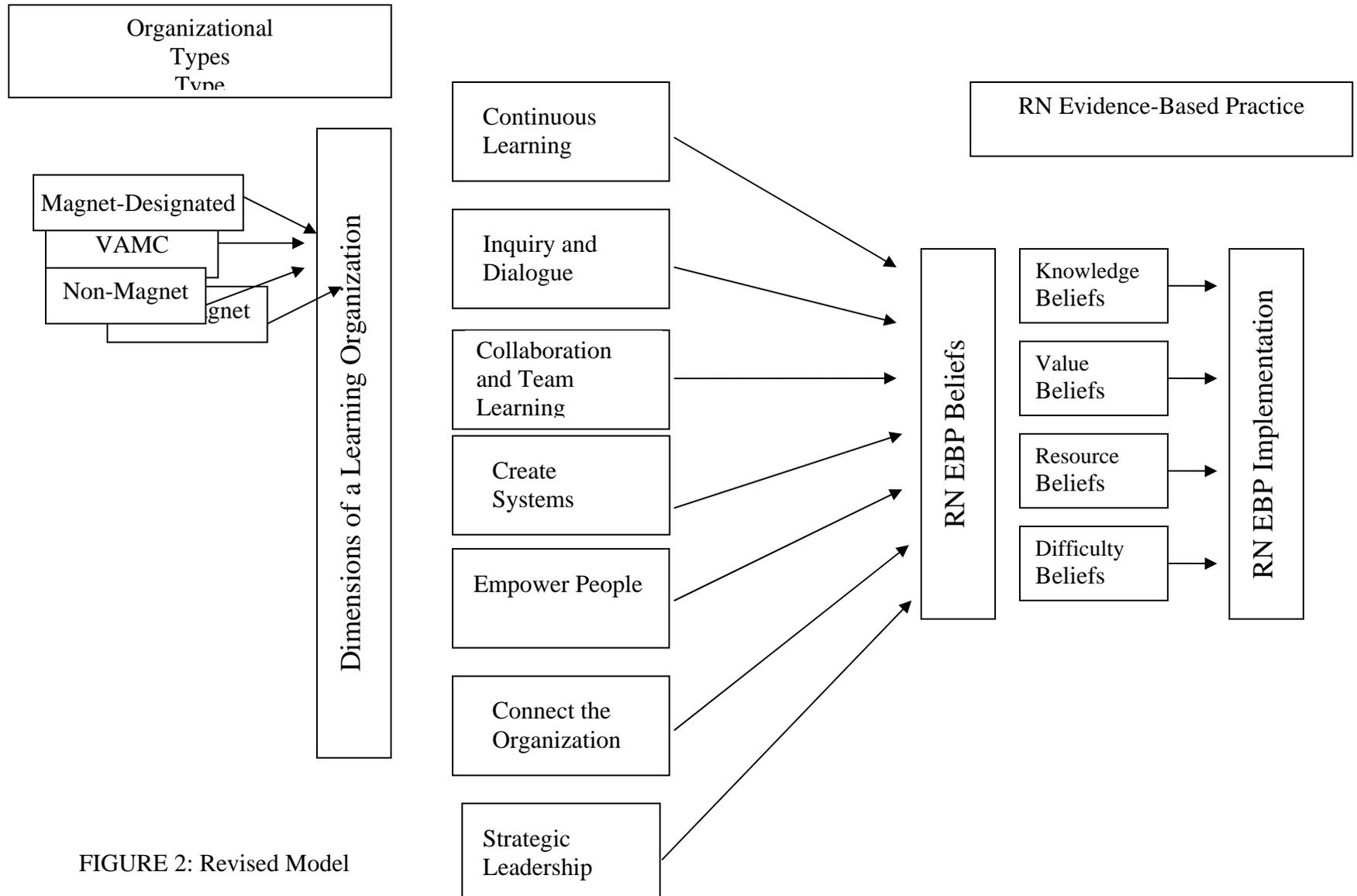


FIGURE 2: Revised Model

APPENDIX C

HUMAN SUBJECT PROTECTION APPROVAL LETTERS

Human Subjects Protection Program



1350 N. Vine Avenue  
P.O. Box 245137  
Tucson, AZ 85724-5137  
(520) 626-6721  
<http://www.irb.arizona.edu>

7 November 2006

Nicolette Estrada, MS  
Advisor: Joyce Verran, Ph.D.  
College of Nursing  
PO Box 210203

**RE: LEARNING ORGANIZATIONS AND EVIDENCE-BASED PRACTICE BY RNS**

Dear Ms. Estrada:

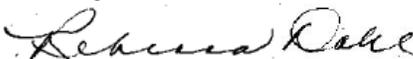
We received your Amendment Form and revised Disclaimer Form concerning your above cited project. Change includes minor administrative changes to the Disclaimer Form and survey (additional response item added to question 14 Dimensions of the Learning Organization Questionnaire in order to expand responses categories) **Note: A copy of your Disclaimer Form, with IRB approval stamp affixed, is enclosed for use in enrolling subjects.**

Please be advised that **clearance from academic and/or other official authorities for site(s) where proposed research is to be conducted must be obtained prior to performance of this study. Evidence of this must be submitted to the Human Subjects Protection Program office.**

Continued exempt status is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consenting instrument used (copies of which we have on file) without the review and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

Thank you for informing us of your work. If you have any questions concerning the above, please contact this office.

