

Facilitators and Barriers to Evidence-Based Cancer Pain Management

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Abstract

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Evidence-based pain management (EBPM) is essential in relieving cancer pain. This dissertation explores nurse-level and organization-level factors for adopting, implementing, and sustaining EBPM practices. A descriptive cross-sectional mixed methods design involving two inpatient oncology units was used for this study. The first paper describes nurse evidence-based practice (EBP) beliefs and behaviors. Nurses ($n=40$) completed the EBP Beliefs and Implementation Scales, and Carlson's Prior Conditions Instruments. Nurses agreed with the positive aspects of EBP and their implementation ability, although their implementation level was relatively low. Nurses supported adopting EBPM practices and were satisfied with their practices and that of others in their unit. Oncology nursing certification was associated with perceived innovativeness ($r = .46, p = .003$), and innovativeness was associated with EBP beliefs ($r = .48, p = .002$). Four themes were identified from qualitative interviews: (a) limited definition of EBP, (b) EBPM decision making varies, (c) limited identification of EBPM practices, and (d) nonpharmacologic interventions are integrated into patient care. The second paper reports barriers, facilitators, and strategies for sustaining EBPM implementation. Staff nurses, nurse managers, advanced practice nurses, and chief nursing officers participated in semi-structured interviews. Lack of time to

access and use EBPM was the most common barrier. The most common facilitators were computer systems and advanced practice nurses. Strategies were posters, one-to-one teaching and patient rounds. The third paper explains the development of a mixed model to explore predictors of nurse EBPM behavior. Data used to develop the model were the questionnaire data and 403 nurse documentation encounters with 58 patients. Hospital was the significant predictor for EBPM behavior ($\beta = -0.377$, $se = .042$, $p < .001$). Results from these papers suggest that nurses believe in the value of EBP. Their low EBP implementation level in the context of EBPM was explained by their trust that standards of care were evidence-based and by the nature of pain management, which requires medical orders for analgesic therapy. Organization-level factors such as pain management clinical nurse specialists, pain resource nurses, and Magnet recognition are important to consider in sustaining EBPM in the oncology inpatient setting.

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Chapter 1

Statement of Problem

The evidence-based practice (EBP) process requires health care providers to critically appraise the current best scientific evidence as the basis for clinical decisions. One's clinical expertise, and patient values and preferences are also considered when making evidence-based clinical decisions (Melnik & Fineout-Overholt, 2011). Evidence-based practice is essential to providing quality care and improving patient outcomes such as cancer pain; however, adopting and sustaining EBP behavior in health care organizations is an ongoing challenge (Titler, 2010).

Adopting EBP depends on nurses being knowledgeable about the scientific evidence for the most effective health care interventions. The evidence may be in the form of published research studies, systematic or integrative reviews, or evidence-based guidelines. Nurses must be able to determine if the evidence is sound and should be used in practice. This takes time which is often limited in the busy clinical setting. Health care organizations may embed the current scientific evidence into policies and procedures to ensure care is evidence-based; thus, nurses do not need to find, critically appraise, and synthesize the evidence to determine if interventions should be implemented in practice.

Sustaining the adoption, implementation, and maintenance of changes in practice is a multi-faceted process that requires motivating and facilitating health care providers to use available evidence-based information (Austin & Claassen, 2008). Evidence-based practice is an expectation of all health care providers. The Institute of Medicine set a goal that by 2020, 90% of the clinical decisions made by health care providers will be evidence-based (Institute of Medicine, 2007); thus, it is essential that effective strategies are identified to facilitate adoption and sustainment of EBP behavior among health care providers.

Evidence-based practice implementation strategies provide potential adopters with knowledge about the evidence-based practice and encourage them to use it (Logan & Graham, 1998). Strategies used in clinical practice include single interventions such as dissemination of educational materials, reminders, best practice champions, and audit and feedback mechanisms; and tailored strategies to overcome identified barriers and enhance EBP facilitators (Cheater et al., 2009; Grimshaw et al., 2001). Little is known about which EBP implementation strategies work for specific patient problems and in what context, or about the mechanisms that make these strategies effective in sustaining EBP behavior (Institute of Medicine, 2007).

Evidence-Based Cancer Pain Management

Clinical practice guidelines are often used as a way to operationalize EBP and achieve safe, high quality, and cost effective care (Reavy & Tavernier, 2008; Wallin, 2005). Although evidence-based guidelines for clinical management of cancer-related pain are available, from organizations such as the Agency for Health Care Policy and Research, the National Comprehensive Cancer Network, and the American Pain Society, cancer pain remains a significant problem. Approximately 59% of patients receiving active treatment for cancer experience moderate to severe pain, as do 64% of patients with advanced disease (van den Beuken-van Everdingen et al., 2007). Inadequate treatment of cancer pain is common as nearly 50% of patients with cancer pain do not experience pain relief (Deandrea, Montanari, Moja, & Apolone, 2008). Cancer pain is a difficult symptom to manage. It may be acute or chronic and may involve different types of pain that occur together such as breakthrough pain and intractable pain. In addition, the etiology of pain may be neuropathic or nociceptive, or both.

Satisfactory pain management remains the single most important challenge to quality of life management in cancer patients (Dray, 2010). Effective management of cancer pain is critical

to all aspects of a patient's life including emotional well-being and physical functioning (Green, Montague, & Hart-Johnson, 2009). Evidence-based pain management (EBPM) decreases resource utilization and patient length of stay, and improves patient outcomes, including patient satisfaction (Green et al., 2009; Samuels, 2010); however, it is highly complex and not easily implemented into systems and processes (Samuels, 2010). Pain relief depends on health care providers using the best pain management principles and evidence-based information available to them (Paice & Ferrell, 2011). Nurses are pivotal in the implementation of evidence-based pain management since they provide continuous direct care to patients in the hospital.

Evidence-based pain management involves comprehensive assessment of pain with a reliable and valid patient-report instrument, communication with the interdisciplinary team members, delivery of pharmacologic and nonpharmacologic interventions based on assessment findings, frequent reassessment of pain, and repeated delivery of interventions (Aiello-Laws & Ameringer, 2009). Based on the patient's pain experience, providers make a decision regarding maintaining the current analgesic regimen or optimizing it by changing the dose, switching medications, adding treatments for side effects, or adding other pharmacologic or nonpharmacologic therapies.

Evidence-based pain management can be evaluated by direct observation of nurses or by review of nurse documentation in the medical record. Hospitals accredited by The Joint Commission are required to document pain assessment, intervention, and reassessment (Resources, 2009); however, compliance with The Joint Commission pain standards may be challenging for institutions. Clinical expertise has been found to be negatively related to the documentation of pain management (Idell & Grant, 2007; Samuels & Fetzer, 2009). Experts may have more difficulty incorporating evidence-based innovations into their practice than less

experienced nurses. Samuels and Fetzer (2009) speculate that when bound by rules, expert practice deteriorates while novices do well with structure.

There has been little research on the nurse-level and organization-level factors that influence sustaining the adoption, implementation, and maintenance of EBPM on the inpatient oncology unit. Understanding the relationships among these factors and EBPM is necessary for identifying and advancing strategies that enhance the use of the EBP process such as the implementation of clinical practice guidelines. This knowledge is critical to providing quality health care and improving cancer pain management.

The purpose of this study was to examine the factors that influence strategies used by nurses and health care organizations to sustain EBPM. The following questions will be answered using both qualitative and quantitative methods:

1. What are the antecedents (EBP beliefs and implementation, EBPM implementation, EBPM social norms, innovativeness) to nurses' EBPM decision making?
2. Are there significant relationships between nurses' characteristics and their antecedents to EBPM decision making?
3. What are the nurse-level and organization-level barriers, facilitators, and strategies for sustaining EBPM for cancer pain in clinical decision making among nurses in the inpatient oncology setting?
4. Do nurse characteristics (EBP beliefs and implementation, perceived EBPM implementation, perceived innovativeness, academic degree, years of nursing practice, oncology nursing certification) predict EBPM behavior?

5. Does unit culture for EBPM, as perceived by the nurse, predict the nurse's EBPM behavior?
6. What is the relationship of the health care organization to nurse EBPM behavior?

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Chapter 2

EVIDENCE-BASED PRACTICE BELIEFS AND BEHAVIORS OF NURSES PROVIDING CANCER PAIN MANAGEMENT: A MIXED METHODS APPROACH

Abstract

Purpose/Objectives: To describe EBP beliefs and behaviors of nurses who provide cancer pain management.

Design: Descriptive mixed methods study

Setting: Two inpatient oncology units

Sample: Forty registered nurses

Methods: Data collected by interviews, EBP Beliefs and Implementation Scales, and Carlson's Prior Conditions Instruments.

Main Research Variables: EBP beliefs, EBP implementation, and evidence-based pain management (EBPM).

Findings: Nurses agreed with the positive aspects of EBP and their implementation ability, although implementation level was low. Participants supported adopting EBPM practices and were satisfied with their practices and that of others in their unit. Oncology nursing certification (OCN®) was associated with innovativeness ($r = .46, p = .003$), and innovativeness was associated with EBP beliefs ($r = .48, p = .002$). Four themes were identified: (a) limited definition of EBP, (b) EBPM decision making varies, (c) limited identification of EBPM practices, and (d) nonpharmacologic interventions are integrated into patient care.

Conclusions: Nurses who provide cancer pain management value EBP. Their low level of EBP implementation in the context of EBPM was explained by their trust that standards of care and medical orders were evidence-based.

Implications for Nursing: Nurses' EBP beliefs and behaviors should be considered when developing strategies for sustaining EBPM practices. Oncology certified nurses should participate in strategy planning and implementation.

Knowledge Translation: (a) Qualitative inquiry is important in understanding EBP and EBPM behaviors. (b) Oncology certified nurses should be considered EBPM champions. (c) Hospital pain management policies must be evidence-based.

Keywords: EBP, EBP beliefs, EBP behaviors, cancer pain management, mixed methods

Introduction

Satisfactory pain management remains the single most important challenge to managing quality of life for patients with cancer (Dray, 2010). A seminal study published in 1994 found that 42% of patients with cancer pain were not given adequate analgesic therapy (Cleeland et al., 1994). A 2008 systematic review confirmed that patients with cancer continued to report insufficient treatment of pain (Deandrea, Montanari, Moja, & Apolone, 2008). Approximately 50% of patients receiving active treatment for cancer experience moderate to severe pain, as do 80% to 90% of patients with advanced disease (van den Beuken-van Everdingen et al., 2007). Although evidence-based guidelines for clinical management of cancer-related pain are available (from organizations such as the Agency for Health Care Policy and Research, the National Comprehensive Cancer Network, and the American Pain Society), nurses may continue to implement traditional pain management practices rather than basing their care on the best research evidence currently available.

Benefits of Evidence-Based Practice

Evidence-based practice (EBP) involves clinical decision making based on current best research evidence, clinical expertise, and patient preferences (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The Institute of Medicine has set a goal that by 2020, 90% of the clinical decisions made by health care professionals will be evidence-based (Institute of Medicine, 2009). EBP in the context of evidence-based pain management (EBPM) decreases resource utilization and patient length of stay, and improves patient outcomes including patient satisfaction, quality of life, and symptom distress (Chang et al., 2002; Green et al., 2010; Samuels, 2010). Although positive outcomes are associated with EBP, nurses are not consistent about adopting EBPM practices (Bell & Duffy, 2009; Herr et al., 2012; Idell, Grant, & Kirk, 2007; Samuels, 2010).

Nurses' Beliefs and Evidence-Based Practice

Beliefs about the value of EBP and about the ability to implement it are associated with nurses' delivery of evidence-based care (Melnyk et al., 2004; Squires, Estabrooks, Gustavsson, & Wallin, 2011). In 2005, a survey of 3,000 registered nurses (RNs) from across the United States examined nurses' perceptions of their access to tools to obtain evidence and their possession of the skills to do so (Pravikoff, Tanner, & Pierce, 2005). Of the 1,097 respondents, more than half were unfamiliar with the term *EBP*. When the RN respondents needed specific information for practice, 68% felt more confident about asking colleagues or peers and searching the Internet than about using bibliographic databases such as PubMed or CINAHL.

Nurses' top reasons for adopting EBP have been identified as having a personal interest in the change in practice, avoiding risk of negative consequences to the patient, and personally valuing the evidence (Brown, Wickline, Ecoff, & Glaser, 2009). A positive relationship exists between nurses' intentions to use research in practice and participatory management, academic degrees, education, availability of relevant research, time, positive attitudes, and mentorship. A systematic review found that the only individual characteristic consistently related to the use of research in practice was nurses' attitude toward research (Squires et al., 2011). Little is known about the relationship between EBP beliefs and EBPM implementation among oncology nurses.

Challenges of Evidence-Based Pain Management

EBPM is highly complex and not easily incorporated into health care systems and processes (Samuels, 2010). EBPM implementation involves comprehensive assessment of pain with a reliable and valid patient-report instrument, delivery of pharmacologic and nonpharmacologic interventions based on assessment findings, frequent reassessment of pain, and repeated delivery of interventions (Aiello-Laws & Ameringer, 2009). Based on the patient's

pain experience, providers make a decision regarding maintaining the current analgesic regimen or optimizing it by changing the dose, switching medications, adding treatments for side effects, or adding other pharmacologic or nonpharmacologic therapies. Provider and organizational factors such as lack of time, heavy workload, inadequate pain assessment, underuse of pharmacologic interventions, and lack of knowledge of pain management principles have been found to influence health care organizations' EBPM practices (Samuels, 2010; Samuels & Fetzer, 2009; Wilson, 2007).

The culture of nursing units within the health care setting is an important organization-level factor in the implementation of EBP (Austin & Claassen, 2008; Estabrooks et al., 2008; Pepler et al., 2005; Scott & Pollock, 2008) and EBPM (Clabo, 2008; Wild & Mitchell, 2000). Attitudes about pain and pain management may extend to the group or unit level creating a type of "group-think" about pain management issues (Wild & Mitchell, 2000). An organizational culture that actively supports EBP was significantly and positively related to EBP beliefs and EBP implementation among nurses in a community hospital and a research-oriented hospital (Melnik, Fineout-Overholt, Giggelman, & Cruz, 2010). Melnyk and colleagues (2012) recently surveyed members of the American Nurses Association and found that 53.6% ($n = 544$) of the 1,097 respondents agreed or strongly agreed that EBP was consistently implemented in their organization, and only 34.5% ($n = 379$) agreed or strongly agreed that their colleagues consistently implemented EBP with their patients. The findings support the importance of understanding the unit culture for EBPM.

Theoretical Framework

Rogers' diffusion of innovations model (2003) provides a theoretical framework for understanding why nurses adopt or reject EBPM. Diffusion is the process by which an

innovation is communicated through channels within a social system. EBPM can be considered an innovation, since it requires shifting an existing idea or practice and developing a new opinion toward a new idea or practice. The hospital setting is a social system, where nurses and other health care providers work together on problem solving to accomplish a common goal: improving the disease state of patients. Changing current pain management practice to EBPM can be considered a diffusion of innovation process.

It is often assumed that adoption of an innovation will occur automatically; however, the rate of diffusion is affected by the social system's communication strategies and the individual's decision-making process (Rogers, 2003). Antecedents to an individual's decision making regarding adoption of an innovation include the individual's previous practice, perception of existing needs or problems, and innovativeness, and the norms of the individual's social system. The purpose of this study was to describe antecedents to the EBPM decision making of nurses who provide care to patients with cancer pain. Specifically, the study sought to answer the following two questions: (a) What are the antecedents (EBP beliefs and implementation, EBPM implementation, EBPM social norms, innovativeness) to nurses' EBPM decision making? and (b) Are there significant relationships between nurses' characteristics and their antecedents to EBPM decision making?

