Nurses’ Knowledge and Attitudes Regarding Pain Assessment and Intervention

Deborah Al-Shaer, Pamela D. Hill, and Mary Ann Anderson

A major reason individuals seek health care is the presence of pain. Moderate-to-severe pain was a chief complaint of 73% of medical patients in a landmark study which also suggested hospitalized patients experience pain unnecessarily (Marks & Sachar, 1973). Pain is a complex, subjective experience that is difficult to evaluate. No objective measure exists (American Pain Society, 2003). Self-report is the most reliable indicator of the presence and intensity of pain (Agency for Health Care Policy and Research, 1992).

In clinical settings, nurses have a vital role in pain assessment and management, and must be knowledgeable regarding how best to assess and manage pain. Pain may be under treated as a result of inadequate assessment or the inappropriate use of analgesics, especially opioids (McCaffery, 2002). Nurses need current knowledge and appropriate attitudes regarding pain assessment and management, regardless of patient age and origin of clinical practice (Lui, So, & Fong, 2008; Matthews & Malcolm, 2007; Manworren, 2000; McCaffery, Ferrell, & Pasero, 2000; Nasar, Sinwan, & Bee, 2005; Tanabe & Buschmann, 2000; Van Hulle Vincent, 2005; Watt-Watson, Stevens, Garfinikel, Streiner, & Gallop, 2001; Yildirim, Cicek, & Uyar, 2008). The purposes of this study were to determine nurses’ knowledge regarding pain assessment and management, and to identify relationships that exist between selected demographic information and nurses’ knowledge.

Background

Several studies have used the Nurses’ Knowledge and Attitude Survey Regarding Pain (NKAS) or an adapted version (Liu et al., 2008; Manworren, 2000; Nasar et al., 2005; Plaisance & Logan, 2006; Rushton, Eggett, & Sutherland, 2003; Van Hulle Vincent, 2005; Yildirim et al., 2008). Findings suggested the attitude of the nurse has an impact on pain management. In addition, confusion and misconceptions exist regarding pain management terminology and use of opioids, and knowledge of pain management is lacking.

Some studies have examined relationships between selected variables and nurses’ knowledge of pain management. University-level education (Brunier, Carson, & Harrison, 1995); working in intensive care units (Nasar et al., 2005), oncology (Rushton et al., 2003; Yildirim et al., 2008), or emergency rooms (Manworren, 2000); and length of clinical experience (Lui et al., 2008; Yildirim et al., 2008) were associated with more knowledge about pain management. Each of these studies used the NKAS or an adapted version. A study using a different instrument to measure emergency room nurses’ knowledge of pain found nurses with a master’s degree or higher, or those who attended a 1-day seminar on pain management, were more knowledgeable about pain management (Tanabe & Buschmann, 2000).

Summary and Significance

Despite decades of research on the subject, inadequate pain assessment and management remain significant problems in health care. Patients’ pain is a unique, subjective experience. A lack of knowledge concerning pain assessment and management is a consistent theme in the literature, particularly misconceptions regarding opioid administration (Miller, 1994; Schmidt, Eland, & Weiler, 1994). Nurses’ knowledge of pain assessment and interventions is an essential component in promoting positive patient outcomes. Continued investigation of this area is needed.

Method

Design, setting, and sample. In this study using a non-experimental, descriptive design, a convenience sample of 129 registered nurses (RNs) participated from 10 separate nursing units in a midwestern metropolitan hospital. The two-campus, 502-
A 600-bed medical center serves a residential population of approximately 300,000 persons. See Table 1 for demographics of this sample.

**Instruments.** Data were collected using a modified-with-permission version of the NKAS (Ferrell & McCaffery, 1987) and a demographic tool developed for this study. Construct validity of the entire original tool was achieved by comparing the scores of nurses with varying levels of expertise. The tool was identified subsequently as discriminating between these levels. Test-retest reliability was $r > 0.80$, and internal consistency reliability, $r = 0.70$.

