Pain Attitudes and Knowledge Among RNs, Pharmacists, and Physicians on an Inpatient Oncology Service

Ying Xue, DNSc, Dena Schulman-Green, PhD, Cindy Czapinski, RN, MSN, Debra Harris, RN, MSN, and Ruth McCorkle, PhD, FAAN

Patients with cancer often experience pain, yet studies continue to document inadequate and inappropriate assessment and management of cancer-related pain. This study aimed to evaluate the attitudes and knowledge of inpatient oncology healthcare providers toward pain management by surveying nurses, pharmacists, and physicians working on the inpatient oncology units at an academic medical center. Healthcare providers generally reported positive attitudes toward pain management but were deficient in their knowledge of pain management. The authors suggest that pharmacists become more integral members of palliative care teams and actively participate in rounds. A need exists for educational programs in pain management for healthcare providers, especially for those who do not routinely care for patients with cancer.

Pain negatively affects the quality of life of patients with cancer. Therefore, pain management is critically important to reduce patients’ physical distress. Estimates of the frequency of cancer pain based on published studies range widely from 14%–100% (Patrick et al., 2003), but many patients are affected. A total of 1,399,790 new cancer cases and 564,830 deaths from cancer were estimated in the United States in 2006 (American Cancer Society, 2006), making pain management a topic of continuing significance.

Despite the prevalence of pain in patients with cancer, studies have documented the inadequate and inappropriate care of patients with cancer who are experiencing pain (Cleeland et al., 1994; Desbiens et al., 1996; Weiss, Emanuel, Fairclough, & Emanuel, 2001). One of the major barriers to optimal pain management is healthcare providers’ inadequate knowledge of pain assessment and management (Bressler, Geraci, & Schatz, 1991; McMillan, Tittle, Hagan, Laughlin, & Tabler, 2000; O’Brien, Dalton, Konser, & Carlson, 1996; Von Roenn, Cleeland, Gonin, Hatfield, & Pandya, 1993). In 1994, the Agency for Health Care Policy and Research, a branch of the U.S. Department of Health and Human Services, issued clinical practice guidelines for the management of pain in patients with cancer (Jacox, Carr, & Payne, 1994). The major recommendations included attention to the assessment of pain, pharmacologic management of pain, nonpharmacologic management of pain, and continuity of pain management. Building on the guidelines, the American Pain Society (2005) issued an evidence-based clinical practice guideline to help healthcare providers and patients control cancer pain.

Healthcare providers, including nurses, pharmacists, and physicians, vary in their attitudes toward and knowledge of cancer pain. At a Glance

- Nurses', pharmacists’, and physicians’ attitudes toward pain management were positive and consistent, but physicians were more likely to believe that patients over-reported pain.
- Pharmacists and RNs who routinely cared for patients with cancer performed better on questions about cancer pain than physicians and RNs with less opportunity to care for such patients.
- Nurses, pharmacists, and physicians need continuing education in pain management.

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Knowledge of Pain Management

Nurses

Several studies have documented nurses’ lack of knowledge about pain management (Cason et al., 1992; Clarke et al., 1996; Hollen et al., 2000; McCaffery & Ferrell, 1997; McMillan et al., 2000; Ryan et al., 1998; Vortherms et al., 1999). The literature review found that healthcare providers have knowledge deficits regarding currently accepted principles of pain management among the entire sample. Pharmacologic management of pain was poorly understood by the healthcare professionals. For example, only 28% of the sample disagreed with the statement, “25% of patients receiving opioids around the clock become addicted”; the actual incidence is less than 1%. Among healthcare professionals, physicians scored significantly higher and pharmacists scored significantly lower than all of the other groups.