Methods

A descriptive, cross-sectional mixed methods design involving two inpatient oncology units, one at each of two medical centers, was used for this study. The medical centers were a 450-bed academic medical center and a 491-bed community-based regional medical center in the Pacific Northwest. The study was approved by the University of Washington's institutional review board. The study sample comprised RNs who were employed at least part-time at one of

the centers and who provided direct care to patients with cancer pain. The academic medical center's 28-bed medical-surgical oncology unit employed 46 RNs. The regional medical center's 34-bed medical oncology unit, which specialized in end-of-life care, employed 60 RNs.

Nurses were invited to participate in the study (a) at shift change by the investigator, (b) via flyers posted on the unit, and (c) through e-mail sent by the nurse manager or nurse researcher at the medical center. Nurses who were interested in learning more about the study were directed to the study Website, created in Catalyst. Potential participants provided consent for study participation by completing Web-based questionnaires.

Quantitative Data Collection and Measures

Questionnaires included a demographic questionnaire, the EBP Beliefs Scale (Melnyk, Fineout-Overholt, & Mays, 2008), the EBP Implementation Scale (Melnyk, et al., 2008), and the Carlson's Prior Conditions Instruments (Carlson, 2008). Survey data were collected from 44 RNs in May and June 2013.

The **EBP Beliefs Scale** measures clinicians' beliefs about the value of EBP and their ability to implement it. It consists of 16 items using a 5-point Likert scale. The scale was treated as a one-factor scale, where items were summed and divided by 16 to yield a mean score that ranged from 1 to 5. Higher scores indicate stronger EBP beliefs. Examples of items include "I believe that EBP results in the best clinical care for patients," "I know how to implement EBP sufficiently enough to make practice changes," and "I believe the care I deliver is evidence-based." The scale has established face, content, and construct validity with internal consistency reliabilities typically greater than 0.85, and Cronbach's alpha greater than 0.90 (Melnyk, et al., 2008).

The **EBP Implementation Scale** measures the extent to which clinicians perceive themselves having implemented EBP in the past 8 weeks. It consists of 18 items using a 5-point Likert scale. The scale was treated as a one-factor scale, where items were summed and divided by 18 to yield a mean score that ranged from 1 to 5. Higher scores indicate higher levels of performance of EBP activities. Activities addressed by the items include “Critically appraised evidence from a research study,” “Used an EBP guideline or systematic review to change clinical practice where I work,” and “Promoted the use of EBP to my colleagues.” The scale has established face, content, and construct validity with internal consistency reliabilities and Cronbach’s alpha both greater than 0.90 (Melnyk et al., 2008).

The **Carlson’s Prior Conditions Instruments** was designed to measure constructs in Rogers’ diffusion of innovations model (2003). These constructs are termed prior conditions and include previous practices, perceived existing needs or problems, innovativeness, and social system norms. The prior conditions influence nurses’ decisions to use EBPM practices. The subscales include 11 items on nurses’ perceptions of how often they perform EBPM (previous practices), 6 items on nurses’ beliefs about pain and perceptions of pain management (perceived existing needs or problems), 6 items on nurses’ ability to initiate or adapt to change (innovativeness), and 7 items on nurses’ perceptions about colleagues’ pain management behaviors (social system norms). All items use a 5-point Likert scale. Each instrument was treated as a one-factor scale, where items were summed and divided by the number of subscale items to yield a mean score that ranged from 1 to 5. Higher scores indicate more support for the conditions for the adoption of EBPM practices. The subscales have established construct validity and Cronbach’s alphas of between 0.73 and 0.83 (Carlson, 2008).

Qualitative Data Collection

From August to October 2013, a subgroup of 12 nurses participated in individual semistructured interviews to share their perceptions of EBP in the context of EBPM. Nurses were selected for an individual interview based on their level of EBPM documentation in the patient medical record, which was examined as part of a larger study on barriers and facilitators to EBPM in the inpatient oncology setting. Three nurses with low scores and three nurses with high scores for EBPM documentation from each medical center were selected for the interview. Nurses were invited by e-mail and in person by the investigator. Two nurses who were invited chose not to participate due to lack of time. Twelve nurses, six from each medical center, participated in a telephone or in-person interview with the investigator. The interview questions had been pilot tested with two RNs who provide pain management at other health care organizations. Their feedback on the clarity and validity of the questions was used to develop the interview guide (see Table 1). All interviews were digitally recorded, with consent, and lasted from 30 to 45 minutes. Interview responses were transcribed verbatim by an experienced transcriptionist. These transcriptions provided the narrative data for qualitative analysis.

Data Analysis

Quantitative data from the study questionnaires were entered into IBM SPSS, version 21, for statistical analysis. Descriptive statistics (i.e., frequency distributions, percentages, means, standard deviations) were used to examine the demographic data and to answer the study questions. *T*-tests and Chi-square tests were performed to compare nurse characteristics and questionnaire scores between the two groups of nurses. Spearman's rho correlations were calculated to test relationships between nurse characteristics and the questionnaire scores. A significance level of .05 was set for all analyses.

The transcribed qualitative data were entered into ATLAS.ti (Muhr, 2014). Content analysis and thematic description (Hsieh & Shannon, 2005; Sandelowski, 2000) were used to (a) identify and understand the meaning of EBP, (b) show how EBP is operationalized, and (c) show how EBP influences pain management on the inpatient unit. The investigator and a member of the research team read each transcript for the set of general themes generated by the nurses. Ideas and concepts were coded as they were communicated through passages or whole responses. A reflexive journal was kept to record the researchers' reactions to the data and examine biases. The emerging set of themes were discussed and used to develop a formal coding framework. Codes were generated from categories that arose from the data and were based on relevant literature and Rogers' diffusion of innovations model (2003). Quotations exemplifying key themes were identified. Data saturation was met with the 12 interviews.

Results

Demographics

The final sample included 22 academic medical center nurses and 18 nurses from the community-based regional medical center (see Table 2). Four regional medical center nurses who completed questionnaires did not care for the patients whose medical records were reviewed as part of the larger study on barriers and facilitators to cancer-related EBPM; these four nurses were not included in the final sample. Nurse demographics did not differ significantly by medical center except for (a) academic degree ($p = .013$) with more nurses with an associate degree in nursing at the regional medical center and (b) part-time vs. full-time employment ($p = .033$) with more nurses working part-time at the regional medical center.

Antecedents

The two groups' average scores were not significantly different for the EBP Beliefs Scale $t(38) = -.43, p = .75$, the EBP Implementation Scale $t(38) = .91, p = .37$, or the Carlson's Prior Conditions Instruments subscales: Previous Practices $t(38) = .06, p = .96$, Perceived Existing Needs or Problems $t(38) = -.29, p = .31$, Innovativeness $t(38) = .62, p = .49$, and Norms of the Social System $t(38) = .56, p = .75$ (see Table 3).

Both groups of nurses agreed with the positive aspects of EBP and their ability to implement it ($M = 3.76, SD = .46$), although their perceived level of EBP implementation was low ($M = 1.65, SD = .68$). The nurses supported adopting EBPM ($M = 4.19, SD = .40$) and were satisfied with their own pain management practices and that of others in their practice setting ($M = 3.34, SD = .71$). The nurses were "sometimes" or "often" innovative ($M = 3.42, SD = .55$), and were neutral about their social system being supportive of adopting EBPM practices ($M = 3.39, SD = .55$).

A significant association was found between OCN® (Oncology Nursing Certification Corporation) certification and innovativeness ($r = .46, p = .003$). Innovativeness was also positively associated with EBP beliefs ($r = .48, p = .002$). Beliefs about EBP were positively associated with nurses' perceived level of EBP implementation ($r = .36, p = .02$; see Figure 1).

Themes

Four key themes emerged from the interviews relative to both EBP and EBPM. These themes and corresponding verbatim nurse responses are described below.

Nurses have a limited definition of evidence-based practice.

The nurses' understood meaning of EBP reflected the definition of research utilization: the use of research findings in clinical practice (Melnyk & Fineout-Overholt, 2011). What was not included

in their description of EBP was the integration of the best available research evidence with clinical expertise and patient values and preferences. This quote is an illustration that highlights the collective perception that the use of research improves patient outcomes:

So I guess that's something I haven't thought much about since school, but it just means to me that there have been a lot of studies done on a subject to find the ... um I guess the most helpful way to do things and prevent bad outcomes like death and infection.

Nurses vary in their evidence-based pain management decision making process.

Some nurses were unsure if they were delivering EBPM. Nurses did not describe a decision making process that included integrating the best scientific evidence with their clinical expertise and the patient's values and preferences. In addition, evidence-based interventions were not typically identified from published guidelines or research findings. These quotes explain the wide variety of EBPM decision-making processes:

Well, as a floor nurse, I think we rely heavily on our policies and what information is brought to me on education days by clinical nurse specialists. Um, I don't really individually seek out evidence-based practices to try to implement on my own.

So I guess when I am in a situation, that I've been in before, I try whatever worked previously, which isn't necessarily completely evidence-based. If I've never been in the situation before, I would go to one of the more experienced nurses.

I'm choosing it [evidence-based interventions] based on my experience more than anything else primarily and then the patient's experience secondary.

Nurses have limited involvement in determining evidence-based pain management practices.

A range of responses was elicited regarding identification of EBPM practices. Some nurses were unclear if there was a pain management policy and procedure. However, nurses were knowledgeable about policies and procedures for medication delivery systems such as epidural infusions. EBPM influence on the unit was commonly related to doctor's orders. Nurses at both medical centers were not clear if doctor's orders were always evidence-based as described by the following quotes.

“Um, personally, I don't really know like what, like what I do that is evidence-based like as a nurse because I am just carrying out the doctor's notes.

Whether what we are doing is evidence-based when I'm there, I go off of orders. I don't go off and look it up, you know, but maybe I will go home later and look it up. You know, like was this a good thing to do?”

EBPM implementation required nurses to rely on, ask, or collaborate with a doctor to order EBPM pharmacologic interventions or to adapt a pain management pharmacologic protocol. There was evidence of collaboration, but most nurses relied on doctor's orders for implementing EBPM practices. The following quote is an example of successful doctor-nurse collaboration after a nurse at the regional medical center learned about a new medication at a pharmaceutical-sponsored dinner:

Typically, they [doctors] are well ahead of us on that. So if I bring it up they will address why they aren't doing it or they will do it, but they won't blow us off. So the constipation med I was telling you about, the medical team went to that and they started researching it and we started using that drug and it has been good for constipation secondary to narcotic

use. They had been researching it on their own separately, so we ended up coming to the same conclusion.

Nurses integrate nonpharmacologic interventions into patient care.

Participants described different processes for integrating nonpharmacologic interventions into patient care. If the nonpharmacologic intervention did not require a doctor's order, nurses would independently implement it with patients.

I know that there are other ways to relieve pain then just, you know, for example narcotic pain medication, and to offer hot packs or cold packs or try to distract a patient sometimes works just as well, or can help narcotics work better and so I try to offer those things, especially if their current pain management system, what they're doing for pain management isn't working as well as it could.

Another implementation process involved collaboration with nurse colleagues to use the intervention with other patients on the unit.

If it was non-pharmacologic and something I could do without a doctor's orders, you know, I would, after reading the article or, you know, looking into it, I would probably consult with my fellow nurses, just to see or get their input and say, you know, "I found this and I thought it would work really well with our patient population, you know, would you like to help me try it or implement it?" and see how well it works for them.

The following quote describes the diffusion process of a new approach in the regional medical center:

Um, usually I would bring it to the charge nurse first or the supervisors if it is something new that I am feeling like that would change, and then we kinda talk about it to see if it is something we can trial ... and then if it is something more complex, we will send out an

e-mail to all the staff, um, and then we talk about it in huddle at the beginning of each shift. We'll talk about what it is we are trialing, or what it is we are wanting to, you know kinda put it into plan and we will put it, make notes on the board as well. Um and then we usually give it at least a week, and if it is going bad then we kinda cut it off, but if it seems to be working ... then our manager usually presents that to the other managers, and I know we have adopted things that other floors have started.

Discussion

This study provides an understanding of nurses' perspectives regarding the antecedents to EBPM decision making through quantitative results illustrated with qualitative findings. The interview responses supported the quantitative findings and provided a richer understanding.

The nurses' understood meaning of EBP described research utilization. Although the term EBP is often considered to be synonymous with research utilization, the definition of EBP is broader, because clinical decision making is based on the best available research evidence integrated with clinical expertise and patient values and preferences (Sackett, et al., 1996). The nurses' understanding of EBP was not surprising, since the focus of EBP initiatives is often on adopting practices based on the best scientific evidence rather on the more nebulous integration of patient preferences and values with clinician expertise. When probed, the nurses stated that they considered patient preferences and clinical experience when making clinical decisions.

The nurses agreed with the positive aspects of EBP and their ability to implement it, although their perceived level of EBP implementation was low. This finding is consistent with a previous study of nurses practicing in a community health care system (Melnyk, et al., 2010). The nurses' low level of EBP implementation in the context of EBPM was explained through the qualitative inquiry. Since the mainstay of pain management is analgesic therapy, nurses relied on

the medical team to ensure that the best practice was in place. Thus, nurses did not critically appraise the scientific evidence or access evidence-based guidelines to find best practices for pharmacologic therapies for pain management.

Another factor influencing EBP implementation was the nurses' trust that the unit's standards of care were evidence-based. Both hospitals had evidence-based policies and procedures, which nurses learn about at orientation and are expected to follow. Unfortunately, at the time of the interviews, the nurses were not clear that there was a pain management policy and procedure. It has been reported that nurses' knowledge of their health care organization's pain management policy is significantly related to the individual nurse's knowledge of pain management and perceived accountability for pain management (Alley, 2001). This would be an important issue to explore further at both medical centers.

When pain management interventions were not successful in relieving pain, many nurses in this study reported that they would seek out another nurse to determine other interventions to use rather than considering an evidence-based clinical practice guideline or searching the literature for current evidence-based practices. This has been previously supported in the literature (Pravikoff, Tanner, & Pierce, 2005) and demonstrates the importance of unit culture in the practice of EBPM by nurses. This finding also illustrates the importance of the social system's communication strategies in diffusing pain management practices in the hospital setting.

Nurses independently integrated non-pharmacologic treatments into patient care. The qualitative findings indicated a difference between the two groups. The academic medical center nurses did not describe sharing new treatments learned from journals or continuing education programs with their medical team. These nurses were employed by an EBP-focused

organization, as evident by its Magnet recognition status, where processes were in place to ensure best practice implementation (Stimpfel, Rosen, & McHugh, 2014). This may result in nurses not actively collaborating with the medical team when integrating new approaches into care.

As described by Rogers' diffusion of innovations model (2003), innovations are first adopted by innovators; therefore, it was not unexpected to find that perceived innovation was positively related to EBP beliefs. Innovators were also more likely to have OCN certification, so they valued having the knowledge and skills to deliver best practices for cancer symptom management. These nurses should be considered champions for sustaining EBPM on the inpatient oncology unit and should be a resource to other staff nurses.

Limitations

Due to the small, self-selected sample, caution should be taken in generalizing these findings to other health care settings or nurses. The use of self-reported data is an additional limitation. Lastly, since diffusion of an innovation takes place over time, a longitudinal study design will be required to describe the innovation diffusion process.

Conclusion and Implications

Through a mixed methods approach, this study provided a rich description of the antecedents to innovation decision making among two groups of nurses caring for patients with cancer pain. Further, this study allowed a detailed understanding of oncology nurses' perspectives regarding EBP. Insights gained from this study should be considered when evaluating EBPM behaviors in health care organizations. The antecedents to EBPM decision making need to be considered when developing an action plan for improving EBPM. Making sustained EBPM a reality in the health care setting is essential for quality cancer care.

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Table 1. *Nurse Semi-structured Interview Guide*

1. What does evidence-based practice mean to you?
2. How does evidence-based practice influence pain management on your unit?
3. Do you have a protocol on your unit for pain management?
4. How do you choose evidence-based interventions?
5. If you have knowledge or evidence about a new approach, how do you integrate it into your care?