The modified version of the NKAS consisted of 32-items; items concerning cancer were omitted. Each item had a definite correct/ incorrect response. The 32-item survey consisted of 13 pharmacologic, 3 non-pharmacologic, and 16 assessment questions. Thus, three subscores and one overall score were obtained. Two vignettes to evaluate nurses’ assessment of pain level and subsequent pharmacologic interventions were part of this survey (McCaffery & Ferrell, 1997). The vignettes portray two patients complaining of the same level of pain who have been medicated with the same amount of morphine. The only difference between the two scenarios is that one patient is grimacing while the other is smiling. Content validity of the revised survey was established by a panel of pain experts. Test-retest reliability with a 2-week interval and a sample size of 12 nurses yielded a correlation coefficient of 0.65, likely attributable to the small sample size.

**Data collection procedure.** Ethics approvals were provided by the university and medical center. Permission for a research team member to attend unit staff meetings was obtained from nurse managers of appropriate nursing units. At the unit staff meetings, an information sheet was provided to each staff nurse in attendance. Consent was implied if the nurse chose to complete the two instruments. No identifying information was asked of potential participants. The researcher exited the room after answering any questions about tool completion. Completed instruments were placed in a sealed manila envelope and returned to the researcher by the nurse manager. All data were kept in a locked file cabinet and destroyed after data analysis was completed.

**Data analysis.** Data were entered into SPSS version 14.0 (SPSS, Inc., Chicago, IL). Descriptive statistics (frequency, percentage, mean, standard deviation) were used to examine normality of the data and describe the sample. Independent $t$-tests and one-way analysis of variance were used to examine differences in knowledge scores with categorical demographic variables. The Chi-square test was used to examine

<table>
<thead>
<tr>
<th><strong>Type of Education</strong></th>
<th><strong>N</strong></th>
<th><strong>Percent</strong></th>
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<tbody>
<tr>
<td>Associate</td>
<td>81</td>
<td>62.8</td>
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<tr>
<td>Bachelor’s</td>
<td>36</td>
<td>27.9</td>
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<tr>
<td>Diploma</td>
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<td>9.3</td>
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<table>
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<tr>
<th><strong>Age</strong></th>
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<th><strong>Percent</strong></th>
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<tr>
<td>18-25</td>
<td>11</td>
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<td>26-35</td>
<td>34</td>
<td>26.8</td>
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<tr>
<td>36-45</td>
<td>40</td>
<td>31.5</td>
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<tr>
<td>46-55</td>
<td>30</td>
<td>23.6</td>
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<tr>
<td>56-65</td>
<td>12</td>
<td>9.4</td>
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<thead>
<tr>
<th><strong>Worked Full Time</strong></th>
<th><strong>N</strong></th>
<th><strong>Percent</strong></th>
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<tbody>
<tr>
<td>16+ or more years</td>
<td>36</td>
<td>28.0</td>
</tr>
<tr>
<td>11-15</td>
<td>22</td>
<td>17.1</td>
</tr>
<tr>
<td>6-10</td>
<td>24</td>
<td>18.6</td>
</tr>
<tr>
<td>1-5</td>
<td>33</td>
<td>25.6</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>13</td>
<td>10.1</td>
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<tr>
<th><strong>Unit Worked</strong></th>
<th><strong>N</strong></th>
<th><strong>Percent</strong></th>
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<tbody>
<tr>
<td>Pulmonary</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>25</td>
<td>18.4</td>
</tr>
<tr>
<td>Medical</td>
<td>21</td>
<td>15.4</td>
</tr>
<tr>
<td>CIU</td>
<td>8</td>
<td>5.9</td>
</tr>
<tr>
<td>Oncology</td>
<td>7</td>
<td>5.1</td>
</tr>
<tr>
<td>ICU</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>Neurology</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>SSU</td>
<td>27</td>
<td>19.9</td>
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<tr>
<td>CSU</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>SICU</td>
<td>12</td>
<td>8.8</td>
</tr>
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CIU=Cardiovascular Intervenional Unit, SSU=Surgical Speciality Unit, CSU=Cardiovascular Step Down Unit, SICU=Surgical Intensive Care Unit
differences in proportions with categorical variables. Level of significance was set at \( p<0.05 \).