A study by Furstenberg et al. (1998) investigated 118 pharmacists as part of a sample that also included physicians and nurses in New Hampshire. They reported that most of the pharmacists were well-informed regarding the fundamentals of cancer pain management and were not concerned about addiction among patients with cancer. However, most of the pharmacists were confused about the issue of increasing tolerance to pain; a small percentage of pharmacists did not believe that most cancer pain can be relieved by appropriate treatment. Likewise, the sample was not well aware of the fact that 70% of patients enter the healthcare system for relief of pain, and they undervalued subjective reports of pain intensity. Finally, the study found that about 54% of pharmacists misunderstood opioid doses, routes, and schedules.

Physicians

Based on the literature, physicians’ knowledge of the basic facts of pain management is satisfactory overall; however, most physicians have knowledge deficits regarding use of opioids. One study (Levin et al., 1998) found that the mean percentage of correct answers to questions about the basics of managing pain in terminally ill patients was at least 90% among oncologists and 70% among primary care physicians. However, only 55% of oncologists and 19% of primary-care physicians correctly answered all three questions about opioid equivalences. A second study (Elliott et al., 1995) that surveyed community physicians also found that most respondent physicians had substantial knowledge deficits about opioids. Nevertheless, the two studies indicated that oncologists generally have more knowledge of pain management than physicians in other specialties.

Comparative Studies About Pain Knowledge

Most studies of healthcare providers’ pain knowledge have focused on a single group, such as nurses or physicians. Two studies have compared pain knowledge among nurses, pharmacists, and physicians, but the results were inconsistent. The first comparative study (Lebovits et al., 1997) investigated 354 nurses, 64 pharmacists, 201 physicians, 40 medical or nursing students, and others randomly selected from a large city hospital, a private community hospital, and a state medical school-based hospital. The investigators found significant knowledge deficits regarding currently accepted principles of pain management among the entire sample. Pharmacologic management of pain was poorly understood by the healthcare professionals. For example, only 28% of the sample disagreed with the statement, “25% of patients receiving opioids around the clock become addicted”; the actual incidence is less than 1%. Among healthcare professionals, physicians scored significantly higher and pharmacists scored significantly lower than all of the other groups.

The second study (Furstenberg et al., 1998) investigated 248 nurses, 118 pharmacists, and 188 physicians who were selected randomly in New Hampshire. The study found that most of the professionals were knowledgeable about the fundamentals of cancer pain management. The study also indicated that approximately 90% of the sample was not concerned about addiction among patients with cancer. As to the nature of the pain experience, the scope of the cancer problem, and pain assessment in general, nurses were the most likely to respond correctly. Physicians were found to be more knowledgeable than nurses and pharmacists with regard to opioid pharmacology.

The literature review found that healthcare providers have knowledge deficits in pain management, especially in the area of opioid pharmacology. Knowledge of pain management continues to be a key topic for oncology healthcare providers. No study has investigated knowledge of pain management among nurses, pharmacists, and physicians who work in an oncology unit by using the same questionnaire among groups. The purpose of this study was to assess attitudes and knowledge regarding pain management of inpatient oncology healthcare providers at an academic medical center and to identify areas of knowledge deficits. Results can inform the development of role-specific educational programs that may assist in the creation of more efficient pain management teams.

Methods

Setting and Sample

The researchers surveyed a convenience sample of 96 healthcare providers (RNs, pharmacists, and physicians) who worked on or were associated with the medical and gynecologic oncology units of a large, urban teaching hospital in the northeastern United States. Approval to conduct the study was obtained from the School of Nursing at Yale University and from the participating hospital. Consent to participate in the study was obtained from each subject. Data were collected from September–November 2002.

Survey Instrument

The study used a survey of pain attitudes and knowledge that was employed previously by the Cancer Pain Role Model Program of the Wisconsin Pain Initiative (Weissman, Dahl,
The authors chose the survey because of its practical content and because it has been used widely in the United States. The survey consists of 36 questions with a closed-answer format; 4 questions are related to the characteristics of practice patterns of pain assessments, 5 are related to attitudes toward pain, and 27 are related to knowledge of pain management. Demographic information, including age, gender, years of practice, education, position, and certification, also was collected.