Table 2. *Participant Demographics**(N = 40)*

Characteristic	<i>n</i>	%
Gender		
Male	3	7.5%
Female	37	92.5%
Age range (years)		
20–40	25	62.5%
41–50	9	22.5%
51–60	6	15%
Ethnicity/Race		
Caucasian/White	35	87.5%
Asian	3	7.5%
Black/African American	1	2.5%
Other	1	2.5%
Years Employed at Workplace		
1–2	8	20%
3–5	19	47.5%
6–10	13	30%
> 10	1	2.5%
Employment Status		
Full-time	25	62.5%
Part-time	15	37.5%
OCN Certification		
No	30	75%
Yes	10	25%
Highest Nursing Degree		
Associate’s Degree	18	45%
Bachelor’s Degree	22	55%
Years in Nursing Practice		
Mean = 6.8		
Median = 4.6		
SD = 5.9		
Range = 1–30		

Table 3. *Mean and Range of Scores for the Quantitative Measures*

	AMC	CRMC	Combined	Range
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	
EBP Beliefs Scale	3.73 (.46)	3.79 (.48)	3.76 (.46)	2.94–4.88
EBP Implementation Scale	1.74 (.83)	1.55 (.45)	1.65 (.68)	1.11–5.0
Carlson's Prior Conditions Instruments				
Previous Practices	4.19 (.41)	4.18 (.40)	4.19 (.40)	2.27–4.82
Existing Needs/Problems	3.40 (.72)	3.27 (.70)	3.34 (.71)	1.86–4.57
Innovativeness	3.47 (.57)	3.36 (.54)	3.42 (.55)	2.17–4.67
Social System Norms	3.36 (.61)	3.41 (.48)	3.39 (.55)	2.29–4.71

Note: AMC = academic medical center, CRMC = community-based regional medical center.

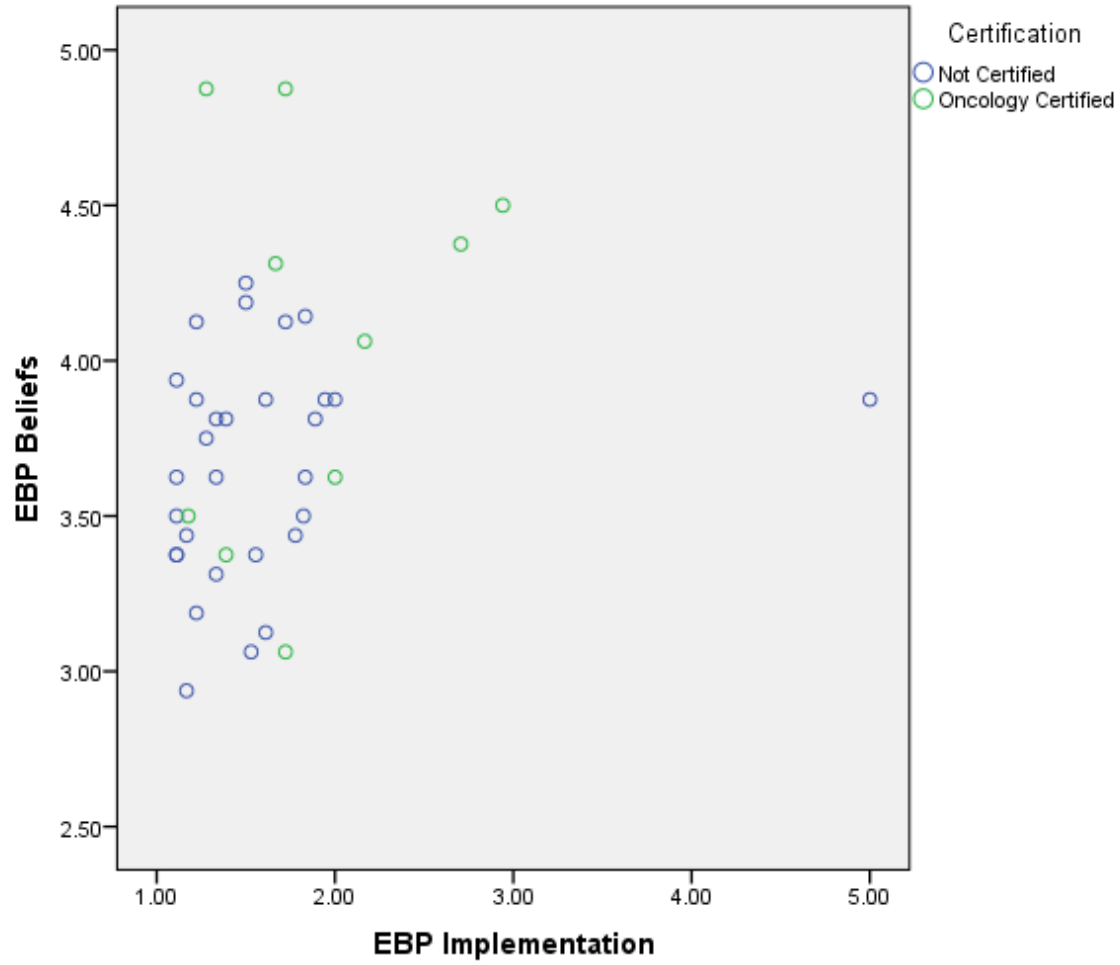


Figure 1. Scatter plot of EBP beliefs and implementation scores by certification

Chapter 3

EVIDENCE-BASED CANCER PAIN MANAGEMENT: BARRIERS, FACILITATORS, AND STRATEGIES FOR SUSTAINING IMPLEMENTATION

Abstract

Background: Successful management of cancer pain depends on health care providers using the evidence-based practice process; however, sustaining these practices within health care organizations can be challenging.

Aims: This study aimed to describe nurse-level and organization-level barriers, facilitators, and strategies for sustaining evidence-based pain management for cancer pain in nurses' clinical decision making.

Design and Methods: This descriptive, cross-sectional qualitative study used 20 semi-structured interviews to provide a detailed understanding of the perspectives of staff nurses, nurse managers, advanced practice nurses, and chief nursing officers. Content analysis was used to interpret the interview data.

Setting: The study was conducted at two inpatient oncology units, one at an academic medical center and one at a community-based regional medical center.

Participants: Participants included 12 staff nurses, 2 nurse managers, 4 advanced practice nurses, and 2 chief nursing officers at two medical centers.

Results and Conclusions: Lack of time to access and use EBPM was the most common barrier to implementation, identified by the majority of staff nurses and nurse managers, and by one advanced practice nurse. The most common facilitators were computer systems, clinical nurse specialists, and nurse educators. Strategies used to sustain evidence-based pain management practices were implemented by clinical nurse specialists and educators and included posters, one-to-one teaching, patient rounds, and reminders. Tailored strategies to overcome identified barriers and to enhance facilitators are essential to ensuring nurses' success at implementing evidence-based cancer pain management.

Background

Relief from cancer pain depends on health care providers using the best pain management practices, guided by the steps of the evidence-based practice (EBP) process. These steps include (a) identifying the clinical problem, (b) searching for and critically analyzing the best evidence, (c) integrating the evidence with the provider's clinical expertise and the patient's preferences and values to make a change in patient care, (d) evaluating the outcomes of the practice change, and (e) disseminating the outcomes of the evidence-based practice change (Melnik & Fineout-Overholt, 2011). Sustaining the adoption, implementation, and maintenance of changes in practice is a complex process that requires motivating and facilitating health care providers to use available evidence-based information (Austin & Claassen, 2008). The detailed, attentive nursing care required to implement evidence-based pain management (EBPM) adds to the complexity of implementation. EBPM requires comprehensive assessment and reassessment, delivery and redelivery of interventions based on the patient's pain experience, communication with interdisciplinary team members, and decisions regarding maintaining or modifying the analgesic regimen and adding treatments for side effects (Aiello-Laws & Ameringer, 2009). Successful management of cancer pain within a health care organization involves developing implementation strategies for sustaining EBPM practices; development of such strategies involves first identifying the barriers and facilitators to implementing EBPM.

Both nurse-level and organization-level factors influence the adoption and implementation of EBP in health care organizations. Documented nurse-related barriers include lack of EBP knowledge and skills, negative attitudes toward research, perceived or real lack of support, time and resource constraints, lack of authority to make a practice change, and beliefs about organizational readiness for EBP (Melnik & Fineout-Overholt, 2011; Ploeg, Davies, Edwards, Gifford, & Miller, 2007; Pravikoff, Tanner, & Pierce, 2005; Squires, Estabrooks,

Gustavsson, & Wallin, 2011; Strickland & O'Leary-Kelley, 2009). Organization-related barriers to implementing EBP include lack of time for nurses to retrieve clinically useful information, lack of managerial commitment, lack of available information technology, and differing practice goals between administrators and staff nurses (Bradley, Schlesinger, Webster, Baker, & Inouye, 2004; McCaughan, Thompson, Cullum, Sheldon, & Thompson, 2002; Rycroft-Malone et al., 2004).

EBP facilitators enable implementation of evidence into practice or make it easier (Melnik & Fineout-Overholt, 2011). A health care organization that actively supports EBP must have organizational resources for ensuring that practice is based on the best evidence available (Smith & Donze, 2010). These organizational resources include physical, human, and financial resources. The most important physical resource is computers with Internet access, which provide access to EBP information such as evidence-based guidelines (Melnik & Fineout-Overholt, 2011). Human resources such as advanced practice nurses or nurse scientists provide EBP education and role modeling. In addition, leaders at all levels of a health care organization, including direct care staff, advanced practice nurses, managers, and executive directors, have been identified as influencing EBP (Gifford, Davies, Edwards, & Graham, 2006). Important leadership activities include facilitating staff EBP behaviors through support, visibility, and communication; creating a positive milieu through vision, role modeling and change; and influencing organizational structures and processes through resources, policies, and monitoring. Financial resources support the human and physical resources. Lack of these organizational infrastructure components have been found to hinder the adoption of EBP among nurses (Melnik & Fineout-Overholt, 2011).

Implementation strategies provide potential adopters with knowledge about a practice change and encourage them to use it (Logan & Graham, 1998). Little is known about which EBP implementation strategies work for specific patient problems and in what context, or about the mechanisms that make implementation strategies effective in sustaining EBP behaviors (Institute of Medicine, 2007). EBP implementation strategies used in clinical practice include interventions such as dissemination of educational materials, reminders, best practice champions, audit and feedback mechanisms, and tailored strategies to overcome identified barriers and enhance EBP facilitators (Cheater et al., 2009; Grimshaw et al., 2001). Multifaceted interventions have been shown to be more effective than single interventions and to improve collaboration between professionals, which may facilitate the diffusion of evidence-based practices (Brink-Huis, van Achterberg, & Schoonhoven, 2008; Dijkstra et al., 2006; Grimshaw, et al., 2001; Grol & Grimshaw, 2003).

The nursing literature indicates that educational strategies in combination with best practice champions, audit and feedback, or nursing rounds have shown success in improving oncology nurses' implementation of pain management clinical practice guidelines (Dulko, Hertz, Julien, Beck, & Mooney, 2010; Idell, Grant, & Kirk, 2007; Ploeg et al., 2010). The use of educational strategies is key, since oncology nurses often lack adequate knowledge of pain management principles and subsequently are ill-prepared to address patients' pain appropriately (Grant, Ferrell, Hanson, Sun, & Uman, 2011; Linkewich et al., 2007; Wilson, 2007). In addition, computerized decisional support systems and specialist-level pain consultation services have improved oncology nurses' practice of EBPM (Goldberg & Morrison, 2007).

To further identify and advance strategies for sustaining EPBM for cancer pain in the clinical decision making of oncology nurses, it is important to study EBPM in the context of the

inpatient oncology setting. The research question that guided this study is: What are the nurse-level and organization-level barriers, facilitators, and strategies for sustaining EBPM for cancer pain in clinical decision making among nurses in the inpatient oncology setting?

Methods

A descriptive cross-sectional design was used for this study. Two medical centers in the Pacific Northwest participated. A medical-surgical oncology unit at a 450-bed academic medical center and a medical oncology unit at a 491-bed community-based regional medical center provided the data collection sites. The academic medical center's 28-bed medical-surgical oncology unit employed 46 registered nurses. The regional medical center's 34-bed medical oncology unit specialized in end-of-life care and employed 60 registered nurses. The study received human subjects approval by the institutional review board at the investigator's university and was part of a larger study addressing nurse implementation of EBPM for cancer pain as measured by nurse documentation in the patient medical record.

The purposive sample for this study was composed of (a) registered nurses who were employed at least part-time as staff nurses and provided direct care to patients with cancer pain, (b) nurse managers of the inpatient oncology units, (c) advanced practice nurses, and (d) chief nursing officers. As part of the larger study, staff nurses were informed at the time of study enrollment that they might be contacted by an investigator to participate in an interview. Staff nurses were selected based on their performance of EBPM documentation in the medical record. Performance level was determined by the research team who reviewed patient medical records and assigned a score to each nurse documentation based on the number of EBPM indicators addressed. Three "high performers" and three "low performers" were identified from each medical center and recruited for interviews. Nurses were invited by e-mail and in person by the

investigator. The advanced practice nurses participating in this study were three clinical nurse specialists and one nurse educator. They were selected to participate in this study because they were employed in positions that supported EBP decision making in their medical center. Nurse managers were invited to participate because they were in charge of the nursing unit's daily operations and managed the participating staff nurses. Chief nursing officers were recruited because they could provide insight into the organizational infrastructure for EBP.

Semi-structured interview guides were developed by the investigator to elicit information about the perceived barriers, facilitators, and strategies used to sustain EBPM practices (see Table 1). The staff nurse interview guide was reviewed by two registered nurses who cared for individuals with pain at different hospitals. Based on their feedback, the interview guide was revised.

All participants were invited by the investigator in person, by email, or through both methods. Two staff nurses who were contacted stated that they were too busy and declined to participate; everyone else who was invited agreed to be interviewed. Individual semi-structured interviews were conducted by telephone or in person with 20 participants from June to October 2013 (see Table 2). All interviews were digitally recorded with consent, and lasted from 30 to 45 minutes.

The interviews were transcribed verbatim by a transcriptionist, and the data entered into the data management program ATLAS.ti (Muhr, 2014). Content analysis (Hsieh & Shannon, 2005; Sandelowski, 2000) was used to describe the EBP culture of the two medical centers, and the barriers, facilitators, and strategies to sustaining EBPM practices among the two groups of nurses. Each transcript was read by the investigator and another member of the research team. The ideas and concepts as communicated through passages or complete responses were assigned

codes. The codes were created from categories developed from within the data and based on the relevant literature for barriers, facilitators, and implementation strategies for EBP and EBPM. Frequency counts of EBPM barriers, facilitators, and implementation strategies were recorded. Direct quotes exemplifying key ideas and concepts were identified.

Results

Organizational Culture of Evidence-Based Practice

The organizational culture for both medical centers was supportive of EBP, as evidenced by their interest in obtaining Magnet recognition: a standard for organizational excellence in nursing and quality patient outcomes recognized by the American Nurses Credentialing Center (American Nurses Credentialing Center, 2008). The academic medical center was one of the first hospitals in the country to receive Magnet recognition and was associated with a university school of nursing, while the community-based regional medical center was in the process of applying for Magnet recognition. Both medical centers had instituted a shared governance structure for shared decision making among nurses.

The chief nursing officers, however, perceived differences in how EBP was practiced by the nurses at the two medical centers. The chief nursing officer from the academic medical center was positive about nurses' practice of EBP and believed nurses practiced EBP at a "fairly high level," but recognized that "there is always room for us to improve." In comparison, the chief nursing officer from the regional medical center felt that EBP was not practiced "as much as it should be" and EBP was based on the extent that nurses followed evidence-based policies and procedures.

