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Evaluation of Evidence-Based Nursing Pain Management Practice

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Abstract

Background—It is important to ensure that cancer pain management is based on the best evidence. Nursing evidence-based pain management can be examined through an evaluation of pain documentation.

Aims—This study aimed to (a) modify and test an evaluation tool for nursing cancer pain documentation, and (b) describe the frequency and quality of nursing pain documentation in one oncology unit via electronic medical system.

Design and Setting—A descriptive cross-sectional design was used for this study at an oncology unit of an academic medical center in the Pacific Northwest.

Methods—Medical records were examined for 37 adults hospitalized during April and May of 2013. Nursing pain documentations ($N = 230$) were reviewed using an evaluation tool modified from the Cancer Pain Practice Index to consist of 13 evidence-based pain management indicators, including pain assessment, care plan, pharmacologic and nonpharmacologic interventions, monitoring and treatment of analgesic side effects, communication with physicians, and patient education. Individual nursing documentation was assigned a score from 0 (worst possible) to 13 (best possible), to reflect the delivery of evidence-based pain management.

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Results—The participating nurses documented 90% of the recommended evidence-based pain management indicators. Documentation was suboptimal for pain reassessment, pharmacologic interventions, and bowel regimen.

Conclusions—The study results provide implications for enhancing electronic medical record design and highlight a need for future research to understand the reasons for suboptimal nursing documentation of cancer pain management. For the future use of the data evaluation tool, we recommend additional modifications according to study settings.

Keywords

evidence-based pain management; electronic documentation; cancer pain

Patients with cancer experience pain from advanced disease as well as from cancer treatment. About one-third of cancer patients who are on cancer treatment and 60%–90% of cancer patients diagnosed with metastatic cancer report moderate to severe pain (Gobel, Triest-Robertson, & Vogel, 2009). The impaired daily functioning due to cancer pain often leads to a loss of productivity and poor quality of life. Implementing evidence-based pain management (EBPM) improves pain management outcomes, lessens patient length of stay, decreases resource utilization, and improves patient satisfaction (Green et al., 2010; Samuels, 2010). Evidence-based guidelines for cancer pain management are available from the National Comprehensive Cancer Network (NCCN) (National Comprehensive Cancer Network, 2014), the American Pain Society (American Pain Society, 2005), and the National Consensus Project for Quality Palliative Care (National Consensus Project for Quality Palliative Care, 2009). Despite the availability of evidence-based guidelines, nurses' implementation of EBPM remains problematic (Hughes, 2008) or inconsistent.

Many research studies have assessed nurses' EBPM practice by collecting clinical data from nursing documentation of non-cancer pain management (Carlson, 2009; Coker et al., 2008; Brown & McCormack, 2006; Herr et al., 2004; Samuels & Fetzer, 2009; Titler et al., 2009; Weinstein et al., 2004). Instruments that have been used to evaluate EBPM and acute or chronic pain management documentation include the Samuels Scale (Samuels & Fetzer, 2008), the Summative Index for Quality of Acute Pain Care (Titler et al., 2009), and the Pain Management Chart Audit Tool (Du Pen et al., 2000). These studies reported infrequent documentation of EBPM for acute pain assessment, pain reassessment, and nonpharmacologic interventions (Brown & McCormack, 2006; Carlson, 2009; Coker et al., 2008; Herr et al., 2004; Samuels & Fetzer, 2009; Titler et al., 2009). Although it is possible that some nursing pain management behaviors, such as pain assessment or nonpharmacologic interventions, may have occurred without being documented, failure to document the pain management process impedes the interprofessional team communication critical to further medical decisions in pain management (Herr et al., 2004).

The ability to determine the state of nursing EBPM for cancer pain is limited due to the absence of established evaluation tools that are specifically designed for cancer pain management documentation. Fine et al. (2010) reported the development, testing, and establishment of reliability and validity of the Cancer Pain Practice Index (CPPI). The CPPI has been used to evaluate the documentation of EBPM for cancer pain by nurses in the

hospice setting through a review of 11 EBPM indicators (Herr et al., 2010). Indicators found to be inconsistently documented were comprehensive pain assessment at time of admission, pain reassessment, monitoring of analgesic-induced side effects, bowel regimen with a presence of opioid order, review of pain treatment plan, and nonpharmacological therapies (Herr et al., 2010; Herr et al., 2012).