Statistical Analysis

Univariate statistics, one-way analysis of variance, Duncan’s multiple range test, and the Scheffe test were performed. Because the results of Duncan’s multiple range test and the Scheffe test were different, the equivalent regression model was further performed to identify the best result (Picard & Cook, 1984). All analyses were conducted using SAS® (SAS Institute Inc.) 9.1. The level of significance criterion for all tests was 0.05 using two tails. Data for nurses were analyzed separately according to the unit where they worked. Analysis was performed this way because the literature indicated that nurses who had more opportunity to care for patients with cancer had more knowledge than those who had less opportunity to care for patients with cancer (Clarke et al., 1996; Vortherms et al., 1992). In the current sample, nurses working on the medical oncology unit had more exposure to patients with cancer than nurses working on the gynecologic oncology unit. Pharmacists and physicians were working in both units simultaneously; therefore, the researchers were unable to conduct analyses for the pharmacist and physician groups by unit.

Results

Sample Demographics

A total of 96 healthcare providers completed the survey, including 50 RNs, 18 pharmacists, and 28 physicians. Tables 1 and 2 present sample demographics. The sample included 26 RNs in medical oncology, with an average age of 36 years. Most were female (92%) and had worked an average of 9.66 years at the participating hospital and an average of 12.9 years in nursing. The most common educational preparation was bachelor’s degree in nursing (58%). About 60% of the medical oncology nurses held the position of clinical nurse I (CNI), and more than half of them held national certification in oncology nursing.

The sample also included 24 RNs in gynecologic oncology, with an average age of 35 years. All were female (100%) and had worked an average of 9.27 years at the participating hospital and an average of 10.3 years in nursing. The most common educational preparation was bachelor’s degree in nursing (67%). About half of the gynecologic nurses held the position of CNI, and 13% held national certification in oncology nursing.

Eighteen pharmacists in the sample had an average age of 31 years. Gender was almost equally distributed among pharmacists. The average number of years working at the participating hospital was 5.67, and the average number of years working in their specialty was 8.53. Most of the pharmacists (71%) held a doctoral degree in pharmacy, and five (29%) were board certified.

Twenty-eight physicians in the sample had an average age of 28 years. Twenty (71%) were male and eight (29%) were female. All of them were residents; seven were interns or first-year resi-

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<th>Table 1. Sample Demographics of Nurses</th>
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<td><strong>CHARACTERISTIC</strong></td>
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<td>Age (years)</td>
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<tr>
<td>Years at this hospital</td>
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<td>Years in nursing</td>
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**Note.** Some data are missing. Because of rounding, percentages may not total 100.

...ents, nine were in the second year of residency, and six were in the third year of residency. The average number of years working at the participating hospital was 1.57, and the average number of years working in their specialty was 1.70. Most of them (58%) were certified or trained in internal medicine.

Practice Patterns

All subjects practiced in the same large, urban teaching hospital in the northeastern United States. They self-reported using a variety of methods to determine pain type and intensity in patients with cancer, such as observation, pain assessment, patient complaint, and a 1–10 rating scale. According to the subjects, the most frequently used tool to assess pain was the 1–10 pain scale (medical oncology nurses: 88%, gynecologic oncology nurses: 100%, pharmacists: 53%, physicians: 69%). Results of the assessments were documented in patient charts, respondents reported. Pain was assessed whenever necessary (e.g., at every office or...
clinical visit, when a patient complained of pain, after a change in analgesic orders, during a patient’s hospitalization, at every home visit. The following sections present education and experience working with patients with cancer, attitudes toward pain management, and knowledge of pain management by group.

Medical Oncology Nurses

Education and experience working with cancer pain: Most nurses (60%) rated their education and training in cancer pain as fair, 20% rated it as poor, 16% rated it as good, and 4% rated it as excellent. Nurses with fewer years of experience working with patients with cancer and those with more years of experience were fairly evenly distributed in medical oncology. The majority of those nurses (80%) spent 67%–100% of their time attending to patients with cancer per week. Almost 70% of nurses treated patients who had pain daily or at least once a day (see Tables 3 and 4).