At both sites, new nurses were oriented to the medical centers' EBPM policy and procedures at orientation. The expectation at both hospitals was that nurses would then follow

the policies and procedures. The chief nursing officer at the regional medical center and both units' nurse managers expressed the belief that the pain management policies and procedures were essential to nurses implementing EBPM; however, the majority of staff nurses interviewed were not aware that there were policies and procedures specific to pain management, but they did know about policies and procedures for pain management delivery systems such as patient-controlled analgesia and epidurals. Embedding evidence into policies, procedures and order sets was described by one of the advanced practice nurses as “intellectually dragging everybody down the road” of EBP. This facilitated the practice of EBPM by nurses rather than requiring nurses to implement the steps of EBP, i.e., to search for and critically analyze the best evidence.

Measurement and sharing of outcomes by nurses was part of the culture at both medical centers. The practice and leadership councils supported through the shared governance structure were mechanisms for nurses' measurement and sharing of outcomes. Conducting chart audits was a primary mechanism of collecting outcomes data. Nurse-sensitive outcomes data such as patient fall and pressure ulcer data were often shared with the nurses by posting the findings on staff bulletin boards. In the interviews, staff nurse participants stated that they found this information helpful. The academic medical center also shared nurse-sensitive outcomes data with the public through posters displayed in the medical center's lobby during Nurses' Week. Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey data and Press Ganey health care performance scores for pain management satisfaction were considered benchmarks by the medical centers' administration.

Both chief nursing officers were in agreement that the employment of clinical nurse specialists was a primary way that fiscal resources were used to support EBP. The academic medical center employed eight clinical nurse specialists, and the regional medical center

employed six. The academic medical center employed a pain management clinical nurse specialist, and in the past, the regional medical center had employed an oncology clinical nurse specialist who was a pain management champion. Clinical nurse specialists and nurse educators were viewed by both chief nursing officers and both nurse managers as clear points of contact within the organization for nurses to obtain research evidence. The role of clinical nurse specialists in facilitating EBP was illustrated by the following quote from a chief nursing officer: “I think having exceptional clinical nurse specialists who help look at and question and bring up new opportunities, new ways of doing things with the nurses . . . are really helpful.”

Web-based resources, which allow nurses to get “quick, easy access to current evidence,” were also recognized by the regional medical center’s chief nursing officer as a fiscal investment supporting the EBP process.

The use of research evidence in the nursing staff’s decision making was monitored or evaluated by incidents that were reported to the nurse manager, such as if a policy or procedure was not being followed by a nurse. However, the nurse managers also monitored use of evidence by when nurses approached them to share ideas for improving pain management. The nurse manager at the regional medical center stated that a “fair amount of them [nurses] do read articles and journals specific to oncology, they’ll bring me stuff or they’ll tell me stuff, e-mail me stuff.” This was also confirmed by the staff nurses.

Barriers to Evidence-Based Pain Management Practice

The most commonly mentioned barrier to implementation of EBPM practice was lack of time. This was perceived as a barrier by the majority of staff nurses, both nurse managers, and one advanced practice nurse (see Table 3). Lack of time was a barrier in terms of finding EBPM information and using it. Nurses from the community-based regional medical center said that

they would look things up at home since there was no time at work to do so. This quote from a staff nurse illustrates this common barrier:

I think that we all do our best, and we all want to provide the best care for our patients, but sometimes we don't have the time to, you know go onto the computer, or go on this, or call this clinical nurse specialist or ... I mean we do when we need to and we'll stop everything we're doing and, if there's some type of urgent situation, or if we have a patient who's obviously in a huge pain crisis that needs priority over a lot of things, but sometimes there's just, if you know this is what I've done in the past and it worked, you're just going to do that because you're so busy with everything else, you're not able, you're not like opening your eyes and broadening your horizons and trying to find alternative things or just further learning for yourself, or maybe this is what I always do but maybe I can do this and it would be better. We just sometimes don't have the time to do that so we just do what we know.

At both medical centers, the hospital-based computer system provided access to EBPM resources. Policies and procedures were available on the computer system. Although the computer system was designed to be helpful, it also was a hindrance to EBPM practice as described by one nurse:

It is hard for me. ... I prefer a book to tell you the truth. I like to browse through and leaf through and be able to find other things on my journey to whatever and um I find it kinda difficult to navigate to find what I want on the Internet quickly.

Other health care providers were also identified as barriers. A nurse was perceived as a barrier by other nurses if he or she did not have the pain management knowledge to implement best practices. For example, if nurses fear oversedating a patient or feel that a patient is "drug

seeking,” these perceptions lead to ineffective pain management practice. Doctors were seen as barriers when they were perceived as not understanding acute or chronic pain management strategies and they subsequently prescribed inadequate analgesic regimens.

Nurses at the academic medical center identified patients as barriers when they were not willing to try other interventions for pain management, such as other analgesics or non-pharmacologic interventions. Patients were also seen as barriers when they were fearful of taking an opioid to control their pain.

Lastly, resources were a perceived barrier when nurses lacked knowledge about pain management resources such as websites or books. They were also a barrier when they were needed for implementation of a non-pharmacologic intervention, such as a self-hypnosis CD, but were not available on the unit.

Facilitators and Strategies for Sustaining Evidence-Based Pain Management Practices

The identified facilitators and strategies for sustaining EBPM practices were similar between the nurses at the two medical centers, with the most common being access to Web-based resources, a physical resource (see Table 4). The medical centers’ information technology systems were designed to provide easy access to research evidence. At the regional medical center, best practices could be found through established links provided by commercial care plans for specific patient problems such as pain.

Human resources were also recognized as important facilitators for sustaining EBPM. Clinical nurse specialists and educators were perceived as key knowledge brokers and EBP champions by the chief nursing officers, the nurse managers, and the advanced practice nurses. Unique to the academic medical center were the pain resource nurses and the school of nursing faculty member who worked part-time as a PhD-prepared nurse researcher. The pain resource

nurses, of which the inpatient medical-surgical oncology unit had six, were staff nurses who had received formal training in pain management and provided pain management education and consultation to their peers.

Pain management education, which both organizations offered in formal classes within the medical center, was a strategy for sustaining EBPM. Attending educational offerings at the academic medical center during work hours was often challenging for nurses, however, as described in this quote:

When you are sitting in an in-service, I can guarantee, you're giving like 30% of your brain to that in-service, because the rest of your brain is going through your shift and what you need to do for your current patients because that's your priority when you're at work. So, it's hard to mix education and actual patient care sometimes.

To facilitate learning during work hours, clinical nurse specialists and nurse educators implemented the strategy of bringing teaching to the unit through posters, one-to-one teaching, and patient rounds. In addition, nurses at the regional medical center described learning about pain management by reading nursing and medical journals at home and attending continuing education events such as conferences and pharmaceutical dinners.

Reference books and tools were also perceived as strategies for sustaining EBPM. The academic medical center used an electronic tool to remind nurses when to reassess patients for pain during pharmacologic and non-pharmacologic treatments.

Improving Implementation of Evidence-Based Pain Management Practices

Ideas for strategies to improve EBPM practice were identified by all participants. They included human resource strategies such as a pain management expert available 24-7 and additional clinical nurse specialists. Strategies to help with evidence-based decision making

included reminders and flow sheets. It was also suggested that improving interdisciplinary communication and “breaking down the barriers” such as attitudes and behaviors would improve EBPM practices. Finally, suggested education strategies included nurse debriefings to discuss what worked and didn’t work for pain control, 5-minute in-services at the beginning of a shift, improving pain management knowledge hospital-wide, and establishing a central EBPM area as described by one staff nurse:

It would be nice if there was one central location where there was like printouts of policies and procedures, there was pictures like this is an epidural and this is, you know, how you count it so you make sure you are counting it, so just things like that where everything is one place so if you have a question, you have one central location to go to instead of trying to like go around and try to find things from a bunch of different areas. Because I think that’s what’s the hardest, like when you have to search for this evidence-based practice, or you’re trying to figure out who you should go talk to, and it’s not in one central location, and sometimes you just don’t have time to do all that searching.

Discussion

The current study adds insight into barriers, facilitators, and implementation strategies for EBPM as perceived by inpatient oncology unit staff nurses, advanced practice nurses, nurse managers, and chief nursing officers.

Lack of time to access and use EBPM is a barrier that is well documented in the literature. All participants who were asked about barriers (nurse managers, advanced practice nurses, and staff nurses) recognized lack of time as the most common barrier. If the EBPM information was not immediately accessible, the nurse may not spend the time to get it and use it. Overcoming this barrier requires tailored strategies such as those the advanced practice nurse

participants were already implementing (i.e., posters with evidence-based information, reference tools for evidence-based care, and one-to-one teaching to nurses on the unit).

The computer system was both a barrier and a facilitator for sustaining EBPM on the unit and was dependent on the nurses' familiarity with the computer system and their computer literacy. From a management perspective, effective computer support is a fiscal investment, and training must occur for all nurses to successfully use the system. Improvements in presenting information clearly and easily need to be employed so nurses can gain quick access to the technology resources rather than navigating through multiple layers of information.

Our findings demonstrate how valuable the strategies implemented by clinical nurse specialists and educators were to sustaining an EBP culture at the two medical centers. Both of these types of advanced practice nurses were clear points of contact within the medical centers for obtaining research evidence; thus, they were essential in closing the gap from research to practice. In addition, clinical nurse specialists and educators were critical in identifying and developing tailored strategies to overcome EBPM barriers and to sustain EBPM. These human resources are a valuable fiscal investment that was strongly supported by the medical centers. The pain resource nurse is another human resource and strategy that has been shown to enhance EBPM practices (Ladak et al., 2013).

The Institute of Medicine has set a goal that by 2020, 90% of the clinical decisions made by health care professionals will be evidence-based (Institute of Medicine, 2009). A formal process for monitoring and evaluating nurses' evidence-based decision making was not in place at these two medical centers. Instead, monitoring was driven by reports of incidents of poor patient care. Health care organizations need to have monitoring and evaluating processes in place to ensure that evidence-based decision making by nurses is a reality. Including pain management

as part of nurses' annual reviews would focus attention on the organization's commitment to EBPM.

A culture of EBP includes internalizing evidence into practice standards and shared governance structures. Both medical centers embedded evidence into policies and procedures to guide clinical practice and internalized evidence through their shared governance structure. The presence of an EBP culture must be in place for an organization to apply for Magnet recognition (Poe & White, 2010). Lastly, since the academic medical center was a teaching organization, it had the additional human resource of a nurse researcher from the school of nursing to support EBP. The community-based regional medical center was not a teaching organization, and this may be why the staff nurses there sought out information from journals and continuing education offerings more actively.

Study Limitations

The findings from this study may not be transferable to other settings, given that the participants were from inpatient settings in medical centers where Magnet recognition is valued. Regional and educational differences in health care organizations may play a role in the barriers, facilitators, and implementation strategies for EBPM. Lastly, nurses' EBPM behaviors need to be evaluated. This could be done through direct observation of nursing practice or review of the nurses' pain management documentation in the patient medical record.

Conclusion

This study expands what we know about EBP barriers, facilitators, and implementation strategies that are applicable to EBPM practices. The study findings provide an understanding of the similarities and differences in cancer-related EBPM practice at two medical centers as perceived by staff nurses, nurse managers, advanced practice nurses, and chief nursing officers.

Barriers and facilitators for cancer-related EBPM practice need to be identified in order to develop tailored strategies to overcome the barriers, enhance the facilitators, and ensure that nurses are capable of successfully managing cancer pain.

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Table 1. *Semi-structured Interview Guides***Chief Nursing Officers**

- To what extent do you believe that evidence-based practice is practiced by nurses in your hospital?
- To what extent are the measurement and sharing of outcomes part of the culture of your hospital?
- To what extent are fiscal resources used to support evidence-based practice?
- What strategies does your hospital use to sustain evidence-based pain management?
- If you could make a change to improve implementation of evidence-based pain management, what would you do?

Nurse Managers and Advanced Practice Nurses

- What tools or resources does your hospital use to facilitate evidence-based pain management?
- How is the use of research in the nursing staff's decision making monitored and evaluated?
- If you could make a change to improve implementation of evidence-based pain management, what would you do?

Staff Nurses

- What tools or resources help you in implementing evidence-based pain management?
- Are there other tools or resources that would help you in delivering evidence-based pain management?
- What barriers make it difficult to implement evidence-based pain management?
- If you could make a change to improve implementation of evidence-based pain management on your unit, what would you do?

Table 2. *Number of Interviews by Nurse Role*

Role	<i>n</i>
Chief Nursing Officer	2
Nurse Manager	2
Clinical Nurse Specialist	3
Nurse Educator	1
Staff Nurse	12
Total	20

Table 3. *Reported Barriers to the Implementation of Evidence-Based Pain Management**Practices*

Barrier	Total %	Staff Nurse (N = 12)		APN (N = 4)		Manager (N = 2)	
		AMC	CRMC	AMC	CRMC	AMC	CRMC
Lack of Time	60	4	5	0	1	1	1
Computer System	20	1	3	0	0	0	0
Doctor	20	3	1	0	0	0	0
Nurse	20	1	2	0	1	0	0
Resources	15	1	1	0	1	0	0
Patient	10	2	0	0	0	0	0

Notes. APN = advanced practice nurse; AMC = academic medical center; CRMC = community-based regional medical center.

Table 4. *Reported Facilitators and Strategies for Sustaining Delivery of Evidence-Based Pain**Management*

Facilitator	Total %	Staff Nurse (N = 12)		APN (N = 4)		Manager (N = 2)		CNO (N = 2)	
		AMC	CRMC	AMC	CRMC	AMC	CRMC	AMC	CRMC
Web-based resources	65	2	5	1	1	1	1	1	1
Human resources									
CNS	50	3	1	1	1	1	1	1	1
Medical team	45	5	2	0	1	0	1	0	0
Nurse leadership	45	0	1	2	2	1	1	1	1
Committees									
PRN ^a	40	4	0	2	0	1	0	1	0
Other RNs	30	3	3	0	0	0	0	0	0
Nurse Educator ^a	30	0	2	0	2	0	1	0	1
Pharmacist	20	0	1	1	1	0	0	1	0
SON researcher ^a	15	0	0	2	0	0	0	1	0
Policies & procedures	40	1	0	2	2	1	1	0	1
Education	35	0	5	1	0	0	0	0	0
Reference books/tools	30	0	2	1	0	1	1	0	1

Notes. RN = registered nurse; APN = advanced practice nurse; CNO = chief nursing officer; AMC = academic medical center; CRMC = community-based regional medical center; CNS = clinical nurse specialist; PRN = pain resource nurse; SON = school of nursing.

^aThese facilitators were found at only one of the two medical centers.

Chapter 4

THE RELATIONSHIP OF NURSE CHARACTERISTICS, HOSPITAL, AND UNIT
CULTURE TO CANCER PAIN MANAGEMENT PRACTICES

Abstract

Background: Nurse evidence-based pain management behavior is essential to relieving patients' cancer pain in the inpatient setting. Both nurse-level and organization-level factors influence the use of evidence-based pain management practices.

Objective: The purpose of this study was to develop a model that described nurses' cancer pain management behavior.

Methods: Data were collected from 40 registered nurses, via a questionnaire and 403 nurse documentation encounters with 58 patients. The participants were from two inpatient oncology units—one each at an academic medical center and a community-based regional medical center. Data were first analyzed descriptively, then with a mixed model.

Results: Hospital was the significant predictor for evidence-based pain management behavior in this model ($\beta = -0.377$, $se = .042$, $p < 0.001$). Nurse documentation of pain management was significantly different between the two medical centers: $t(401) = 22.56$, $p < .001$. Nurse characteristics and unit culture did not predict evidence-based pain management behavior.