**Results**

Out of a possible 32 points, the average knowledge score was 25.9 (SD=2.5). Scores ranged from a minimum of 20 to a high of 31. The distribution of letter grades for the knowledge scores is displayed in Table 2. The majority of respondents (n=79, 61.2%) received a letter grade of B or better on the modified NKAS. Nurses in this study were above average in their knowledge of pain assessment and management. However, the lack of knowledge regarding pharmacologic interventions reinforces findings in the existing body of pain research (Bergh & Sjöström, 1999; Brunier et al., 1995; Clarke et al., 1996; Lui et al., 2008; Tanabe & Buschmann, 2000; Textor & Porock, 2006). A number of discrepancies exist in knowledge regarding medications, dosages, side effects, and duration of action (Brunier et al., 1995; McCaffery & Ferrell, 1997; Tanabe & Buschmann, 2000; Watt-Watson, 1987).

**Knowledge Scores by Selected Variables**

Years of experience on current unit. Nurses who reported having worked 16 or more years on their particular nursing unit scored significantly higher than nurses who held an associate’s degree (M=25.7; SD=2.5). Baccalaureate-prepared nurses scored significantly higher on the 16 assessment items compared to nurses with other preparation (\( p=0.03 \)). No significant differences existed between nurses prepared at the baccalaureate or diploma/associate level on pharmacologic (\( p=0.61 \)) and non-pharmacologic items (\( p=0.75 \)).

**Nursing unit.** The seven RNs on the oncology unit scored significantly higher on the total knowledge survey (M=28.7; SD=1.5) compared with nurses on all remaining units (M=25.8; SD=2.4; \( p=0.005 \)). Oncology nurses scored significantly higher on the 13 pharmacologic items (M=10.9; SD=1.5) compared to all other units (M=9.3; SD=1.8; \( p=0.029 \)). RNs from the oncology and pulmonary units achieved the highest scores on the 16 assessment items (M=14.4; SD=1.4 vs. M=14.4; SD=0.79), respectively. The highest scores on the three non-pharmacologic items were achieved by RNs from the neurology unit (M=2.75; SD=0.46).

**Most Frequently Missed Items**

The most frequently missed items and the corresponding correct and incorrect response percentages are illustrated in Table 3. The item regarding meperidine (Demerol®) and aspirin equianalgesic dosing was the most frequently missed question.

**Discussion**

Pain assessment and knowledge are the basis for nursing intervention and a critical component of effective pain management. This study identified nurses’ knowledge regarding pain assessment and intervention and the influences, if any, of selected demographic variables on knowledge of pain management principles. Overall, participants earned a letter grade of B or better on the modified NKAS. Nurses in this study were above average in their knowledge of pain assessment and management. However, the lack of knowledge regarding pharmacologic interventions reinforces findings in the existing body of pain research (Bergh & Sjöström, 1999; Brunier et al., 1995; Clarke et al., 1996; Lui et al., 2008; Tanabe & Buschmann, 2000; Textor & Porock, 2006). A number of discrepancies exist in knowledge regarding medications, dosages, side effects, and duration of action (Brunier et al., 1995; McCaffery & Ferrell, 1997; Tanabe & Buschmann, 2000; Watt-Watson, 1987).

Assessment begins with the patient’s self-report, which is the most reliable indicator of the subjective state referred to as pain. In this study, 100% of participants responded correctly to the question regarding self-report. However, when asked to provide the percentage of patients who over-report their pain, only 10% provided the correct response.
(no patient over-reports pain). In fact, participants indicated this occurs with one out of three patients in practice. The most significant barrier to effective pain management is nurses’ reliance on their own subjective judgment (Schaeheutle, Cantrill, & Noyce, 2001). To manage patient pain effectively, nurses must trust patient self-report, even if it appears to be incongruent with the patient’s nonverbal behavior or the nurses’ individual beliefs.

Similar to an early investigation (Watt-Watson, 1987), educational preparation of the nurse was not related significantly to overall knowledge of pain assessment and intervention. However, baccalaureate-prepared nurses did score higher on assessment questions. It is not clear why this difference was found, as analysis of graduates from associate and baccalaureate degree programs showed similarity in assessment skills (Smith, 2002). When pharmacologic and non-pharmacologic questions were analyzed, no significant differences existed between groups.

Unlike previous studies, nursing experience was important. Nurses who reported less than 1 year or at least 16 years experience achieved the highest knowledge scores. For the new nurse, this finding may reflect more structured pain education in nursing programs, although the curricula of nursing schools within the community were not examined for such content. For the more seasoned nurse, the effect of clinical practice may explain this finding.