Attitudes toward pain management: Medical oncology nurses believed that about 59% of patients with cancer under-reported the amount of pain they had and that 12% of patients with cancer over-reported it. They also believed that the majority of patients’ pain (78%) could be relieved with appropriate treatment with antineoplastic drugs, radiation therapy, and/or analgesic drugs. The majority of medical oncology nurses had no concern or mild concern about morphine addiction. Almost 92% of nurses said that giving patients with cancer as much analgesics as they need for relief of pain at any time during the course of their cancer was appropriate (see Table 5).

Knowledge of pain management: Nurses in medical oncology answered almost 60% of 27 questions on knowledge of pain management correctly. They performed very well on questions regarding assessment of pain, such as judgment of the intensity of cancer-related pain, the most likely reason that patients with cancer develop pain, and whether a placebo trial is a useful test to determine whether a patient’s pain is real. Improvements were needed in two areas. The first was pharmacologic knowledge of pain control, such as the indications when patients with cancer need an increased amount of opioid analgesic to control pain, and the calculation of equianalgesic doses of IV morphine to acetaminophen/oxydode hydrochloride. Secondly, medical oncology nurses were not knowledgeable regarding alternative therapies used to palliate pain. For instance, only 34% of the nurses taking the survey knew the most commonly administered course of radiation therapy when treating painful bone metastases in the femur or humerus, and only 16% knew the percentage of patients who obtain complete or partial pain relief within three months after a course of palliative radiation therapy to painful bone metastases.

Gynecologic Oncology Nurses

Education and experience working with cancer pain: Most gynecologic oncology nurses (43%) rated their education and training in cancer pain as fair, 30% rated it as good, 17% rated it as poor, and 9% rated it as excellent. The gynecologic oncology unit included nurses with different years of experience working with patients with cancer. The majority of nurses (88%) spent 67%–100% of their time attending to patients with cancer. Half of the nurses treated patients who had pain daily or more than once a day (see Tables 3 and 4).

Attitudes toward pain management: On average, nurses in gynecologic oncology believed that about 49% of

| Table 2. Sample Demographics of Pharmacists and Physicians |
|-----------------|-----------------|-----------------|
| CHARACTERISTIC                   | PHARMACISTS (N = 18) | PHYSICIANS (N = 28) |
| Age (years)                      |                  |                  |
| X                               | 31.3             | 27.7             |
| SD                              | 6.6              | 2.3              |
| Years at this hospital           |                  |                  |
| X                               | 5.7              | 1.6              |
| SD                              | 5.5              | 0.9              |
| Years in pharmacy/medicine      |                  |                  |
| X                               | 8.5              | 1.7              |
| SD                              | 7.1              | 0.9              |
| CHARACTERISTIC                   | n %              | n %              |
| Gender                          |                  |                  |
| Male                            | 8 47             | 20 71            |
| Female                          | 9 53             | 8 29             |
| Educational preparation         |                  |                  |
| Bachelor of science degree      | 4 23             | –                |
| Master of science degree        | 1 6              | –                |
| PharmD                          | 12 71            | –                |
| Level of professional activity  |                  |                  |
| Intern or first-year resident   | –                | 7 32             |
| Second-year resident            | –                | 9 41             |
| Third-year resident             | –                | 6 27             |
| Board certification             |                  |                  |
| Yes                             | 5 29             | –                |
| No                              | 12 71            | –                |
| Specialty certified or trained  |                  |                  |
| Emergency medicine              | –                | 1 5              |
| Internal medicine               | –                | 11 58            |
| Medicine, pediatrics            | –                | 1 5              |
| Medicine, psychiatrics          | –                | 1 5              |
| Obstetrics and gynecology       | –                | 3 16             |
| Not certified                   | –                | 2 11             |

Note: Some data are missing. Because of rounding, percentages may not total 100.