Conclusions: The factors that influence evidence-based pain management behavior are complex. A higher level of evidence-based pain management care was provided at the academic medical center's inpatient oncology unit, which had nurse resources that routinely provided pain management education and consultation. The academic medical center also had Magnet recognition.

Implications for Practice: Future studies should include pain management clinical nurse specialists, pain resource nurses, Magnet status, and nurse pain management knowledge as predictors of nurse evidence-based pain management behavior. Knowledge of the factors that influence evidence-based pain management practices will inform strategies for sustaining evidence-based pain management in the oncology inpatient setting.

Evidence-based pain management (EBPM) in the inpatient setting is a complex process. To ensure safe delivery of analgesic therapy and assess its effectiveness, EBPM requires a detailed patient assessment using a reliable and valid assessment tool, implementation of pharmacologic and nonpharmacologic treatments, reassessment of the patient's pain experience, maintenance or modification of analgesic therapy, management of adverse effects, addition of pharmacologic or nonpharmacologic treatments, and communication with the medical team (Aiello-Laws & Ameringer, 2009). Nurses in the inpatient setting spend the most time with patients in pain, and are essential in implementing EBPM practices to relieve cancer pain. Their behavior is influenced by nurse characteristics, health care organization practices, and unit culture.

Nurse Characteristics

Nurse characteristics are important to consider when evaluating EBPM practice. Examples of nurse characteristics include evidence-based practice (EBP) beliefs, nurse perceived EBPM implementation and innovativeness, academic degrees and years of nursing practice. Beliefs about EBP and one's ability to implement it are related to nurse delivery of evidence-based care (Melnyk, Fineout-Overholt, Feinstein, et al., 2004; Squires, Estabrooks, Gustavsson, Wallin, 2011). A positive association exists between higher levels of education and nurses' intentions to use research in practice (Squires, et al., 2011). Barriers to EBP implementation among nurses are well documented in the literature and include lack of EBP knowledge and skills, negative attitudes toward research, perceived or real lack of support, time and resource constraints, lack of authority to make changes in practice, and beliefs about organizational readiness for EBP (Melnyk & Fineout-Overholt, 2011; Ploeg, Davies, Edwards, Gifford, Miller,

2007; Pravikoff, Tanner, Pierce, 2005; Strickland, O'Leary-Kelley, 2009; Grant, Ferrell, Hanson, Sun, Uman, 2011).

Among oncology nurses, knowledge of pain principles has been found to influence EBPM implementation (Grant, et al., 2011; Xue, Schulman-Green, Czaplinski, Harris, McCorkle, 2007). Since oncology nursing certification (ONC®) indicates that a nurse has the knowledge and expertise to competently care for patients with cancer (Brown, Murphy, Norton, Baldwin, Ponto, 2010) it can be speculated that nurses with this certification may provide a higher quality of pain management to their patients.

Health Care Organization Practices

In order to support nurse EBPM behavior, health care organizations must have practices in place that enable nurses to deliver patient care based on the best evidence. These practices include access to medical information resources, pain education and consultation by specialists such as advanced practice nurses, and administrative support (Melnyk & Fineout-Overholt, 2011). An example of health care organizations that support EBPM behavior are those with Magnet recognition. This status is awarded to hospitals that demonstrate excellence in nursing practice and patient outcomes by providing evidence-based patient care (American Nurses Credentialing Center, 2008).

A health care organization's pain management model also impacts nurse implementation of EBPM. A systematic review of organizational models with integrated processes for the management of cancer pain found that the types of models demonstrating positive results for pain relief and patient satisfaction were 1) institutional models (policies and procedures for pain assessment and pain treatment), 2) clinical pathway models (pain assessment and pain treatment), and 3) pain consultation models (Brink-Huis, van Achterberg, Schoonhoven, 2008).

Unit Culture

The culture of a nursing unit within the health care setting is a significant organization-level factor in the implementation of EBP (Austin & Claassen, 2008; Estabrooks, Scott, Squires, et al., 2008; Melnyk BM, Fineout-Overholt E, Giggelman M, Cruz, 2010; Scott & Pollock, 2008). Culture is defined as the shared values, beliefs, and assumptions of a group, which guide the behavior of the group through shared social norms (Schein, 2006). The use of scientific evidence in practice is both a cognitive process and a social process, as evident by the impact of unit culture on the adoption of EBP (Alta, Richer, Heon, 2007). For example, rather than seeking and implementing evidence-based care, nurses may continue to use interventions that are ineffective and not evidence-based because this is level of care delivered by the nurses on their unit. Clabo (2008) used an ethnographic approach to determine that unit culture influenced pain assessment practice among nurses on two postoperative units. Wild and Mitchell (2000) found unit culture, as perceived by nurses, to have an impact on pain outcomes on three inpatient units including a medical oncology unit.

Evidence-Based Pain Management Behavior

EBPM practices by nurses can be evaluated through direct observation or by review of nurse documentation in the medical record. Documentation provides evidence of the clinical decision-making process for managing pain. Hospitals accredited by The Joint Commission are required to follow specific standards to document pain assessment, intervention, and reassessment (Resources, 2009). These standards have influenced organizations to implement policies and procedures to ensure proper assessment and management of pain; however, achieving Joint Commission standards for pain management documentation is often challenging (Cohen, Easley, Ellis, et al., 2003; Gordon, Rees, McCausland, 2008; Samuels & Fetzer, 2009;

Weinstein, Romanus, Lepisto, et al., 2009). Clinical expertise has been found to be negatively related to the documentation of pain management (Samuels & Fetzer, 2009; Idell, Grant, Kirk, 2007), and experts may have more difficulty incorporating EBP than do less-experienced nurses (Samuels & Fetzer, 2009).

Understanding the factors that influence the implementation of EBPM by nurses will inform strategies for sustaining EBPM practice in the inpatient oncology setting. The purpose of this study was to develop a model to describe cancer pain management behavior of nurses as indicated by nurse documentation in the medical record. Specifically, the study sought to answer the following questions: (1) Do nurse characteristics (EBP beliefs and implementation, perceived EBPM implementation, perceived innovativeness, academic degree, years of nursing practice, oncology nursing certification) predict EBPM behavior? (2) Does unit culture for EBPM, as perceived by the nurse, predict the nurse's EBPM behavior? (3) What is the relationship of the health care organization to nurse EBPM behavior?

Methods

A cross-sectional hierarchical design was used for this study. The study was conducted from May to September 2013 at two inpatient oncology units in the Pacific Northwest area, one at a 450-bed academic medical center and one at a 491-bed community-based regional medical center. The academic medical center's 28-bed medical-surgical oncology unit employed 46 registered nurses (RNs). The regional medical center's 34-bed medical oncology unit specialized in end-of-life care and employed 60 RNs.

This study was part of a larger mixed-methods study examining barriers, facilitators, and strategies for sustaining EBPM implementation. Human subjects approval was obtained from the

institutional review board at the investigator's university. The sample consisted of RNs who provided direct care to patients with cancer pain and who worked at least part-time.

Survey Data Collection

A convenience sample of 22 RNs from the academic medical center and 18 RNs from the regional medical center participated in the study. The participants represented 48% of the nurses employed on the academic medical-surgical oncology unit and 30% of the nurses at the regional center's medical oncology unit. Participants completed the following Web-based questionnaires: a demographic questionnaire, the EBP Beliefs Scale (Melnyk, Fineout-Overholt, Mays, 2008), the EBP Implementation Scale (Melnyk, et al., 2008), and the Carlson's Prior Conditions Instruments (Carlson, 2008).

EBP Beliefs Scale: This instrument measures nurses' perceptions of the value of EBP and their ability to use it in nursing practice. It comprises 16 items using 5-point Likert scales. A mean score ranging from 1–5 is obtained by summing the item scores and dividing by 16. Higher scores demonstrate stronger EBP beliefs. Examples of items include “I am sure that I can implement EBP,” “I am sure that evidence- based guidelines can improve clinical care,” and “I believe that I can search for the best evidence to answer clinical questions in a time-efficient way.” The instrument has established face, content, and construct validity with internal consistency reliabilities typically greater than 0.85, and Cronbach's alpha greater than 0.90 (Melnyk, Fineout-Overholt, Mays, 2008). In this study, the Cronbach's alpha was 0.88.

EBP Implementation Scale: This instrument measures nurses' perceptions of the degree to which they have performed EBP activities in the past 8 weeks. It comprises 18 items using 5-point Likert scales. A mean score ranging from 1–5 is obtained by summing the item scores and dividing by 18. Higher scores reflect higher levels of implementation of EBP activities.

Activities addressed by the items include “Informally discussed evidence from a research study with a colleague,” “Read and critically appraised a clinical research study,” and “Used an EBP guideline or systematic review to change clinical practice where I work.” The instrument has established face, content, and construct validity with internal consistency reliabilities and Cronbach’s alpha greater than 0.90 (Melnik, et al., 2008). In this study, the Cronbach’s alpha was 0.95.

Carlson’s Prior Conditions Instruments: This instrument measures conditions that influence nurses’ decisions to use EBPM practices. It consists of 11 items that address nurses’ beliefs about how frequently they implement EBPM practices (previous practices subscale), 6 items on nurses’ perceptions of pain and pain management (perceived existing needs or problems subscale), 6 items on nurses’ aptness to make or adapt to change (innovativeness subscale), and 7 items on beliefs about nurse and physician colleagues’ pain management behaviors (social system norms subscale). All responses are indicated using 5-point Likert scales. A mean score ranging from 1–5 is obtained by summing the items and dividing by the number of subscale items. Higher scores indicate stronger support of the conditions for EBPM practice. The scale has established construct validity and Cronbach’s alphas of 0.73 to 0.83 (Carlson, 2008). In this study, the Cronbach’s alphas were 0.55 (innovativeness subscale), 0.71 (previous practices subscale), 0.78 (perceived existing needs or problems subscale), and 0.81 (social system norms subscale). The scores for perceived existing needs or problems and social system norms were combined to provide one score to describe the unit’s EBPM culture. Examples of items addressing unit EBPM culture included “Pain is generally well controlled where I work,” “There is insufficient time to implement pain management strategies,” and “Nurses are often reluctant to administer opioid analgesics.”

Medical Record Data Collection

The study participants agreed to have the research team review their pain management documentation in patients' electronic medical records (EMRs). The research team identified adult patients with cancer pain who were hospitalized on a participating oncology unit and were cared for by one or more nurse participants during the 2 months prior to nurse completion of the study questionnaires. Eligible patients ($N = 96$) were mailed a study information statement and a letter asking for permission to review their medical record. The mailing was followed with a phone call by the research team to obtain consent for review of the patient's medical record. Consent was obtained from 61 patients. It was determined that 3 of the patients did not have pain related to cancer, thus, data were collected from 58 patients' medical records.

Two research team members reviewed 403 documentation encounters (229 from the academic medical center, 174 from the regional medical center) using a modified version of the Cancer Pain Practice Index (Fine, Herr, Titler et al., 2010). The Cancer Pain Practice Index measures 11 key practices of EBPM and has established content validity, and inter-rater reliability of 93% (Fine, et al., 2010). The original instrument was modified based on the two medical centers' EBPM policies and procedures and served as the data collection instrument for evaluation of EBPM behavior through nurse documentation in the medical record. The 13 indicators were: (1) initial pain assessment at admission, (2) frequency of pain assessment, (3) use of a valid pain scale, (4) pain location, (5) pain characteristics, (6) functional assessment, (7) initiation or review of pain management care plan, (8) pharmacologic interventions, (9) nonpharmacologic interventions, (10) bowel regimen with opioid orders, (11) monitoring of analgesic side effects, (12) communication with physicians, and (13) pain-related patient education. As documented in the patient medical record, each pain indicator was assigned a score

of 0 (indicator not met) or 1 (indicator met). If an indicator was not applicable to a particular patient (for example, initial pain assessment is performed only upon admission to the unit), the indicator was not scored. Each nurse documentation encounter received a total score by summing all applicable indicator scores and dividing by the number of applicable indicators, yielding a mean score that ranged from 0–1. In addition, demographic data including age, sex, race, diagnosis, and treatment were collected from the patient medical records. Inter-rater reliability was established at 95% on a randomly selected group of 10 nurse documentation encounters.

Data Analysis

Quantitative data were analyzed using SPSS version 21. Descriptive statistics were used to summarize the demographic data, nurse characteristics (EBP beliefs and implementation, perceived EBPM implementation, perceived innovativeness, academic degree, years of nursing practice, oncology nursing certification), and unit culture for EBPM. *T*-tests and Chi-square tests were calculated to determine if demographic characteristics and questionnaire scores were different between the two inpatient units. Spearman's rho correlations were performed to assess associations between nurse characteristics and the questionnaire scores. Bivariate analyses using linear regression were calculated to determine the relationship between EBPM behavior and nurse characteristics, perceived unit culture for EBPM, and patient demographic data. A significance level of .05 was set for all analyses.

To control for nesting of documentation encounters within patients and nurses, a mixed-effect model (cross-classified random effects model) using hierarchical linear modeling (HLM) was applied to develop the model. Patient nesting did exist within more than one nurse and this was accounted for in the model. The dependent variable was the EBPM documentation score. The independent effect of hospital, nurse characteristics, and unit EBPM culture were calculated

and significance was determined. The patient covariates of age, sex, race, and cancer treatment were controlled for by inclusion in the model. The nurse characteristics, unit EBPM culture, and the hospital and patient covariates were initially assumed fixed and were centered on the grand mean. Analyses were exploratory in nature.

Results

Patient Demographics

Over half of the patients whose medical records were reviewed for this study were female (55%) and Caucasian/white (79%). The mean patient age was 60.5 years ($SD = 16.5$, range = 24–85 years). The most common type of cancer was urological (25.9%), followed by uterine/cervical (12.1%), lung (12.1%), hematological (8.6%), and all other solid tumors (20.7%). The types of treatment were surgery (43.1%); palliative care (24.1%); medical management, such as treatment for dehydration, sepsis, electrolyte imbalance, or gastrointestinal bleed (20.7%); and chemotherapy or radiation (12.1%).

Nurse Demographics

Most nurses were female (92.5%), were 20–40 years old (62.5%), were Caucasian/white (87.5%), had a bachelor of science nursing (BSN) degree (55%) or an associate degree in nursing (ADN) (45%), and had 6.8 mean years of nursing practice (see Table 1). Oncology nursing certification had been obtained by 25% of the nurses. Nurse demographics did not differ significantly by medical center except for (1) employment ($p = .033$), with more nurses working part-time versus full-time at the regional medical center; and (2) academic nursing degree ($p = .013$), with more nurses at the regional medical center having an ADN.

Nurse Characteristics and Unit EBPM Culture

Questionnaire scores did not differ significantly between the nurses at the two medical centers. Nurses valued EBP and believed in their ability to use it ($M = 3.76, SD = .46$), although the perceived degree to which they performed EBP activities was relatively low ($M = 1.65, SD = .68$). The nurses believed in practicing EBPM ($M = 4.19, SD = .40$) and agreed that their colleagues' and their own pain management practices were appropriate ($M = 3.34, SD = .71$). The frequency of perceived innovativeness was "sometimes" or "often" ($M = 3.42, SD = .55$). The nurses neither agreed nor disagreed that their social system was supportive of implementing EBPM practices ($M = 3.39, SD = .55$).

A significant relationship was found between OCN certification and innovativeness ($r = .46, p = .003$). Perception of self as innovative was also positively related to EBP beliefs ($r = .48, p = .002$). In addition, EBP beliefs were related to perceived level of EBP implementation ($r = .36, p = .02$).

Evidence-Based Pain Management Behavior

On average, 10 documentation encounters were collected for each nurse (range = 2–16). The mean EBPM score was 0.75 ($SD = .23$, range 0–1); thus, on average, nurses documented 75% of the EBPM indicators. The mean EBPM score for the academic medical center was 0.90 ($SD = .13$), and for the regional medical center, 0.55 ($SD = .18$). The two medical centers' mean EBPM scores were significantly different: $t(401) = 22.56, p < .001$.