Sincerely,



Rebecca Dahl, R.N., Ph.D.  
Director  
Human Subjects Protection Program

cc: Departmental/College Review Committee

APPROVED BY UNIVERSITY OF AZ IRB.  
THIS STAMP MUST APPEAR ON ALL  
DOCUMENTS USED TO CONSENT SUBJECTS.  
DATE: 11/7/06

Title of Project: Learning Organizations and Evidence-Based Practice by RNs

You are being invited to voluntarily participate in this research study. The purpose of the study is to determine the relationship of elements of a learning organization and evidence-based practice by RNs. You are eligible to participate because you are a registered nurse employed by this organization, either full-time or part-time. If you agree to participate, you are asked to complete the attached survey. The survey can be completed in a location convenient for you and will take about 10-15 minutes. You may choose not to answer some or all of the questions and not put your name anywhere on the survey.

Any questions you have will be answered and you may withdraw from the study at any time. There are no known risks from your participation and no direct benefit to you from your participation is expected. There is no cost to you except for your time and you will not be compensated for your participation. You may submit your name to be part of a drawing for a \$50 money order. Please **detach** the coupon, add your name and contact information, and place it separately into the box. At the end of data collection, all names from your facility will be placed into a container and one name will be drawn. Once the winner has been notified and acknowledges receipt of the money, all coupons will be shredded. You may enter even if you decide not to complete the questionnaire.

Only the principal investigator will have access to the information that you provide. To maintain your confidentiality, your name will not be in any reports that result from this project. Your information will be locked in a cabinet in a secure place.

You can obtain further information from the principal investigator, Nicolette Estrada, RN, MAOM, FNP, a doctoral student at the University of Arizona, at [nestrada@nursing.arizona.edu](mailto:nestrada@nursing.arizona.edu) or (602) 330-6981. If you have questions concerning your rights as a research subject, you can call the University of Arizona Human Subjects Protection Program office at (520) 626-6772.

By completing the survey, you are giving permission for the investigator to use your information for research purposes.

Please return the completed questionnaire to the provided box by Insert date: Nicolette Estrada

Thank you,

Nicolette Estrada

Human Subjects Protection Program



1350 N. Vine Avenue  
P.O. Box 245137  
Tucson, AZ 85724-5137  
(520) 626-6721  
<http://www.irb.arizona.edu>

27 October 2006

Nicolette Estrada, MS  
Advisor: Joyce Verran, Ph.D.  
College of Nursing  
PO Box 210203

**RE: LEARNING ORGANIZATIONS AND EVIDENCE-BASED PRACTICE BY RNS**

Dear Ms. Estrada:

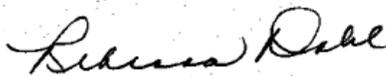
We received documents concerning your above cited project. Regulations published by the U.S. Department of Health and Human Services [45 CFR Part 46.101(b) (2)] exempt this type of research from review by our Institutional Review Board. **Note: A copy of your Disclaimer Form, with IRB approval stamp affixed, is enclosed for use in enrolling subjects.**

Please be advised that **clearance from academic and/or other official authorities for site(s) where proposed research is to be conducted must be obtained prior to performance of this study. Evidence of this must be submitted to the Human Subjects Protection Program office.**

Exempt status is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consenting instrument used (copies of which we have on file) without the review and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

Thank you for informing us of your work. If you have any questions concerning the above, please contact this office.

Sincerely,



Rebecca Dahl, R.N., Ph.D.  
Director  
Human Subjects Protection Program

cc: Departmental/College Review Committee

APPROVED BY UNIVERSITY OF AZ IRB.  
THIS STAMP MUST APPEAR ON ALL  
DOCUMENTS USED TO CONSENT SUBJECTS.  
DATE: 10/27/06

#### Disclaimer Form

Title of Project: Learning Organizations and Evidence-Based Practice by RNs

You are being invited to voluntarily participate in the above-titled research study. The purpose of the study is to determine the relationship of dimensions of a learning organization and evidence-based practice by RNs. You are eligible to participate because you are a registered nurse employed by this organization, either full-time or part-time. If you agree to participate, you are asked to complete the attached survey. The survey can be completed in a location convenient for you and will take about 10-15 minutes. You may choose not to answer some or all of the questions. Your name does not appear on the survey.

Any questions you have will be answered and you may withdraw from the study at any time. There are no known risks from your participation and no direct benefit from your participation is expected. There is no cost to you except for your time and you will not be compensated for your participation directly. However, you may submit your name to be part of a drawing for a \$50 money order. Please **detach** the coupon, add your name and contact information and place it separately into the box. At the end of data completion, all the names from your facility will be placed into a container and one name will be drawn. Once the winner has been notified, and acknowledge receipt of the money, all coupons will be shredded. You may enter even if you decide not complete the questionnaire.

Only the principal investigator will have access to the information that you provide. In order to maintain your confidentiality, your name will not be revealed in any reports that result from this project. Survey information will be locked in a cabinet in a secure place.

You can obtain further information from the principal investigator, Nicolette Estrada, RN, MS, MAOM, FNP, a doctoral student at the University of Arizona, at [nestrada@nursing.arizona.edu](mailto:nestrada@nursing.arizona.edu) or (602) 330-6981. If you have questions concerning your rights as a research subject, you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721.

Please return the completed questionnaire provided by **insert date** to: Nicolette Estrada

By completing the survey, you are giving permission for the investigator to use your information for research purposes.

Thank you,

Nicolette Estrada

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