| Table 3. Ratings of the Adequacy of Education and Training in Cancer Pain |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| RATE YOUR UNDERGRADUATE PAIN MANAGEMENT EDUCATION | MEDICAL ONCOLOGY NURSES (N = 26) | GYNECOLOGIC ONCOLOGY NURSES (N = 24) | PHARMACISTS (N = 18) | PHYSICIANS (N = 28) |
| Poor            | 5  20          | 4  17           | 4  23           | 8  31           |
| Fair            | 15 60          | 10 44           | 9  53           | 10 38           |
| Good            | 4  16          | 7  30           | 3  18           | 8  31           |
| Excellent       | 1  4           | 2  9            | 1  6            | –              |
patients with cancer under-reported the amount of pain they had and that 15% of patients with cancer over-reported it. They also believed that the majority of patients’ pain (69%) could be relieved with appropriate treatment with antineoplastic drugs, radiation therapy, and/or analgesic drugs. All of the gynecologic oncology nurses had no concern or mild concern about morphine addiction. About 71% of them said that giving patients with cancer as much analgesic as they need for relief of pain was appropriate at any time (see Table 5).

**Knowledge of pain management**: Nurses in gynecologic oncology answered about half of 27 questions about pain management correctly. They performed well in the following areas: drugs or drug combinations that are most appropriate for the treatment of severe postoperative pain, judgment of the intensity of cancer-related pain, the most likely reason that patients with cancer develop pain, the analgesic duration of oral acetaminophen/oxycodone hydrochloride, and the type of pain that a woman with metastatic breast cancer to the axillary lymph nodes experiences when she notes sharp and shooting pain down the arm associated with a tingling sensation in her fingers.

Similar to the nurses in medical oncology, the nurses in gynecologic oncology had knowledge deficits with regard to pharmacologic pain control and alternative therapies used to palliate pain. Where the groups of nurses differed was in their knowledge of the treatment of chronic pain. Only 12% of the gynecologic nurses knew what drugs are appropriate for the treatment of chronic and severe cancer pain, and 13% knew the incidence of addiction when opioids are used chronically for the treatment of severe pain.

### Pharmacists

**Education and experience working with cancer pain**: Most of the pharmacists (53%) rated their education and training in cancer pain as fair, 23% rated it as poor, 18% rated it as good, and 6% rated it as excellent. The pharmacists did not report much experience working with patients with cancer. About 59% had less than one year of experience working with patients with cancer, 12% had 1–3 years, 12% had 4–6 years, 6% had 7–10 years, and 12% had more than 10 years. In terms of the portion of their work week spent attending to patients with cancer, 60% of pharmacists spent less than 33% of their time doing so. Sixty percent of the pharmacists almost never treated patients with cancer with pain at the time of the survey, 27% treated those with pain less than once a week, 7% treated patients with cancer with pain several times a week, and 7% treated them daily (see Tables 3 and 4).

**Attitudes toward pain management**: On average, pharmacists believed that about 59% of patients with cancer under-reported the amount of pain they had and that 14% over-reported it. They believed that 67% of the patients’ pain could be relieved with appropriate treatment with antineoplastic drugs, radiation therapy, and/or analgesic drugs. All of the pharmacists had no concern or mild concern about morphine addiction; they agreed that giving patients with cancer as much analgesic as they need for relief of pain was appropriate at any time (see Table 5).

**Knowledge of pain management**: Of the four groups in the sample, pharmacists answered the most questions correctly (64%). They performed well on the pharmacology of pain control. Of the pharmacists taking the survey, 94% knew which drug most likely would control a patient’s pain if it was not relieved by morphine and which drug causes tremors, myoclonus, or seizures with chronic use. All of the pharmacists knew about the ceiling analgesic effect of nonsteroidal anti-inflammatory drugs, whereas only 76% of medical oncology nurses, 46% of gynecologic oncology nurses, and 70% of physicians had that knowledge.

The pharmacists had knowledge deficits regarding alternative therapies for pain control. No pharmacists knew what the most commonly administered course of radiation therapy is for treating painful bone metastases in the femur and humerus. Only 33% knew that urinary retention is a complication of morphine addiction when opioids are used chronically for the treatment of chronic and severe cancer pain, and 13% knew the incidence of addiction when opioids are used chronically for the treatment of severe pain.