Evaluation of EBPM implementation is an important component in quality assurance and quality improvement processes. Ongoing assessment of EBPM aims to identify existing gaps in nursing pain management. Strategies can then be developed and adopted to improve nurses' EBPM. To expand our knowledge of nursing EBPM in the context of inpatient cancer treatment, our study aimed to (a) modify and test a nursing documentation evaluation tool for cancer pain management, and (b) describe the frequency and quality of nursing documentation in one oncology unit via its electronic medical system.

Methods

Design

A descriptive cross-sectional design was used for a review of patient medical records. The study used an evaluation tool to assess nursing documentation in the records of patients in an oncology inpatient unit of an academic medical center located in the Pacific Northwest. The study was reviewed and approved by the institution's human subjects protection committee.

Sample: Nurse Participants and Patient Participants

This study was part of a larger study of barriers and facilitators to evidence-based nursing pain management. The medical-surgical oncology unit of the academic medical center where the study was conducted was a 28-bed unit in a 450-bed academic medical center with National Cancer Institute designation as a comprehensive cancer center. There were 46 registered nurses working on this unit during the study period. The nurse-to-patient ratio was 3–4 patients per nurse on day shifts and 4–5 patients per nurse on night shifts.

In May 2013, 22 nurses volunteered to participate in the larger study. As part of the study, they agreed to have their pain management documentation reviewed for the 1-month period prior to their study enrollment (April to May 2013). Medical records for the patients who were cared for by the 22 enrolled nurses during that month were selected based on the following criteria: (a) patient was older than 18 years of age; and (b) patient had experienced pain due to cancer or its treatment during the 1-month study period while he or she was hospitalized on the oncology unit. A letter describing the study's purpose with a consent form was mailed to 62 eligible patients. The research team made follow-up phone calls to answer questions and obtain verbal consent from the patients 2 to 3 weeks after the letters were sent. Twenty-five patients were excluded from the study either because they were unable to be reached after several attempts by the research team ($n = 21$) or because they declined review of their medical records ($n = 4$). Records for 37 participating patients, with a total of 230 pain management nursing documentations, were reviewed for this study.

Instrumentation and Data Collection

To assess the nursing EBPM behaviors at the study site, the CPPI was modified to incorporate nursing care requirements indicated by the academic medical center's pain management policies and procedures. The modified evaluation tool appraises 13 EBPM indicators (the original 11 plus 2 added indicators; see Table 1). Added to the CPPI's 11 initial indicators were two single indicators for communication with physicians and for pain-related patient education. Each indicator was assigned a score, either 0 (the indicator was not met) or 1 (the indicator was met). If an indicator was not relevant to a particular patient or situation (e.g., initial pain assessment is performed only at admission, thus not relevant to patients admitted prior to the study period), the indicator was marked "not applicable." Therefore, the maximum score assigned for an individual documentation (if there were no indicators marked not applicable) was 13, which indicates optimal practice and documentation of nursing EBPM. The components of the nursing documentation reviewed included nursing notes, nursing flow sheets, the medication administration record, and the nursing care plan. The pain management documentation ($N = 230$) charted by the participating registered nurses were reviewed. Inter-rater reliability was established at 95% on a randomly selected group of 10 nursing documentations.

Results

Sample Description

The majority of the patients whose medical records were reviewed were Caucasian (67.6%) and female (62.2%) (see Table 2). The mean age was 59.8 years (range 24–85 years), with 65% of patients age 55 years or older. The most frequent cancer diagnosis was ovarian cancer (29.7%). The types of pain recorded were cancer pain only (29.7% of patients), surgical pain only (32.4%), or both (37.8%). Twenty-six patients (70%) received surgery for their cancer during their total hospital stay.

The nurses who participated in the study were predominantly female (95.5%) and had a mean age of 32 years (range 23–53 years) (see Table 3). The mean years of nursing experience among participating nurses was 4.73 years (range 1–15 years). Seventy-seven percent of the nurses worked full time; 72% had a bachelor's degree in nursing; and 22% were certified in oncology nursing.

