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Effectiveness of an education intervention to strengthen nurses' readiness for evidence-based practice: A single-blind randomized controlled study

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ABSTRACT

Background: Nurses' lack of readiness for evidence-based practice slows down the uptake, adoption, and implementation of evidence-based practice which is of international concern as it impedes attainment of the highest quality of care and best patient outcomes. There is limited evidence about the most effective approaches to strengthen nurses' readiness for evidence-based practice.
Objectives: To evaluate the effectiveness of an Advanced Practice Nurse-delivered education program to strengthen nurses' readiness for evidence-based practice at a university hospital.
Design: A single-blind randomized controlled trial with repeated measures design, with measures completed during spring and fall 2015, before the education program (T0), within 1 week after (T1), 8 weeks after (T2), and 4 months after completion of education interventions (T3).
Setting: One large university hospital system in Finland, consisting of 15 acute care hospitals.
Participants: The required sample size, calculated by a priori power analysis and including a 20% estimated attrition rate, called for 85 nurse participants to be recruited. Nurses working in different professional nursing roles and care settings were randomly allocated into two groups: intervention (evidence-based practice education, N = 43) and control (research utilization education, N = 34).
Methods: The nurse participants received live 4-h education sessions on the basic principles of evidence-based practice (intervention group) and on the principles of research utilization (control group). The intervention group also received a web-based interactive evidence-based practice education module with a booster mentoring intervention. Readiness for evidence-based practice data, previous experience with evidence-based practice, and participant demographics were collected using the Stevens' EBP Readiness Inventory.
Results: Nurses' confidence in employing evidence-based practice and actual evidence-based practice knowledge were lower at T0, compared with the post-education scores, specifically at T1. The improvement in the confidence or actual evidence-based practice knowledge levels did not differ between the intervention and control groups. Confidence in employing evidence-based practice was directly correlated with level of education and inversely correlated with age. Actual evidence-based practice knowledge was lowest among nurses who had no previous knowledge or experience of evidence-based practice.
Conclusions: Both the evidence-based practice and research utilization education interventions improved nurses' confidence in employing evidence-based practice and actual evidence-based practice knowledge, strengthening their evidence-based practice readiness at least in the short-term. Most of the variation in the confidence in employing evidence-based practice and actual evidence-based practice knowledge levels was due to background factors, such as primary role and education level, which emphasize differences in educational needs between nurses with diverse backgrounds.

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1. Introduction

Healthcare organizations worldwide regard implementation of evidence-based practice (EBP) as a high priority because it is associated with higher quality and consistency of care as well as better patient outcomes at lower expenditures (McGinty & Anderson, 2008; Melnyk, Fineout-Overholt, Giggleman, & Cruz, 2010; Wallen et al., 2010). EBP is an approach to solving problems in clinical decision-making which integrates best evidence from rigorous studies with clinicians' expertise and patients' values and preferences (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012). To facilitate the uptake, adoption, and integration of best evidence into clinical decision-making, over the past 10 years, a paradigm shift has taken place from the "old" paradigm of research utilization, or the retrieval, critique, and use of the research results from a *single* primary study, to the "new" paradigm of EBP, which is considered to be a much broader concept including research utilization and the integration of *summarized* best evidence from several well-defined studies into clinical practice (Melnyk & Fineout-Overholt, 2011). However, integration of best evidence into nurses' daily clinical decision-making has turned out to be more challenging than initially thought, as the majority of clinicians do not engage in EBP on a consistent basis, contrary to healthcare leaders' and patients' expectation that implementation of EBP should be the norm in daily practice (Bennett et al., 2003; Fink, Thompson, & Bonnes, 2005; Meline & Paradiso, 2003; Melnyk et al., 2012; Wallen et al., 2010). The challenges to EBP implementation arise from a multitude of reasons, including widespread confusion and divergent understandings among nurses about what actually constitutes EBP, the complex nature of the multistep EBP implementation process itself, nurses' lack of readiness for EBP, and a paucity of robust research studies evaluating the effectiveness of nursing interventions designed to advance nurses' EBP competencies (Egerod & Hansen, 2005; Gifford, Davies, Edwards, Griffin, & Lybanon, 2007; Dalheim, Harthug, Nilsen, & Nortvedt, 2012; Harrison & Graham, 2012; Matthew-Maich, Ploeg, Dobbins, & Jack, 2013; Saunders & Vehviläinen-Julkunen, 2015; Wallen et al., 2010; Wilkinson, Nutley, & Davies, 2011). Nurses' EBP competencies include such factors as nurses' familiarity with, attitudes toward and beliefs about EBP, as well as their EBP knowledge and skills, and self-efficacy (i.e., confidence) in their own abilities to employ EBP.