### Physicians

**Education and experience working with cancer pain**: About one-third of physicians evaluated their undergraduate education about pain management as good, and the majority of them rated it as poor or fair. No physician rated it as excellent. Evaluation of residency training on pain management was similar to training in medical schools. Fourteen percent of physicians evaluated their residency training about pain management as good, and 60% rated it as excellent. Evaluation of residency training on pain management was similar to training in medical schools. Fourteen percent of physicians evaluated their residency training about pain management as good, and 60% rated it as excellent.
Because all of the physicians who responded to the survey were residents or interns, most of them did not have much experience working with patients with cancer in pain. About 58% of them had less than one year of experience working with patients with cancer, and 31% had one to three years. Although number of years of experience working with patients with cancer in pain was not extensive among physicians, most of them (67%) spent more than two-thirds of their time attending to patients with cancer. Regarding the frequency of treating patients with cancer in pain, 33% of the physicians almost never treated patients with cancer in pain at the time of the survey, 19% treated them less than once a week, 22% treated them several times a week, 22% treated them daily, and 4% treated them more than once a day (see Tables 3 and 4).

**Attitudes toward pain management:** In general, physicians believed that more than half of patients with cancer under-reported the amount of pain they had and that more than a quarter over-reported it. Of the physicians, 68% believed that patients’ pain could be relieved with appropriate treatment with antineoplastic drugs, radiation therapy, and/or analgesic drugs. Most physicians had no concern or mild concern about morphine addiction and believed that giving patients with cancer as much analgesic as they need for relief of pain was appropriate at any time (see Table 5).

**Knowledge of pain management:** Physicians answered more than half (55%) of the 27 questions about pain management correctly. They performed well on questions regarding clinical therapy for pain (judgment of the intensity of cancer-related pain and nerve blocks that would be most likely to reduce pain coming from the abdominal viscera). They had knowledge deficits in the areas of pharmacology and alternative therapies. Only 4% of the physicians knew which drug is not appropriate for the treatment of chronic and severe cancer pain. Only 11% of the physicians had the ability to determine the equivalent dose of IV morphine for oral acetaminophen/oxycodone hydrochloride. Knowledge of what percentage of patients obtains complete or partial pain control from radiation therapy was evident in 7% of physicians.

### Table 5. Attitudes Toward Pain Management

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>MEDICAL ONCOLOGY NURSES (N = 26)</th>
<th>GYNECOLOGIC ONCOLOGY NURSES (N = 26)</th>
<th>PHARMACISTS (N = 18)</th>
<th>PHYSICIANS (N = 28)</th>
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<tbody>
<tr>
<td>What do you think is the percentage of patients with cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who under-report the amount of pain they have?</td>
<td>59.23 22.26*</td>
<td>49.13 20.87*</td>
<td>59.44 17.65*</td>
<td>53.39 19.91*</td>
</tr>
<tr>
<td>Who over-report the amount of pain they have?</td>
<td>12.31 11.07*</td>
<td>15.22 10.39*</td>
<td>14.44 7.84*</td>
<td>25.54 16.18b</td>
</tr>
<tr>
<td>Whose pain can be relieved with appropriate treatment</td>
<td>78.08 22.54*</td>
<td>68.64 23.56*</td>
<td>67.22 30.06*</td>
<td>68.39 26.42*</td>
</tr>
<tr>
<td>with antineoplastic drugs, radiation therapy, and/or analgesic drugs?</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If a family member of yours were given morphine to control cancer-related pain, what concern would you have about that family member becoming addicted to morphine?</td>
<td>20 77</td>
<td>16 67</td>
<td>11 61</td>
<td>15 54</td>
</tr>
<tr>
<td>No concern</td>
<td>5 19</td>
<td>8 33</td>
<td>7 39</td>
<td>11 39</td>
</tr>
<tr>
<td>Mild concern</td>
<td>1 4</td>
<td>–</td>
<td>–</td>
<td>1 4</td>
</tr>
<tr>
<td>Moderate concern</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1 4</td>
</tr>
<tr>
<td>Extreme concern</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1 4</td>
</tr>
<tr>
<td>At what time do you feel it is appropriate to give patients with cancer as much analgesic as they need for relief of pain?</td>
<td>24 92</td>
<td>17 71</td>
<td>18 100</td>
<td>27 97</td>
</tr>
<tr>
<td>At any time during the course of their cancer</td>
<td>–</td>
<td>–</td>
<td>1 4</td>
<td>–</td>
</tr>
<tr>
<td>Prognosis less than three months</td>
<td>1 4</td>
<td>4 17</td>
<td>–</td>
<td>1 4</td>
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<tr>
<td>Prognosis less than one month</td>
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<td>2 8</td>
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### Comparative Analysis of Attitudes Toward and Knowledge of Pain Management