A total of 230 pain documentations were reviewed. The average number of reviewed documentations per patient was 6.2 (range 2–20 documentations). The average number of documentations per participated nurse was 10.5 (range 5–16 documentations).

Evidence-Based Pain Management

On average, nurses in our study documented 90% of the EBPM indicators. One nursing pain documentation did not address any of the indicators and nine pain documentations addressed all applicable indicators. Across all patients' medical records, documentation was fragmented or incomplete for pain reassessment, pharmacologic interventions, and bowel regimen with opioid orders (see Table 1). The following sections address the EBPM indicator data in detail.

Pain Assessment

Institutional pain management policies at the study site required nurses to conduct pain assessment at least once every 8 hours after admission, using a valid pain scale. Pain assessment was documented at least once per nursing shift in almost all nursing documentations (99.6%). Also well documented were the use of valid pain scales (either descriptive or numeric; 99.6%), pain character (88.2%), pain location (90.4%), and functional assessment (87.8%).

However, two issues in the documentation of pain assessment components were identified. First, post-intervention pain reassessment, which was not listed as a single indicator but was analyzed in the study based on the time of assessment conducted and pain interventions provided, was documented inadequately. Institutional policies at the study site require nurses to reassess the pain after each pain-relieving intervention. The timing of reassessment is based on the type of intervention, pharmacologic route and kinetics, and patient conditions. However, in 27 documentations, the time that pain assessment was performed did not match the time that the pain intervention was provided. Second, all nurses' documentation of functional assessment was nonspecific. For example, nurses routinely documented that a patient "completes required functional activity/treatment(s)" but did not document the specific types of functional assessment performed, the level of functional status, or any changes in functional status associated with a focused pain assessment result.

Plan of Care

Nonspecific documentation was also observed in the care plans. Care plan indicator data were identified from two places in the study site's Cerner electronic medical record system (Cerner Corporation, 2014): the nursing pain assessment flow sheet and the "Plan of Care" page. On nursing pain assessment flow sheets, nurses routinely documented "yes" to the question "Is patient meeting goal for symptom relief?" with almost every pain assessment. On the "Plan of Care" page, nurses often documented that they "assess the pain as needed and meet the patient's goal for pain relief". Such generalized documentation does not provide detailed, individualized information on what specific goals the patient had for pain relief, or changes made in the care plan when pain was not well managed.

Pharmacologic and Nonpharmacologic Interventions

About 31% of nursing pain documentations ($n = 70$) did not meet the pharmacologic management indicators. Among these documentations, almost half ($n = 31$) documented administration of neither opioid nor non-opioid analgesics, although patient pain was identified throughout the nursing shifts. None of the nursing progress notes mentioned any reason for the absence of pharmacologic interventions.

The nonpharmacologic interventions were well documented (100%). However, all of the identifiable nonpharmacologic interventions documented were either "turn every 2 hours" or "self turns," as comfort measures. We were unable to locate documentation of any additional types of nonpharmacologic interventions (e.g., music, massage, distraction) in the hospital's Cerner system during the study period.

Bowel Regimen and Analgesic Side Effects

Bowel management was defined by researchers as an administration of stool softeners or laxatives when the patient was receiving continuous, scheduled, or as-needed opioids. Our analysis revealed that 48.2% of the documentations failed to include evidence of appropriate bowel management when there was an opioid order in use. However, all nurses documented monitoring of other common side effects of analgesics, such as respiratory depression, sedation, nausea and vomiting, and so on. Such consistent practice was indicated by nurses' routine documentation of respiration rates, sedation levels, and the occurrence as well as the treatment of nausea and vomiting in the nursing flow sheet.

Communication With Physicians

Fourteen nursing documentations revealed that nurses had communicated with physicians for pain management issues. The main reason for nurses communicating with physician regarding the pain management was an inadequate pain control and a possible need for additional pain management methods.