There was not consistent nurse documentation of all 13 EBPM indicators. The most common indicators not documented were pain reassessment after pharmacologic intervention (41% of documentation encounters); assessment of pain character, such as dull, sharp, pressure, throbbing, and so forth (35%); monitoring of analgesic side effects (30%); use of an appropriate

assessment scale (16%); and assessment of pain location (15%). Documentation of care plan review was consistently incomplete in the regional medical center's EMR.

Linear Regression

Statistically significant bivariate relationships were found between EBPM behavior and hospital, patient race, cancer treatment, years of nursing practice, and highest nursing academic degree (Table 2). This regression analysis did not take into account the clustering of documentation encounters within patients and nurses.

Mixed Effect Model

The significant predictor for EBPM behavior was hospital ($\beta = -0.377$, $se = .042$, $p < 0.001$). The referent hospital group was the academic medical center; thus, patients who were hospitalized on the inpatient oncology unit at the academic medical center received a higher level of EBPM care from nurses compared to patients on the inpatient oncology unit at the regional medical center. Nurse characteristics (EBP beliefs and implementation, perceived EBPM implementation, perceived innovativeness, academic degree, years of nursing practice, oncology nursing certification) and unit culture for EBPM were not significant predictors for nurse EBPM behavior.

Discussion

This study focused on cancer pain management practices by inpatient oncology unit nurses over a 2-month period, and the nurse-level and organization-level predictors. After controlling for nesting of documentation encounters within patients and nurses, hospital was the only predictor of EBPM behavior. Patients cared for at the academic medical center received a higher level of EBPM care.

Both the academic and the regional medical centers had an EBP infrastructure including medical information resources accessible to nurses, advanced practice nurses who provided education and consultation, and administrative support for EBPM. The academic medical center had three unique features that were not accounted for in the model and which may influence EBPM behavior among oncology nurses: (1) a pain management clinical nurse specialist (CNS), (2) pain resource nurses, and (3) Magnet recognition. Although the regional medical center employed CNSs, it did not have a CNS who specialized in pain management. The academic medical center employed a pain management CNS who routinely provided pain management education and consultation to the nurses on the oncology inpatient unit. These nurses received pain management education twice a year during the medical center's skill days and every other year as part of the medical center's mandatory registered nurse education. The CNS also developed and implemented both electronic and paper EBPM reminders for nurses. The academic medical center supported nurses to be formally trained as pain resource nurses so they could provide pain management education and consultation to their colleagues. Six of the registered nurses employed on the inpatient unit were pain resource nurses. Lastly, although the regional medical center was applying for Magnet recognition, the academic medical center, one of the first hospitals in the country to receive Magnet recognition, had 20 years of Magnet recognition; thus, the practice environment at the academic medical center had long been recognized for nursing excellence. These three factors may account for hospital as a predictor for EPBM behavior in this study.

Nurse characteristics were not found to be predictive of EBPM. This may be related to the health care organizations' pain management practices. The two medical centers in this study had scientific evidence for pain management embedded in policies and procedures that nurses

were required to follow. Thus, if nurses implemented the organization's pain management standards, they might deliver EBPM without necessarily needing to be innovative themselves, believe in EBP, or perceive themselves as implementing EBP or EBPM. In addition, academic degree, years of nursing practice, and certification in oncology nursing would not necessarily predict EBPM practice. A larger more heterogeneous sample would provide further insight about the relationship between nurse characteristics and EBPM practice.

The literature supports unit culture as important in guiding the behavior of nurses through shared social norms. Findings from this study indicated that unit culture does not predict EBPM behavior. This may be due to the way that unit culture was measured: the relationship of unit culture to EBPM practice may be better explained by questionnaires that explain the intricacies of unit culture as perceived by nurses. Samuels and Fetzer (2009) found that nurse perception of the practice environment, as measured by the Practice Environment Scale of the Revised Nursing Work Index using a 4-point Likert scale, did not contribute to pain management documentation among 85 nurses on three inpatient postoperative units.

According to indicators found missing in the patient medical record documentations, EBPM practice was not consistently implemented. Nurses may have been implementing EBPM without documenting it, but as this study focused on chart documentation, EBPM practice could not be assured. Indicators of EBPM that were not consistently documented included reassessment after pharmacologic interventions, monitoring of analgesic side effects, and use of appropriate assessment scales. The absence of these indicators has been reported in other nurse documentation studies in the oncology inpatient setting (Cohen, Easley, Ellis, et al., 2003; Gordon, Rees, McCausland, 2008; Weinstein, Romanus, Lepisto, et al., 2009). A limitation of collecting data through medical record review is that the findings may underestimate actual care

delivered by the nurse. Other methods of data collection, such as direct observation, were not feasible for this study due to the associated time and cost as well as the potential for the nurses changing their behavior as a result of being observed. Due to the small, homogeneous convenience sample, caution must be taken in generalizing findings to other health care settings.

Conclusions and Implications

The study findings add to the scientific literature on cancer pain management practice by nurses and provide insight about predictors for EBPM behavior. The predictors that lead to EBPM behavior are complex. Hospital was the significant predictor for EBPM behavior in this study: a higher level of EBPM care was delivered to the patients on the academic medical center's inpatient oncology unit. This medical center had nurse resources that routinely provided pain management education and consultation to nurses, which may have influenced their EBPM behavior. In addition, the practice environment has long been recognized as demonstrating nursing excellence. Future studies should examine these factors as predictors for EBPM behavior in the inpatient oncology setting.

No empirical findings for nurse factors related to EBPM practice were established by this study. Inclusion of nurse pain management knowledge in future studies using a mixed model approach may help explain the variation. In addition, the use of different instruments to measure nurse characteristics and unit culture for EBPM may demonstrate different findings regarding the relationship of nurse-level and organization-level factors to nurses' EBPM behavior.

Knowledge of the factors that influence EBPM practice by nurses will inform strategies for sustaining EBPM practice in the oncology inpatient setting. These strategies may include EBPM policies and procedures, EMR platforms that best facilitate EBPM documentation, and audit and feedback to ensure nurses are aware of chart audit findings. Health care organizations

need to continue to strive for EBPM practice by nurses so that all patients receive optimal pain management care.

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Table 1. Nurse Demographics and Characteristics by Medical Center

Characteristic	AMC Nurses	CRMC Nurses
	(<i>n</i> = 22)	(<i>n</i> = 18)
Gender <i>n</i> (%)		
Male	1 (5%)	2 (11%)
Female	21 (95%)	16 (89%)
Age range <i>n</i> (%)		
20–30 years	13 (59%)	4 (22%)
31–40 years	6 (27%)	2 (11%)
41–50 years	2 (9%)	7 (39%)
51+ years	1 (5%)	5 (28%)
Ethnicity/Race <i>n</i> (%)		
Caucasian/White	20 (90%)	17 (94%)
Asian	1 (5%)	0
Black/African American	1 (5%)	0
Chose not to answer	0	1 (6%)
Highest Nursing Degree <i>n</i> (%)		
Associate Degree	6 (27%)	12 (67%)
Bachelor's Degree	12 (73%)	6 (33%)
Years in Nursing Practice mean (<i>SD</i>)	4.73 (3.9)	9.5 (7.8)
Years Employed at Workplace <i>n</i> (%)		
1–2	6 (27%)	2 (11%)
3–5	10 (46%)	9 (50%)
6–10	6 (27%)	6 (33%)
11–15	0	1 (6%)
Employment Status <i>n</i> (%)		
Full-time	17 (77%)	8 (44%)
Part-time	5 (23%)	10 (56%)
OCN Certification <i>n</i> (%)		
No	17 (77%)	13 (72%)
Yes	5 (23%)	5 (28%)
Documentation Encounters mean (range)	11.23 (5–15)	9.72 (2–16)
EBPM Behavior mean (<i>SD</i>)	0.90 (0.13)	0.55 (0.18)
EBP Beliefs mean (<i>SD</i>)	3.73 (0.46)	3.79 (0.48)
EBP Implementation mean (<i>SD</i>)	1.74 (0.83)	1.55 (0.45)
Previous Practices mean (<i>SD</i>)	4.19 (0.41)	4.18 (0.40)
Existing Needs/Problems mean (<i>SD</i>)	3.40 (0.72)	3.27 (0.70)
Innovativeness mean (<i>SD</i>)	3.47 (0.57)	3.36 (0.54)
Social System Norms mean (<i>SD</i>)	3.36 (0.61)	3.41 (0.48)

Abbreviations: AMC, academic medical center; CRMC, community-based regional medical center

Table 2. Relationships of Independent Variables and Co-Variates to Evidence-Based Pain Management Behavior

Independent Variables	Bivariate Linear Regression			Hierarchical Linear Modeling		
	<i>R</i>	<i>R</i> ²	<i>p</i> -value	<i>Coefficient</i>	<i>SE</i>	<i>p</i> -value
Hospital	0.92	0.84	<0.001	-0.377	.041	<0.001
Nurse Characteristics						
Years of Nursing Practice	0.35	0.12	0.028	-0.000	.000	0.997
Highest Nursing Degree	0.33	0.11	0.036	-0.020	.029	0.493
Oncology Certification	0.02	0.00	0.913	0.024	.035	0.490
EBP Beliefs	0.07	0.01	0.657	-0.010	.032	0.735
EBP Implementation	0.06	0.00	0.706	-0.027	.020	0.182
EBPM Behavior (perceived)	0.01	0.00	0.971	0.012	.033	0.729
Innovativeness	0.10	0.01	0.560	0.002	.028	0.932
Unit Culture	0.06	0.00	0.733	0.002	.013	0.888
Co-Variates						
Patient Characteristics						
Age	0.03	0.001	0.556	-0.000	.000	0.083
Sex	0.88	0.01	0.076	0.016	.017	0.343
Race	0.29	0.86	<0.001	-0.000	.027	0.992
Treatment						
Chemotherapy/Radiation	0.32	0.10	<0.001	-0.001	.039	0.977
Medical Management	0.15	0.02	0.002	0.025	.026	0.324
Palliative Care	0.41	0.17	<0.001	0.027	.035	0.448
Surgery (ref)	0.49	0.17	<0.001	0	---	---

CHAPTER 5

IMPLICATIONS AND RECOMMENDATIONS FOR NURSING PRACTICE, EDUCATION, AND RESEARCH

This study provides a contribution to understanding nursing care, adds to the knowledge of the dissemination process of EBPM practices in health care organizations, and provides insight about predictors for EBPM behavior.

Practice

The nurses participating in this study were similar in their EBP beliefs, perceived EBP and EBPM implementation, perceived innovativeness and unit culture. They were also similar in demographic characteristics (age, race, sex), years of nursing practice, and oncology nursing certification, but not similar in terms of highest academic nursing degree obtained—significantly more nurses at the academic medical center had a Bachelor’s Degree in Nursing. Their EBPM behavior was significantly different as indicated by their documentation of pain practices in the patient medical record. This finding was supported by hospital being the only predictor in the model for EBPM behavior. By examining the differences between the two hospitals, two important practice implications are recognized: human resources and Magnet Recognition.

Human Resources

The academic center had two human resources that were facilitators for EBPM behavior and were not present at the community regional medical center. The pain management clinical nurse specialist (CNS) was one such facilitator. This CNS was responsible for routinely providing pain management education to the nurses on the inpatient oncology unit. The academic medical center also had six pain resource nurses who were available for pain consultation and education with their peers. In order to ensure that nurses practice EBPM, it is recommended that

health care organizations consider (1) employing a CNS specializing in pain management and to (2) support staff nurses to be trained as pain resource nurses.

Magnet Recognition

Although unit culture was not a predictor of EBPM behavior, the organizational culture was different between the two medical centers. The academic medical center had a 20 year history of Magnet recognition; thus, it had long been recognized as demonstrating nursing excellence and quality patient outcomes. Hospitals with Magnet recognition have processes in place for ensuring evidence-based nursing care; thus, nurses employed at these hospitals may be better supported to deliver EBPM practices. Hospitals without Magnet recognition can benefit from learning about the EBP environment of hospitals with Magnet recognition and application of relevant processes and strategies.

Other implications for nursing practice include:

Documentation

If nurses do not document the care they deliver, it cannot be assured that it occurred. Evidence-based pain management indicators not consistently documented in this study included pain reassessment after pharmacologic intervention; assessment of pain character, i.e., dull, sharp, pressure, throbbing etc.; monitoring of analgesic side effects; use of an appropriate assessment scale; and assessment of pain location. Recommendations for improving pain documentation include 1) health care organizations' policies and procedures need to be clear regarding pain management documentation requirements, 2) electronic medical record platforms should be designed to best facilitate EBPM documentation, 3) health care organizations may want to consider the use of hand-held devices so that nurses can document their assessments immediately, and 4) chart audit data should be used as benchmarks to identify necessary

corrective actions and nurse managers should underscore nurses' accountability for patient care by reviewing these data with nurses at their annual evaluations.

Evidence-Based Policies and Procedures

To ensure EBPM practices among nurses, hospital pain management policies and procedures need to be evidence-based. Nurses know about the EBP process and its importance, but in a busy clinical setting, it is not practical for them to find and critically appraise the scientific evidence for best practice. If this is what is expected of nurses by their health care organization, they should have the time to do so. However, it may be more realistic to embed the best scientific evidence into policies and procedures. Clinical nurse specialists and nurse educators are key people to develop these policies and procedures and can provide education to staff nurses about the health care organizations' required evidence-based care. In addition, because pharmacologic pain management interventions are driven by doctor's orders, nurses need to use critical thinking when reviewing orders so that evidence-based interventions are provided to the patient.

Tailored Strategies

Lack of time to access and use EBPM practices was the most common barrier to delivering EBPM at both medical centers. Strategies for overcoming this barrier included the CNS or Nurse Educator teaching staff nurses about EBPM practices through posters on the unit, one-to-one teaching, and paper and electronic reminders. Barriers and facilitators for cancer EBPM practice should be identified on the inpatient oncology unit in order to develop tailored strategies to overcome barriers and to enhance EBPM facilitators.

Oncology Nursing Certification

As evident by the finding that innovativeness is significantly related to oncology nursing certification (OCN®), nurses with this credential should be considered EBPM champions. It is recommended that OCN nurses be included in planning and implementing strategies to ensure EBPM practices by nurses on the unit. This could be best done by supporting their training as pain resource nurses.

Computer System

Computers are essential to the documentation of assessment and management of cancer pain and for the identification of EBPM interventions. Computer systems must provide easy access to this information and to the sections of the medical record where nurse documentation of EBPM practices is required. It is recommended that administrators gather information from staff nurses to determine what improvements are needed to make this resource user-friendly for busy nurses and then to facilitate these changes.

Education

Schools of nursing need to ensure that courses on EBP, nursing documentation, and scope of nursing practice, reinforce the following information:

Evidence-Based Practice Operationalization

As demonstrated by this study, nurses may be unclear about the difference between research utilization and EBP. Nurses need to understand that EBP involves decision making that includes the integration of the nurse's clinical expertise and the patient's values and preferences, and to be able to operationalize EBP in practice.

Documentation

Reinforcement of the documentation of nurse pain management behaviors is needed in nursing education. Because EBPM is complex, students must understand that assessment and implementation of interventions must be documented or it can be assumed that EBPM practices were not used. In addition, nurses need to understand the repercussions of poor documentation since the health care team relies on medical record documentation to understand the patient's pain experience and how best to manage it.

Scope of Nursing Practice

It was clear from this study, that some nurses may believe that their role in EBPM delivery is to follow doctor's orders. Nurses need to understand that critical thinking is required when delivering nursing care and to not implement medical orders without considering the evidence for the interventions and patient safety.

Staff Development

Continued nursing education is necessary in the clinical setting in order to reinforce EBPM practices and to share new evidence for practice changes. Clinical nurse specialists and nurse educators are key in delivering this education as they have been trained to be clinical experts. In addition, outcomes must be evaluated to determine if nurses are applying the EBPM knowledge to patient care.