Nurses, pharmacists, and physicians believed that 50%–60% of patients with cancer under-reported their pain. No statistically significant difference existed among groups (p = 0.3). With regard to the percentage of patients who over-report pain, a statistically significant difference did exist among groups (p = 0.0007). Post-hoc analysis revealed that physicians were significantly more likely to believe that patients over-reported their pain than the other three groups. Comparative analyses were not performed for the other two attitude questions because many cells included zero.

For the overall sample, the mean number of correct answers for the 27 questions on knowledge of pain management was 14.81 (55%). One-way analysis of variance showed a statistically significant difference among groups (p = 0.0007). Post-hoc analysis found that the pharmacists and medical oncology nurses performed better than the physicians and gynecologic oncology nurses.
Discussion

Attitudes Toward Pain Management

This study examined attitudes toward and knowledge of pain management in a sample of RNs, pharmacists, and physicians caring for patients with cancer on inpatient oncology units at an academic medical center. Nurses, pharmacists, and physicians generally reported positive attitudes toward pain management, as shown by their beliefs regarding patients’ reported pain and analgesic addiction. However, physicians were more likely than nurses and pharmacists to believe that patients over-reported their pain. This finding is similar to results of a previous study (Furstenberg et al., 1998), which found that physicians were more likely than nurses or pharmacists to believe that patients were being treated adequately for pain. The American Pain Society guideline (2005) recommended that all patients with cancer be screened for pain at each outpatient visit or hospital admission and that patients’ self-reports should be used as the foundation for pain assessment. According to attitude theory (Rokeach, 1970), attitudes about pain should influence pain management behavior. Theoretically, physicians who believe that patients over-report their pain are more likely to undertreat patients with pain. The majority of the sample had no concern or mild concern about morphine addiction and believed that giving patients as much analgesic as they need for relief of pain at any time during the course of their cancer was appropriate.

Knowledge of Pain Management

The overall rate of correct answers to questions about pain management for the sample was 55%. This is consistent with prior research by Lebovits et al. (1997), who published one of two articles comparing pain knowledge among nurses, pharmacists, and physicians. Most of the providers were well-informed regarding the fundamentals of pain management. However, findings of the current study indicate that knowledge deficits still exist among healthcare providers. Questions poorly answered by the four groups were about pharmacologic management of pain and alternative therapies used to palliate pain. Some of the poorly answered questions were about issues common to routine practice, such as indications of increased amounts of opioid analgesic, the calculation of an equianalgesic dose of IV morphine to acetaminophen/oxydode hydrochloride, and the percentage of patients who obtain complete or partial pain relief.

The knowledge deficits influence pain management in patients with cancer, thereby underscoring the need for healthcare providers to master assessment of pain. Assessment of pain is the first step to successful pain management for all provider groups. Evaluation of pain is required every time a healthcare provider assesses a patient with cancer. Failure to assess and evaluate pain accurately was recognized as an important reason for undertreatment of pain. Pharmacologic and nonpharmacologic management of pain also is critical for patients with cancer in pain.