Patient Education

Two hundred and ten nursing documentations received "non-applicable" for this indicator. The main reason for it being "non-applicable" for these documentations was that the patient had received pain-related education during previous nursing shifts within the 24-hour period time as recommended by institutional policy at study site. Twenty pain nursing documentations mentioned pain-related patient education. The content of documented pain education varied from reinforcing patients' use of a patient controlled analgesia (PCA) and teaching patients to report pain by using numeric pain scales, to discussing available nonpharmacologic therapies and appropriate comfort measures. All documentations of pain-related patient education performed by nurses was found in the nursing progress notes section of the Cerner system.

Discussion

After being tested and validated in this study, our evaluation tool was found practical and easy to use for cancer pain management evaluation in the oncology setting. In addition to the traditional pain management indicators (e.g., pain assessment, pharmacological interventions), two added indicators, communication with physicians and pain-related patient education, yielded more valuable data reflecting the different aspects of nursing pain management practice.

Although the EBPM indicators were well documented in our study overall (90% of all pain documentations), suboptimal documentation was found for pain reassessment, pharmacologic management, nonpharmacologic interventions, and bowel management. Such documentation deficits may indicate gaps in nursing practice. Similar gaps identified from pain documentation have been reported in other studies about acute, chronic, and cancer pain management (Carlson, 2009; Coker et al., 2008; Brown & McCormack, 2006; Herr et al., 2004; Herr et al., 2010; Samuels & Fetzer, 2009; Titler et al., 2009).

Pain assessment is a key step in identifying a patient's pain and measuring pain severity. Pain reassessment evaluates the adequacy of pain management interventions and identifies the undertreated pain. Our study found that pain reassessment, if documented accurately, was not adequately performed. Although there was routine nursing documentation of "pain relief goal met" after each pharmacologic intervention was provided, the documentation did not provide specific information regarding possible changes in pain severity, location, or character. More detailed pain reassessment data is needed so that nurses can determine the effectiveness of the pharmacologic interventions and make clinical judgments regarding any need to change the care plan.

At the study site, functional assessment is considered to be an essential component of pain assessment. Understanding the impaired functional levels of patients who are in pain helps nurses establish an individualized care plan to promote recovery as well as prevent long-term functional impairment. In the Cerner system of the study site, the functional assessment charting options included "completes required activities", "hesitates activities due to pain", and "stops activities due to pain". Seventy percent of participating patients received surgical treatment and had surgical pain during the study period and many of them might have impaired physical activities due to the pain. However, all functional assessment was documented the same way—as "completes required activities"—without detailed documentation explaining at which levels the physical activities were assessed. Thus the accuracy of these functional assessment results was questionable.

An absence of documentation of pharmacological intervention in 31 individual pain documentations raises the concern of possibly inadequate pharmacologic implementation. Weinstein and colleagues (2004) reported a similar finding in their study, in which about 13% of patients did not receive pharmacologic intervention with the confirmation of pain. Weinstein's and colleagues' (2004) study suggested that an absence of documentation for pharmacologic intervention could mean either that the patient declined medication or that the medication was given, but not documented. In our study, we could not locate any nursing documentation in these 31 patient records indicating the actual reasons that might explain why the pharmacologic pain interventions were not provided.

National guidelines and institutional pain management policies at the study site recommend using nonpharmacologic therapies in conjunction with pharmacologic interventions. There was no established institutional protocol to guide the implementation of various nonpharmacologic interventions. Thus the use of various nonpharmacologic interventions was recommended but not mandatory at the study site. In our study, the only nonpharmacologic pain management intervention documented in the nursing flow sheet was positioning, such as "turning." There was no established documentation section in the Cerner system for "nonpharmacologic intervention" where additional types of nonpharmacologic therapies could be identified during study period. The reason for the lack of documentation of various nonpharmacologic interventions at the study site was unclear. It might be explained by inadequate working time for nurses to implement various nonpharmacologic therapies (e.g., guided imagery), discordance between actual practice and documentation, or deficiencies in professional knowledge of evidence-based nonpharmacologic therapies for pain management.

At the study site, many oncology patients received surgical treatments and, by postoperative protocol, were not on bowel regimen until they passed gas and were able to tolerate oral opioids by mouth post-operatively. This fact led to 116 nursing documentations being “non-applicable” for bowel regimen indicator. However, 48.2% of the rest of the nursing documentations had no bowel regimen initiated and documented in our study, which might imply that the bowel management was not optimal for these patients when their pain was managed with opioids.