Research

NonPharmacologic Interventions

To improve the care of patients with cancer pain, it is recommended that scientific evidence for nonpharmacologic interventions be generated through clinical trial testing. Nonpharmacologic interventions typically do not require a medical order; thus, nurses can independently identify and implement these interventions. As shown by this study, nurses are

using nonpharmacologic pain management interventions in practice; however, the scientific literature is lacking high level evidence for these interventions.

Testing of Implementation Strategies

Implementation strategies provide nurses with knowledge about a practice change and encourage them to use it. In this study, posters, one-to-one teaching, patient rounds, and reminders for when to assess patients after implementing pharmacologic and nonpharmacologic interventions were used by the hospitals. Large scale studies to determine which strategies or combinations of strategies improve nursing practice and patient outcomes are needed so that evidence-based implementation strategies are identified for EBPM in the oncology inpatient setting.

Replication and Further Model Testing

Replication of the model developed in this study is needed with other health care organizations. It is recommended that the variable of nurse pain management knowledge be included in the model. In addition, three organizational factors: pain CNS, pain resource nurses, and Magnet recognition, should be examined as predictors for EBPM behavior in the inpatient oncology setting. Inclusion of these variables in future studies using a hierarchical linear modeling approach may help explain nurse EBPM behavior.

In summary, this study provided implications and recommendations for nursing practice, education, and research. Continued study of the EBP process and the use of EBPM practices in the oncology is important to nursing science, health care organizations, and the patient with cancer pain and their families.

Appendix A: Study Measures

EBP Beliefs Scale

Melnik & Fineout-Overholt, Copyright 2003

Below are 16 questions 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 or Disagree	Agree	Strongly Agree	Choose Not to Answer
1. I believe that EBP results in the best clinical care for patients.	1	2	3	4	5	0
2. I am clear about the steps of EBP.	1	2	3	4	5	0
3. I am sure that I can implement EBP.	1	2	3	4	5	0
4. I believe that critically appraising evidence is an important part of the EBP process.	1	2	3	4	5	0
5. I am sure that evidence-based guidelines can improve clinical care.	1	2	3	4	5	0
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	0
7. I believe that I can overcome barriers in implementing EBP.	1	2	3	4	5	0
8. I am sure that I can implement EBP in a time efficient way.	1	2	3	4	5	0
9. I am sure that implementing EBP will improve the care that I deliver to patients.	1	2	3	4	5	0
10. I am sure about how to measure the outcomes of care.	1	2	3	4	5	0

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Choose Not to Answer
11. I believe that EBP takes too much time.	1	2	3	4	5	0
12. I am sure that I can access the best resources in order to implement EBP.	1	2	3	4	5	0
13. I believe that EBP is difficult.	1	2	3	4	5	0
14. I know how to implement EBP sufficiently enough to make practice changes.	1	2	3	4	5	0
15. I am confident about my ability to implement EBP where I work.	1	2	3	4	5	0
16. I believe the care that I deliver is evidence-based.	1	2	3	4	5	0

EBP Implementation Scale

(Melnyk & 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	1-3 times	4-5 times	6-7 times	>8 times	Choose Not to Answer
1. Used evidence to change my practice...	1	2	3	4	5	0
2. Critically appraised evidence from a research study....	1	2	3	4	5	0
3. Generated a PICO questions about my clinical practice	1	2	3	4	5	0
4. Informally discussed evidence from a research study with a colleague....	1	2	3	4	5	0
5. Collected data on a patient problem...	1	2	3	4	5	0
6. Shared evidence from a study or studies in the form of a report or presentation to more than 2 colleagues...	1	2	3	4	5	0
7. Evaluated the outcomes of a practice change....	1	2	3	4	5	0
8. Shared an EBP guideline with a colleague	1	2	3	4	5	0
9. Shared evidence from a research study with a patient/family member.....	1	2	3	4	5	0
10. Shared evidence from a research study with a multi-disciplinary team member.....	1	2	3	4	5	0
11. Read and critically appraised a clinical research study....	1	2	3	4	5	0

	0 times	1-3 times	4-5 times	6-7 times	>8 times	Choose Not to Answer
12. Accessed the Cochrane database of systematic reviews	1	2	3	4	5	0
13. Accessed the National Guidelines Clearinghouse.....	1	2	3	4	5	0
14. Used an EBP guideline or systematic review to change clinical practice where I work.....	1	2	3	4	5	0
15. Evaluated a care initiative by collecting patient outcome data.....	1	2	3	4	5	0
16. Shared the outcome data collected with colleagues.....	1	2	3	4	5	0
17. Changed practice based on patient outcome data....	1	2	3	4	5	0
18. Promoted the use of EBP to my colleagues.....	1	2	3	4	5	0

Carlson's Prior Conditions Instrument

This part of the questionnaire includes a series of statements about your practice behaviors related to pain management. There are no right or wrong answers. Please describe yourself by what you really do, not as you think you should do.

- Read each statement
- Check the box below the response for each statement that best describes the frequency you perform the behavior in your practice.

	Never	Seldom	Some times	Often	Almost Always	Choose Not to Answer
1. I ask about the quality of the pain when assessing my patient's pain.....	1	2	3	4	5	0
2. I use a numeric or verbal pain scale to assess my patient's pain intensity.....	1	2	3	4	5	0
3. I wait until the physician makes patient rounds rather than calling him/her when my patient reports inadequate pain relief....	1	2	3	4	5	0
4. I assess my patient's pain level by asking the patient to rate his/her pain.....	1	2	3	4	5	0
5. I evaluate the effectiveness of pain control interventions.....	1	2	3	4	5	0
6. After assessing my patient's pain, I ask the patient if he/she wants/needs relief.....	1	2	3	4	5	0
7. When assessing my patient's pain, I assess the duration of his/her pain.....	1	2	3	4	5	0
8. After providing oral analgesics, I return within 30-45 minutes to assess the degree of pain relief.....	1	2	3	4	5	0
9. I record the patient's own rating of pain in the patient record.....	1	2	3	4	5	0
10. I wait for my patient to report pain or request analgesia rather than asking if he/she needs additional analgesia.....	1	2	3	4	5	0
11. I record the percent of time pain treatment is effective.....	1	2	3	4	5	0

Carlson's Prior Conditions Instrument

This part of the questionnaire includes a series of statements examining your beliefs about pain and your perceptions of pain management practices in your practice setting. There are no right or wrong answers Please describe yourself as you really feel, not as you think you should feel.

- Read each statement.
- Check the box below the response that best describes your agreement with each.

	Disagree Strongly	Disagree Moderately	Neither Agree or Disagree	Agree Moderately	Agree Strongly	Choose Not to Answer
1. Pain is generally well controlled where I work.....	1	2	3	4	5	0
2. Inadequate pain relief is common...	1	2	3	4	5	0
3. My co-workers underestimate the severity of the patient's pain.....	1	2	3	4	5	0
4. I am more aggressive in controlling my patient's pain than my co-workers.....	1	2	3	4	5	0
5. Patients receive adequate pain relief	1	2	3	4	5	0
6. Physicians too readily accept unrelieved pain.....	1	2	3	4	5	0
7. Nurses too readily accept unrelieved pain.....	1	2	3	4	5	0

Carlson's Prior Conditions Instrument

This part of the questionnaire includes a series of statements describing you. Please describe yourself as you really are, not as you think you should be.

- Read each statement.
- Check the box below the response that best describes how often it describes yourself

	Never	Seldom	Sometimes	Often	Almost Always	Choose Not to Answer
1. I network with other nurses outside of my work environment.....	1	2	3	4	5	0
2. I am considered an informal/formal leader in my work environment.....	1	2	3	4	5	0
3. Co-workers ask my opinion about new ideas/practices.....	1	2	3	4	5	0
4. I try new ideas/practices when research indicates its value.....	1	2	3	4	5	0
5. Unless I have seen a similar idea/practice work in the past, I am reluctant to try something new.....	1	2	3	4	5	0
6. I need encouragement from others before doing something new.....	1	2	3	4	5	0

Carlson's Prior Conditions Instrument

This part of the questionnaire includes a series of statements to seek information about standards of practice or norms pertaining to pain management in your practice setting. There are no right or wrong answers. Please describe your practice setting as it really is, not as you think it should be.

- Read each statement. Please indicate your own personal agreement about each statement below by marking the numbers that best describes your work environment.
- Check the box below the response that best describes your agreement with each statement.

	Disagree Strongly	Disagree Moderately	Neither Agree or Disagree	Agree Moderately	Agree Strongly	Choose Not to Answer
1. Physicians are often reluctant to prescribe opioid analgesics.....	1	2	3	4	5	0
2. Nurses are often reluctant to administer opioid analgesics...	1	2	3	4	5	0
3. Physicians usually will not cooperate with requests for additional analgesics If called after office hours.....	1	2	3	4	5	0
4. There is insufficient time to implement pain management strategies.....	1	2	3	4	5	0
5. Nurses are hesitant to contact physicians if pain control is inadequate.....	1	2	3	4	5	0
6. Physicians usually order analgesic doses too small with dosage intervals too long.....	1	2	3	4	5	0
7. Opioid analgesics are prescribed less often than needed because of concern about side effects such as nausea and/or constipation....	1	2	3	4	5	0

Is there anything else that you want to tell me about pain management practices or concerns you may have?

Please use the space provided below.

Staff Nurse Demographic Information

1. Please provide your current age _____
2. Gender:
 - Male
 - Female
3. What Race Do You Consider Yourself:
 - Hispanic or Latino (A person of Cuban, Mexican, Puerto Rican, South or Central American or other Spanish culture or origin, regardless of race)
 - Not Hispanic or Latino
 - Choose not to answer
4. What Ethnicity Do You Consider Yourself? You May Choose One or More Responses
 - American Indian/Alaska Native
 - Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or other Asian)
 - Black/African American
 - Hawaiian/Pacific Islander
 - White/Caucasian
 - More than one ethnic group
 - Chose not to answer
 - Unknown/Other (specify):

5. Nursing education Level:

- Associate Degree
- Bachelor's Degree
- Master's Degree
- Doctorate Degree

6. Years of nursing practice: _____

7. Years employed at current workplace:

- 1 – 2
- 3-5
- 6-10
- 11-15
- 16+

8. Employment status:

- Full-time
- Part-time
- Other: _____

9. Do you have any of the following oncology certifications?

- OCN AOCNS
- AOCN AOCNP
- NO

Analgesics' side effects	Assessment for opioid SE (RR, N/V, alertness, or confusion)				
Communication with physicians (when pain management is ineffective or goal is not met)					
Pt education for self pain management					
Total Scores					
Total # of "N/A"					

Appendix B: Information Statements

**UNIVERSITY OF WASHINGTON
NURSE INFORMATION STATEMENT**

Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

Researchers:

Linda Eaton, PhD Candidate, UWSON. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, UWSON. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking you to be in a research study. The purpose of this Information Statement is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. Please call or email one of the research team members listed above. When we have answered all your questions, you can decide if you want to be in the study or not.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) and its impact on cancer-related pain. You are being asked to participate in this study because you are a nurse providing direct care for patients with cancer-related pain.

STUDY PROCEDURES

We will ask you to complete four questionnaires on the study website. The questionnaires will take 10 -15 minutes to complete. The questionnaires include:

- An EBP Beliefs Scale. An example of a question is *“I believe that critically appraising evidence is an important part of the EBP process (Strongly Disagree to Strongly Agree).”*
- An EBP Implementation Scale. An example of a question is *“In the past 8 weeks, I have informally discussed evidence from a research study with a colleague....(0 times to >8 times).”*
- A pain management survey. An example of a question is *“When assessing my patient’s pain, I assess the duration of his/her pain... (never to always).”*
- A demographic survey about your age, sex, race, ethnicity, education level, years of professional practice, years employed at current workplace, and oncology certification.

After you have completed the questionnaires, we will review medical records for 5-10 patients you have cared for during the previous month. We will record pain management documentation

and record demographic data and pain indicators for each patient, including age, gender, race, diagnosis, treatment, number of days inpatient, type of pain, pain score, nurses' comprehensive pain assessment findings, number and findings of pain reassessments conducted, number and types of nursing interventions implemented, and patient preferences for interventions. Based on the level of documentation of evidence-based pain management, we will invite six nurses to participate in a telephone interview to discuss nurse-level and organizational-level strategies to sustain evidence-based pain management. An example of an interview question is *What barriers make it difficult to implement evidence-based pain management?* The interview is anticipated to last 30 minutes and will be scheduled at a time convenient for the nurse. If you are selected for the interview, we will contact you by e-mail or in person.

RISKS, STRESS, OR DISCOMFORT

You may feel that answering the questionnaires is stressful. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You can choose not to participate in the study. If you decide to take part in the study, you can later change your mind and withdraw from the study at any time. You are free to only answer questions that you want to answer. Your decisions will not change any present or future relationship with the University of Washington or your employer.

BENEFITS OF THE STUDY

You may not be helped by participating in this study. However, you may benefit from knowing that you have contributed to knowledge development that may help other nurses and patients with pain in the future.

OTHER INFORMATION

You may refuse to participate and may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information you provide will be confidential. All data will be identified using codes rather than names. The key linking codes with identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed all research data will be maintained indefinitely on an encrypted USB drive. Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

No information about you collected during this study will be placed in your employment record or shared with your employer or supervisor.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

You do not have to agree to participate in this study and can withdraw participation at any time. If you notify us that you wish to stop participating in this study, we may continue to use and release the information that has already been collected.

You will receive a \$10 Starbucks card for participating in the study.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098.

Please print a copy of this Information Statement for your records.

By completing the questionnaires, you are agreeing to participate in the study.

UNIVERSITY OF WASHINGTON
NURSE INTERVIEW INFORMATION STATEMENT
Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

Researchers:

Linda Eaton, PhD Candidate, UWSON. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, UWSON. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking you to be in a research study. The purpose of this Information Statement is to give you the information you will need to help you decide whether to be in the study or not. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. You will receive a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) as well as the impact of these strategies on the patient outcome of cancer-related pain. You are being asked to participate in this study because you are a nurse providing direct care for patients with cancer-related pain.

STUDY PROCEDURES

We will ask you to participate in a telephone interview with a member of the research team. The interview will ask questions about nurse-level and organizational-level strategies used to sustain evidence-based pain management. An example of a question is "*What strategies does your hospital use to sustain evidence-based pain management?*" The interview will be audio-recorded and it is anticipated to last 30 minutes.

RISKS, STRESS, OR DISCOMFORT

You may feel that participating in the interview is stressful. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You can choose not to participate in the study. If you decide to take part in the study, you can later change your mind and withdraw from the study at any time. You are free to only answer questions that you want to answer. Your decisions will not change any present or future relationship with the University of Washington or your employer.

BENEFITS OF THE STUDY

You may not be helped by participating in this study. However, you may benefit from knowing that you have contributed to knowledge development that may help other nurses and patients with pain in the future.

OTHER INFORMATION

You may refuse to participate and may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information you provide will be confidential. All data will be identified using codes rather than names. The key linking codes with identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed all research data will be maintained indefinitely on an encrypted USB drive. Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

No information about you collected during this study will be placed in your employment record or shared with your employer or supervisor.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

You do not have to agree to participate in this study and can withdraw participation at any time. If you notify us that you wish to stop participating in this study, we may continue to use and release the information that has already been collected.

You will receive a \$20 Starbucks card for participating in the study.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098.

By participating in the interview, you are agreeing to be in the study.

UNIVERSITY OF WASHINGTON
NURSE MANAGER CONSENT FORM

Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

Researchers:

Linda Eaton, PhD Candidate, UWSON. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, UWSON. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking you to be in a research study. The purpose of this Consent Form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. You will receive a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) as well as the impact of these strategies on the patient outcome of cancer-related pain. You are being asked to participate in this study because you are involved in supervising oncology care.