In fields of practice with clinical orientation, it is crucially important to specify the competencies expected for successful performance of core work functions, to guide the recruitment and practice of clinicians in their work settings. Benner (1984, p. 304) has defined competence in nursing as the "ability to perform the task with desirable outcomes under the varied circumstances of the real world", referring to the expected knowledge, attitudes, beliefs, skills, and abilities (i.e., competencies) for successful performance of key work functions. Clinical competencies are thus a mechanism that clarifies performance expectations and supports clinicians in providing high-quality, evidence-based care (Dunn et al., 2000; Melnyk, Gallagher-Ford, & Fineout-Overholt, 2014). A national expert panel in the USA developed the national consensus competencies for employing EBP in nursing (Stevens, 2009). The panel systematically generated, validated, and endorsed the competency statements, which consisted of 10 to 32 items, depending on the level of nursing educational preparation. Uses of the competencies include evaluating practicing nurses' abilities to employ EBP and guiding EBP professional development and education programs in nursing (Stevens, 2009). More recently, Melnyk et al. (2014) have developed a set of 13 EBP competencies for practicing RNs and 11 additional EBP competencies for Advanced Practice Nurses (APNs) through using the Delphi survey technique to determine consensus among EBP mentors from across the USA. Adoption of specific EBP competencies for practicing RNs and APNs and their integration into the organizational processes can assist healthcare organizations in establishing clear performance expectations related to EBP and in achieving more consistent employment of EBP in nurses' daily clinical decision-making, thus improving patient outcomes, care quality, and effectiveness of healthcare delivery, while reducing variations in and cost of care (Grol & Grimshaw, 2003; Hart et al., 2008; Melnyk et al., 2012, 2014).

In a recent integrative review on the state of nurses' readiness for EBP, Saunders and Vehviläinen-Julkunen (2015) concluded that interventional studies assessing the impact of an education or mentoring intervention on advancing practicing nurses' EBP competencies appear to be relatively rare in the international literature, as out of the 37 research studies included in the review only six (16%) were studies employing some kind of an intervention to advance practicing nurses' EBP readiness, i.e., their EBP competencies. However, five out of the six studies used a one-group quasi-experimental (i.e., non-randomized) pretest–posttest study design, evaluating the impact of an educational program on RNs' attitudes toward and implementation of EBP (Varnell, Haas, Duke, & Hudson, 2008), RNs' attitudes and perceptions of knowledge and skills towards EBP (Sherriff, Wallis, & Chaboyer, 2007), nurses' perceptions of knowledge, attitude and skill level related to EBP (Hart et al., 2008), or assessed the impact of a structured multifaceted mentorship program to implement EBP (Wallen et al., 2010), or the impact of an EBP strategic plan on RN's beliefs of the importance of EBP, frequency of using best evidence in daily practice, and the perception of organizational readiness for EBP (Hauck, Winsett, & Kuric, 2012). In addition, a virtual paucity of nursing research exists on studies evaluating the effectiveness of these interventions through two-group experimental study designs, i.e., randomized controlled trials (RCTs), with only one pilot RCT (Levin, Fineout-Overholt, Melnyk, Barnes, & Vetter, 2011) found in the international nursing literature. The study focused on APN-delivered EBP education and mentoring interventions in the home health care setting, using a repeated measures study design to measure the outcomes of nurses' EBP beliefs, EBP implementation, and job-related nurse outcomes (i.e., job satisfaction, group cohesion, nurse productivity and turnover rates). However, to our knowledge, the effectiveness of interventions designed to advance nurses' EBP readiness has not been previously evaluated by any theory-based RCT involving an APN-delivered EBP education program for practicing RNs at a university hospital setting. There is thus a need to fill this knowledge gap in the international literature.

In addition, there are other knowledge gaps in the international nursing literature, to which this study aims to respond. First, although the body of knowledge describing nurses' readiness for EBP has been steadily growing in countries with a relatively long tradition for conducting EBP research (Beke-Harrigan, Hess, & Weinland, 2008; Pravikoff, Tanner, & Pierce, 2005; Ross, 2010; Thiel & Ghosh, 2008; Waters, Crisp, Rychetnik, & Barratt, 2009), there is a limited amount of research studies investigating nurses' EBP preparedness in non-English-speaking countries that have joined the global EBP movement more recently. Second, there is a paucity of research studies in the non-English-speaking countries that test and evaluate the effectiveness of nursing education interventions designed to advance practicing nurses' EBP competencies via a two-group experimental study design. Third, APNs as EBP mentors are a relatively new phenomenon in most non-English-speaking countries, as the majority of APN positions at the acute care hospital setting have been established e.g. in Finland within the last 5 years (HUS 2015). Thus, utilizing APN-delivered education interventions to advance practicing RNs' EBP competencies is also a new phenomenon in many non-English-speaking countries. Therefore, the goals of this study were to: 1) conduct first RCT evaluating the impact of an APN-delivered EBP education and mentoring intervention on RNs' EBP competencies at a university hospital setting in a non-English-speaking country, and to 2) provide a benchmark from Finland for international comparisons of RCTs evaluating the effectiveness of nursing EBP education interventions to advance practicing nurses' EBP competencies. RCTs from different countries around the world enlarge and enrich the growing international body of knowledge on the effectiveness of nursing interventions in advancing practicing nurses' EBP readiness, and thus, contribute to building a more