Overall, the data collection for this study was a lengthy and arduous process. This was primarily due to the fragmentation of electronic medical records in the Cerner system. It took approximately 4–5 hours on average to complete each patient’s medical record review. The difficulty of locating appropriate data for each EBPM indicator contributed to the prolonged data abstraction process. For example, none of the documentation in the “educational interventions” category of the medical record was specific to pain education. All documentation of pain-related patient education was found in the nursing progress notes.

A limitation of this study is that data might have been overlooked due to it being abstracted from different places in the electronic medical system. A second limitation is that using nursing pain documentation as a single clinical data resource may not be an accurate method of evaluating nurses’ actual practice of EBPM for cancer pain over time. Combining the documentation review with real-time observation of nurses’ practice at bedside, and interviewing nurses for their perceptions of actual EBPM practice, would provide a more comprehensive view of the current state of nursing documentation and EBPM. Moreover, our study did not examine the actual reasons that might explain the low occurrences of documentation for several EBPM indicators. Large cross-sectional studies are needed to differentiate the possible explanations: an issue of quality of nursing pain documentation but not practice, or a true deficit in the practice of EBPM? Lastly, a limitation of this study was the use of a convenience sample. It may be possible that the nurses who did not volunteer to be in the study did not want their pain management documentation to be reviewed because they believed it was deficient.

Despite these limitations, we believe that our study findings represent the current state of nursing pain documentation on the oncology unit at the study site. These findings provide baseline data for future studies that can be conducted, after implementation of policy or practice changes, to improve nursing pain documentation and EBPM.

Implications and Conclusions

The inadequacy or absence of nursing documentation of specific pain indicators raises concern about the quality of EBPM provided to patients. As it is not clear what impedes nurses to provide consistent EBPM during cancer pain management, one implication of this study is the need to explore with nurses the possible barriers to consistent implementation of best and current evidence into pain management practice. If the findings relate to quality of documentation, then quality improvement programs are needed to promote the consistency and completeness of nursing documentation related to pain assessment and management. Meanwhile, institutional administrators and electronic medical system vendors may consider

a possible electronic medical system improvement in which all essential elements of nursing pain documentation (e.g., pain assessment, pain-related patient education) are grouped into one documentation set for easy charting for nurses and convenient medical record retrieval for other health care providers, administrators, and researchers.

Suboptimal quality of nursing pain documentation as well as inconsistent EBPM practices have been addressed with various interventions such as staff education and quality reviews (Samuels & Bliss, 2012). Based on our study findings, we recommend that institutional administrators provide periodic staff education on documentation guidelines, institutional pain management policies, and evidence-based pharmacologic and nonpharmacologic pain management interventions. The education might be provided via monthly in-services, educational handouts or posters in nursing units, or one-to-one mentoring. Advanced practice nurses, such as clinical nurse specialists, are often the best people to design and conduct nursing educational programs on the floors for better quality of pain documentation and pain management.

Our modified CPPI tool provides a comprehensive and quantitative evaluation of nursing documentation of EBPM for cancer pain. Future research with larger sample sizes and in different clinical settings would provide additional evaluation of reliability and validity, as variations may occur with the use of the tool in settings where pain management policies differ or different electronic medical record platforms are used. For future use of this tool, we recommend additional modifications according to the setting.

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Table 1

Evidence-Based Pain Management (EBPM) Indicators Included in the Modified Evaluation Tool, and Percentage Documented