The authors found that the subject groups had expertise in different areas of pain management. Nurses were skilled at assessment of pain, pharmacists were skilled at pharmacologic management of pain, and physicians were skilled at clinical therapy for pain. The findings indicate that teams consisting of nurses, pharmacists, and physicians could better manage pain in patients with cancer than individual providers because various team members could contribute their particular expertise to more efficiently manage patients’ pain.

Nurses who worked in a clinical practice setting with more exposure to patients with cancer were more knowledgeable than those who worked in a clinical practice setting with less exposure to patients with cancer, which also is consistent with previous studies (Hollen et al., 2000; O’Brien et al., 1996; Ryan et al., 1994). This finding indicates that if nurses are exposed frequently to correct information about pain management, they gain better knowledge of pain management. Continuing education on pain management would be effective for nurses who need to know how to manage pain but do not have frequent exposure to correct pain management practices. More than half of the nurses in the medical oncology group reported that they held national certification, compared to 13% of nurses in the gynecologic oncology group. Certification status also might have affected their pain knowledge. Limited by the sample size, the authors were not able to perform multivariate analysis to identify factors independently associated with pain knowledge among nurses. Future research is needed to investigate the impact of national certification on nurses’ knowledge of pain management.

In contrast to previous studies that found that physicians were most knowledgeable about pain management (Furstenberg et al., 1998; Lebovits et al., 1997), the current study found that pharmacists were most knowledgeable. This may have resulted from the small size of the pharmacist group in the current study or the fact that 71% of the pharmacist sample held doctoral degrees, which is not representative of most clinical settings. The American Society of Health-System Pharmacists (2002) stated that pharmacists have a pivotal role in the provision of palliative care. The results of the current study support the notion that pharmacists should become a more integral part of the palliative care team and should participate in rounds actively. Because of their pharmacologic expertise, pharmacists are crucial to the shaping and success of cancer pain management strategies. This different finding also might be attributed to the composition of the sample. In the current study, all physicians were either interns or residents with one to three years of clinical experience. Less experience might explain less knowledge, which also might be related to the lack of adequate education about pain management according to physicians’ self-evaluation of their medical school training.

Study Limitations

The findings of this study must be interpreted with a few points in mind. First, the authors employed a convenience sample without a large sample size in each subgroup, so generalizability of results is limited. Second, physicians were all at the stage of residency and did not represent the entire physician population. Finally, no data are available on the psychometric properties of the survey employed in the study; however, the instrument has been used widely.

Implications for Nursing

The study indicates that nurses, pharmacists, and physicians need continuing education in pain management. Although pharmacists and nurses with more exposure to patients with cancer...
were more knowledgeable than physicians and nurses with less exposure, all groups had knowledge deficits. Education in pain management should be geared toward a particular audience of healthcare providers because providers who play different roles with regard to pain require different information about pain management. The results indicate that nurses require education on the appropriate actions and uses of drugs and the pharmacology of pain management. They also need continuing education regarding alternative therapies, such as radiation therapy, nerve blocks, and implanted infusion devices. Pharmacists, in contrast, are well versed in the pharmacologic treatment of pain but require additional education regarding alternative therapies. Physicians’ expertise is in clinical therapies for the treatment of pain, but they need more education regarding pharmacology and alternative therapies for pain control. In addition to education, communication among nurses, physicians, and pharmacists should be encouraged at unit meetings, grand rounds, seminars, and other meetings so that the groups can share practical information.

The study indicates that interdisciplinary team involvement in pain management would be more effective than individual involvement of healthcare providers. Nurses were skilled at assessment of pain, pharmacists were skilled at pharmacologic management of pain, and physicians were skilled at clinical therapy for pain. Nurses work on the front line of patient care, and their expertise in assessing pain enables them to provide accurate and important information to pharmacists and physicians to further manage pain. Use of an interdisciplinary team approach to pain management would capitalize on the strengths of each provider group and would help ensure more complete pain management.

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