STUDY PROCEDURES

We will ask you to complete four questionnaires. The questionnaires will take 10 -15 minutes to complete. The questionnaires include:

- An EBP beliefs scale. An example of a question is *“I believe that critically appraising evidence is an important part of the EBP process (Strongly Disagree to Strongly Agree).”*
- An implementation of EBP scale. An example of a question is *“In the past 8 weeks, I have informally discussed evidence from a research study with a colleague....”*
- A pain management questionnaire. An example of a question is *“When assessing my patient's pain, I assess the duration of his/her pain... (never to almost always).”*
- A demographic questionnaire about your age, race, ethnicity, education level, years of professional practice, years employed at current workplace, oncology certification, and unit characteristics: number of beds, average patient acuity, and pain management clinical practice guideline utilized.

After you have completed the questionnaires, we will ask you to participate in an interview with a member of the research team. The interview will ask questions about nurse-level and

organizational-level strategies used to sustain evidence-based pain management. An example of a question is “*What strategies does your hospital use to sustain evidence-based pain management?*” The interview will be audio-recorded and it is anticipated to last 30 minutes.

We will also ask that you share the patient assignment lists for the last month with the research team. These lists will be used to identify patients with cancer-related pain cared for by the nurse study participants so that we can review the patients’ medical records for documentation of pain management. We will record demographic data and pain indicators for each patient, including age, gender, race, diagnosis, treatment, number of days inpatient, type of pain, pain score, nurses’ comprehensive pain assessment findings, number and findings of pain reassessments conducted, number and types of nursing interventions implemented, and patient preferences for interventions.

RISKS, STRESS, OR DISCOMFORT

You may feel that answering the questionnaires and participating in the interview is stressful. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You can choose not to participate in the study. If you decide to take part in the study, you can later change your mind and withdraw from the study at any time. You are free to only answer questions that you want to answer. Your decisions will not change any present or future relationship with the University of Washington or your employer.

BENEFITS OF THE STUDY

You may not be helped by participating in this study. However, you may benefit from knowing that you have contributed to knowledge development that may help other nurses and patients with pain in the future.

OTHER INFORMATION

You may refuse to participate and may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information you provide will be confidential. All data will be identified using codes rather than names. The key linking codes with identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed all research data will be maintained indefinitely on an encrypted USB drive. Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

No information about you collected during this study will be placed in your employment record or shared with your employer or supervisor.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

You do not have to agree to participate in this study and can withdraw participation at any time. If you notify us that you wish to stop participating in this study, we may continue to use and release the information that has already been collected.

Printed name of study staff obtaining consent	Signature	Date
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You will receive a \$20 Starbucks card for participating in the study.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098. You will receive a copy of this consent form.

Printed name of participant	Signature of participant	Date
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Copies to: Researcher
 Participant

UNIVERSITY OF WASHINGTON
KEY INFORMANT CONSENT FORM

Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

Researchers:

Linda Eaton, PhD Candidate, UWSON. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, UWSON. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking you to be in a research study. The purpose of this Consent Form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. You will receive a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) as well as the impact of these strategies on the patient outcome of cancer-related pain. You are being asked to participate in this study because you are involved in oncology care.

STUDY PROCEDURES

We will ask you to participate in an interview with a member of the research team. The interview will ask questions about nurse-level and organizational-level strategies used to sustain evidence-based pain management. An example of a question is "*What strategies does your hospital use to sustain evidence-based pain management?*" The interview will be audio-recorded and it is anticipated to last 30 minutes.

RISKS, STRESS, OR DISCOMFORT

You may feel that participating in the interview is stressful. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You can choose not to participate in the study. If you decide to take part in the study, you can later change your mind and withdraw from the study at any time. You are free to only answer questions that you want to answer. Your decisions will not change any present or future relationship with the University of Washington or your employer.

BENEFITS OF THE STUDY

You may not be helped by participating in this study. However, you may benefit from knowing that you have contributed to knowledge development that may help other nurses and patients with pain in the future.

OTHER INFORMATION

You may refuse to participate and may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information you provide will be confidential. All data will be identified using codes rather than names. The key linking codes with identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed, all research data will be maintained indefinitely on an encrypted USB drive. Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

No information about you collected during this study will be placed in your employment record or shared with your employer or supervisor.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

You do not have to agree to participate in this study and can withdraw participation at any time. If you notify us that you wish to stop participating in this study, we may continue to use and release the information that has already been collected.

Printed name of study staff obtaining consent	Signature	Date
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You will receive a \$20 Starbucks card for participating in the study.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098. You will receive a copy of this consent form.

Printed name of participant	Signature of participant	Date
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UNIVERSITY OF WASHINGTON
CHIEF NURSING OFFICER CONSENT FORM

Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

Researchers:

Linda Eaton, PhD Candidate, UWSON. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, UWSON. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking you to be in a research study. The purpose of this Consent Form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. You will receive a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) as well as the impact of these strategies on the patient outcome of cancer-related pain. You are being asked to participate in this study because you are administratively responsible for your hospital's nursing staff.

STUDY PROCEDURES

We will ask you to participate in an interview with a member of the research team. The interview will ask questions about nurse-level and organizational-level strategies used to sustain evidence-based pain management. An example of a question is "*What strategies does your hospital use to sustain evidence-based pain management?*" The interview will be audio-recorded and it is anticipated to last 30 minutes.

RISKS, STRESS, OR DISCOMFORT

You may feel that participating in the interview is stressful. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You can choose not to participate in the study. If you decide to take part in the study, you can later change your mind and withdraw from the study at any time. You are free to only answer questions that you want to answer. Your decisions will not change any present or future relationship with the University of Washington or your employer.

BENEFITS OF THE STUDY

You may not be helped by participating in this study. However, you may benefit from knowing that you have contributed to knowledge development that may help other nurses and patients with pain in the future.

OTHER INFORMATION

You may refuse to participate and may withdraw from this study at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information you provide will be confidential. All data will be identified using codes rather than names. The key linking codes with identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed, all research data will be maintained indefinitely on an encrypted USB drive. Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

No information about you collected during this study will be placed in your employment record or shared with your employer or supervisor.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

You do not have to agree to participate in this study and can withdraw participation at any time. If you notify us that you wish to stop participating in this study, we may continue to use and release the information that has already been collected.

Printed name of study staff obtaining consent	Signature	Date

You will receive a \$20 Starbucks card for participating in the study.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098. You will receive a copy of this consent form.

Printed name of participant	Signature of participant	Date

**UNIVERSITY OF WASHINGTON
PATIENT INFORMATION STATEMENT**

Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management

<Name of Hospital in Name of City>

Researchers:

Linda Eaton, PhD Candidate, University of Washington School of Nursing. Voicemail: 206/616-9396. Email: lineaton@uw.edu*

Wenjia Song, DNP Student, University of Washington School of Nursing. Voicemail: 206/616-9396. Email: wenjia@uw.edu*

**Please note that we cannot guarantee the confidentiality of email communications.*

Researcher's statement

We are asking to review your medical record as part of a research study. The purpose of this Information Statement is to give you the information you will need to help you decide whether to give *permission for your medical record to be reviewed. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. Please call or email one of the research team members listed above. When we have answered all your questions, you can decide if you want your medical record to be reviewed or not.

* In the event the patient is deceased, the legally authorized representative as documented in the medical record will be asked for permission to review the patient's medical record.

PURPOSE OF THE STUDY

The purpose of this study is to examine the factors that influence strategies used by nurses and hospitals to sustain practice based on the best evidence and its impact on cancer-related pain. You are being asked to participate in this study because you were a patient cared for by one or more nurses participating in the study.

STUDY PROCEDURES

Information written in your medical record during your stay at the <Name of Hospital in Name of City> is needed to determine how your pain was managed by the nurses who cared for you during your hospital stay. A member of the research team will collect the following information from your medical record:

- age
- gender
- race
- diagnosis
- treatment
- number of days inpatient hospitalization
- type of pain

- pain score
- nurses' comprehensive pain assessment findings
- number and findings of pain reassessments conducted by nurses
- number and types of nursing interventions implemented following pain assessment
- patient preferences for interventions

This information will be used to determine if the nurse(s) who cared for you provided you with pain management based on the best evidence.

You will be contacted by a research team member by phone in approximately 10 days to answer any questions and to ask for your permission to review your medical record.

- If you are not home and you have an answering machine or voice mail, you will be asked to call the research team member to give your permission or to decline permission. If you do not return the call, it will be assumed that you have given permission for review of your medical record.
- If you are not home and do not have an answering machine or voice mail, the research team member will call you again for the next 2 consecutive days.
- If you do not speak directly with the research team and you do not want your medical record reviewed, you may contact the research team at any time by phone or email to decline permission. Any information that may have been collected from your medical record will be destroyed.

RISKS, STRESS, OR DISCOMFORT

You may feel that review of your medical record is an invasion of privacy. There is a risk of breach of confidentiality. Procedures for protecting from this risk are described below.

ALTERNATIVES TO TAKING PART IN THIS STUDY

You may choose not to give permission for review of your medical record. If you decide to give permission, you can later change your mind and notify the research team who will destroy any information that may have been collected from your medical record. Your decisions will not change any present or future relationship with the <Name of Hospital in Name of City> or the University of Washington.

BENEFITS OF THE STUDY

You may not be helped by having your medical record reviewed. However, you may benefit from knowing that you have contributed to knowledge development that may help nurses and patients with pain in the future.

OTHER INFORMATION

You do not have to agree to have your medical record reviewed and can withdraw permission at any time without penalty or loss of benefits to which you are otherwise entitled.

All of the information collected will be confidential. All information will be identified using codes rather than names. The key linking codes with your identity will be saved in a separate file on an encrypted USB drive and deleted upon study completion on June 1, 2014. After the key is destroyed all research information will be maintained indefinitely on an encrypted USB drive.

Only the research team will have access to research data. No personal identifiers will be used in the distribution of the results of this research.

Government or university staff sometimes reviews studies such as this one to make sure they are being done safely and legally. If a review of this study takes place, study records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

The University of Washington or others may publish the results of this study. No names or other direct identifiers will be used in any public presentation or publication about this study unless you sign a separate consent allowing that use.

If you have questions later about the research, please ask one of the researchers listed above. If you have questions about your rights as a research subject, you can call the University of Washington Human Subjects Division at (206) 543-0098.

Appendix C: Study Recruitment Flier

Seeking Nurse Volunteers

Facilitators and Barriers to Cancer Pain Management Based on the Best Evidence



The purpose of this study is to examine the factors that influence strategies used by nurses and healthcare organizations to sustain evidence-based practice (EBP) as well as the impact of these strategies on the patient outcome of cancer pain.

Your need to be a:

- Registered nurse
- Employed at least part-time (50%)
- Provides direct care to oncology patients

You will:

- Complete 4 questionnaires about EBP, pain management and demographics.
- Questionnaires take 10 -15 minutes to complete.
- We will review 5-10 medical records of patients you cared for in the prior month
- You may be invited to do a phone interview to discuss nurse- and organizational-level strategies to sustain pain management based on the best evidence.

Compensation: Starbucks' card for questionnaires (\$10) and interview (\$20)

For further information about this study, please contact:

Go to our webpage: <https://catalyst.uw.edu/workspace/lineaton/37973/>

Call Linda Eaton (206) 616-9396, email: lineaton@uw.edu

Research Study at University of Washington

Appendix D: Nurse Email

E-Mail Invitation to Participate in the Phone Interview**E-Mail Subject Line: Further Input is Needed From You Regarding Pain Management**

Dear <name>

I appreciate you completing the questionnaires for the *Facilitators and Barriers to Evidence-Based Cancer-Related Pain Management Study* and would like to invite you to participate in a telephone interview to discuss nurse-level and organizational-level strategies to sustain evidence-based pain management. An example of an interview question is *What barriers make it difficult to implement evidence-based pain management?* The interview will last approximately 30 minutes and will be scheduled at a time convenient for you.

You will receive a \$20 Starbucks' card for your time participating in the interview.

I hope you will consider participating in the interview. If you are interested, please respond to this email message or contact me at (206) 616-9396.

Thanks,

Linda Eaton, MN, RN, AOCN
PhD student
University of Washington School of Nursing
Biobehavioral Nursing and Health Systems

Accessing the Information Statement: When the nurse contacts the PI, a time will be scheduled to do the interview and the information statement will be e-mailed to nurse for his/her review prior to the call. If the nurse has not had time to read the information statement prior to the telephone call, the interview will begin with the PI reading the information statement to the nurse and answering any questions. The nurse's participation in the interview is his/her agreement to participate in the study.

Appendix E: Patient Letter

Patient Approach Letter

<Date>

Dear < name of patient >,

The purpose of this letter is to obtain permission to review your medical record from your <dates of hospitalization> hospital stay at <name of hospital>. This information is needed to understand how nurses provide pain management based on the best evidence. Your medical record will provide information on how pain was managed by the nurses who cared for you.

Enclosed is an information statement for you to learn more about the information that would be collected from your medical record. You may call me if you have questions or wish to opt out of further contact about the study.

If I do not hear from you, I will call you in approximately 10 days to answer any questions you may have and to ask for your permission to review your medical record.

Thank you for considering my request to review your medical record. I look forward to talking with you.

Sincerely,

Linda Eaton, PhD(c), MN, RN, AOCN
Principal Investigator, University of Washington School of Nursing
E-mail: lineaton@uw.edu; Voicemail: 206-616-9396

Appendix F: Patient Phone Script

Phone Script: Patient Call

<Greetings> My name is Linda Eaton and I am from the University of Washington School of Nursing. I am calling about the letter you received in the mail from me approximately 10 days ago asking for your permission to review your hospital medical record from your <date of stay> stay at <hospital>.

I am calling today to answer any questions you may have and to ask your permission to review your medical record.

Is this a good time to talk with you?

-----> <If patient says NO>

What day and time would be best for me to call you back this week?

<Patient states day and time>

I will call you back then on <day and time>. Thank you.

-----> <If patient says YES>

Have you had a chance to read the information statement that was included with the letter?

-----> <If patient says NO>

I will read the statement to you over the phone. *After reading the statement:* Do you have any questions?

-----> <If patient says YES>

After answering questions: Do you give permission for use of your medical record as described in the information statement?

-----> <If patient says NO>

Thank you very much for talking with me today. Good-bye.

-----> <If patient says YES>

I appreciate you giving me your permission. If you change your mind or have any other questions, feel free to contact me. Thank you very much. Good bye.

-----> <If patient says NO>

Do you give permission for use of your medical record as described in the information statement?

-----> <If patient says NO>

Thank you very much for talking with me today. Good-bye.

-----> <If patient says YES>

I appreciate you giving me your permission. If you change your mind or have any other questions, feel free to contact me. Thank you very much. Good bye.

-----> <If patient says YES>

Do you have any questions?

-----> <If patient says YES>

After answering questions: Do you give permission for use of your medical record as described in the information statement?

-----→ <If patient says NO>

Thank you very much for talking with me today. Good-bye.

-----→ <If patient says YES>

I appreciate you giving me your permission. If you change your mind or have any other questions, feel free to contact me. Thank you very much. Good bye.

-----→ <If patient says NO>

Do you give permission for use of your medical record as described in the information statement?

-----→ <If patient says NO>

Thank you very much for talking with me today. Good-bye.

-----→ <If patient says YES>

I appreciate you giving me your permission. If you change your mind or have any other questions, feel free to contact me. Thank you very much. Good-bye.

If patient is not home and has voicemail or an answering machine:

My name is Linda Eaton and I am calling from the University of Washington School of Nursing. I recently mailed a letter to <name> asking permission to review <his or her> medical record. <Name>, please call me back at (206) 616-9396 to let me know your decision. If I do not hear from you, I will assume that you have given permission for review of your medical record. Thank you and I look forward to hearing from you.