EBPM Indicator	Recommendation	EBPM Documented (n, %)	EBPM Not Documented	Frequency of “Non-Applicable” Indicators
1. Initial pain assessment	Perform within 24 hours of admission if newly admitted	8 (88.9%)	1 (11.1%)	221
2. Frequency of pain assessment	Perform and document pain assessment at least every 8 hours, AND before and after pain-relieving interventions	229 (99.6%)	1 (0.4%)	0
Components of a pain assessment:				
3. Use of valid pain scale for each pain assessment	Use an evidence-based pain intensity scale such as the Brief Pain Inventory; Face, Legs, Activity, Cry, Consolability Scale (FLACC); Wong-Baker FACES; 0–10 Numeric; or Simple Descriptor	229 (99.6%)	1 (0.4%)	0
4. Documentation of pain characteristic	Assess and document at least every 8 hours	201 (88.2%)	27 (11.8%)	2
5. Documentation of pain location	Assess and document at least every 8 hours	206 (90.4%)	22 (10.6%)	2
6. Functional assessment	Perform at least once every nursing shift	202 (87.8%)	28 (12.2%)	0
7. Initiation or review of care plan	Initiate care plan at admission if pain is identified, review care plan at least every nursing shift, modify care plan as needed	226 (98.3%)	4 (1.7%)	0
8. Pharmacologic intervention	Document time, name, route, and dosage of each administered opioid, or non-opioid analgesic	155 (68.6%)	71 (31.4%)	4
9. Nonpharmacologic intervention	Document nonpharmacologic interventions recommended by institutional policies, such as cold/hot, turns, massages, distraction, music, and so on	187 (100%)	0 (0%)	43
10. Bowel regimen with opioid order	Document bowel regimen along with the use of opioid unless bowel medications are contraindicated	59 (51.8%)	55 (48.2%)	116
11. Assessment of opioid-related side effects	Monitor respiration rate, sedation levels, nausea/vomiting, and so on	198 (100%)	0 (0%)	32
12. Communication with physicians ^a	Document communication with physicians when there is a need for initiation of pain management, report of severe pain, or modification of pain management plan	14 (100%)	0 (0%)	216
13. Pain-related patient education ^a	Document pain management plan, available pharmacologic and nonpharmacologic pain interventions, self pain management strategies, and so on	20 (100%)	0 (0%)	210

^aIndicators 1–11 are from the original Cancer Pain Practice Index (CPPI); indicators 12 and 13 were added to the tool for this study per pain management guidelines at the study site.

Note: “Non-Applicable Indicator” was indicated when an indicator was not relevant to a particular patient or situation (e.g., initial pain assessment is performed only at admission, thus not relevant to patients admitted prior to the study period).

Table 2

Demographic Characteristics of Patient Participants

Demographic Characteristics	Sample (N= 37)
Mean age in years	59.8
Gender (n, %)	
Female	23 (62.2%)
Male	14 (37.8%)
Ethnicity (n, %)	
White	25 (67.6%)
Hispanic	1 (12.7%)
Black	3 (8.1%)
Asian	2 (5.4%)
Alaska Native and Pacific Islander	2 (5.4%)
Unknown	4 (10.8%)
Diagnosis (n, %)	
Ovarian cancer	11 (29.7%)
Bladder cancer	7 (18.9%)
Uterine cancer	4 (10.8%)
Renal cancer	3 (8.1%)
Cervical cancer	2 (5.4%)
Prostate cancer	2 (5.4%)
Lymphoma	2 (5.4%)
Breast cancer	1 (2.7%)
Lung cancer	1 (2.7%)
Other cancers ^a	4 (10.8%)
Types of pain (n, %)	
Both cancer pain and surgical pain	14 (37.8%)
Surgical pain only	12 (32.4%)
Cancer pain only	11 (29.7%)

^aThe category of other cancers included diagnoses of maxillary sinus squamous cell cancer, Gardner syndrome, germ cell tumor, and unidentified pelvic mass.

Table 3

Demographic Characteristics of Nurse Participants

Demographic Characteristics	Sample (N= 22)
Mean age in years	32.0
Gender (n, %)	
Female	21 (95.5%)
Male	1 (4.5%)
Mean years of nursing practice (range)	4.37 (1–15)
Years of employment at workplace (n, %)	
1–2 years	6 (27.3%)
3–5 years	10 (45.5%)
6–10 years	6 (27.3%)
Nursing education completed (n, %)	
Bachelor's degree	16 (72.7%)
Associate's degree	6 (27.3%)
Employment status (n, %)	
Full-time	17 (77.3%)
Part-time	5 (22.7%)
Oncology certification (n, %)	
Noncertified	17 (77.3%)
Certified	5 (22.7%)