The length of practice on the current unit was also important. Nurses with at least 16 years experience on a unit had more knowledge of pain assessment and intervention than those with 1-5 years on that unit. Continued experience in a specific clinical setting appears to engender better overall knowledge of care of the patient experiencing pain.

The nursing unit also appeared to be important. Oncology nurses were significantly more knowledgeable when compared to nurses on all other units, which supports prior findings (Brunier et al., 1995; Clarke et al., 1996). However, previous research used the original NKAS, which contains six specific cancer-related items. In the current study, these items were omitted, and oncology nurses still scored highest. The oncology nurses did not have any advantage when answering the modified tool, and nurses from other units were not at a disadvantage due to the presence of questions about cancer pain. In essence, eliminating these six items helped to level the survey.

The clear superiority of oncology nurses’ knowledge concerning pain assessment and intervention may be explained by the holistic and palliative approach that is a hallmark of this nursing specialty (Rushton et al., 2003; Wilson, 2007). The focus is on patient care, not necessarily medical cure. Additionally, these topics are central to orientation and continuing education for oncology nurses.

**Study Limitations**

The convenience sample does not allow for generalizability of study results. Data collection was conducted in the winter months in the Midwest, and inclement weather may have influenced the attendance of potential participants at unit meetings. However, with the lack of educational diversity within this metropolitan area, an increased sample size would likely yield similar findings.

Administration of the study during staff meetings may have also limited the sample size. Most units surveyed did not require attendance at staff meetings. However, the research team deliberately chose not to administer this survey through the mail or allow participants to take the survey outside the employment setting. These administration methods could have allowed for use of outside sources.

**Nursing Implications**

Pain is a subjective experience that is difficult to evaluate and, at times, difficult to manage. Pain crosses cultural and social lines. Patients have the right to appropriate assessment and management of their pain based on Joint Commission core principles (Joint Commission Resources, 2010). Thus, knowledge of pain management is a necessity for any practicing nurse in a hospital setting.

Education regarding pain assessment and particularly pain management needs to be a high priority. Deficits in this area of practice may be attributed to inadequate knowledge as reported in this and other studies. However, education alone may not change clinical nursing practice. Health care organizations need to institutionalize pain management practices by incorporating basic principles of pain assessment and management into daily practice (Berry & Dahl, 2000). Gordon, Dahl, and Stevenson (1996) outlined eight steps to institutionalizing pain management that are patterned after the work of the American Pain Society Quality Care Committee (1995). Mandatory hospital education sessions for all nurses may provide the needed knowledge regardless of years of experience or educational preparation. Clinical competencies should incorporate education about pharmacologic and non-pharmacologic methods of relieving pain (Matthews & Malcolm, 2007). Annual review of pain competencies could be instituted as policy.

**Future Research**

This study utilized a modified version of a previously administered survey. Research using this modified tool is needed so findings from future research can be compared to those in this study. Use of this tool within different institutions and in different geographic locations may serve to increase the generalizability of findings.

Analysis of nursing curricula is needed. Studies examining the content and length of time the topic of pain is covered would help identify educational shortcomings. Also needed are investigations of pain-related content provided during employee orientation. Studies examining pre- and post-orientation knowledge are needed to help nurse leaders and
educators assess the adequacy of current orientation concerning pain management principles, and assist in developing informative and practical pain management programs. Examination of knowledge scores among persons who have completed programs such as a Pain Resource Nurse Training program (Alliance of State Pain Initiatives, 2010), and those who have not, may enable educators to identify deficiencies in current educational practices and augment existing orientation and continuing education programs.

**Conclusion**

Despite the findings and recommendation of substantial past research, nurses continue to demonstrate inadequate knowledge of pain assessment and pain management interventions. Although the results of this study indicated relatively high knowledge scores, some nurses are not prepared adequately to care for patients who experience pain. Knowledge of pain management principles and interventions is insufficient.

Pain is a subjective experience. Nurses must refrain from basing pain management assessment and interventions on personal beliefs and judgments. Training to develop sensitivity and empathy must be critical components of nursing education. Accurate knowledge and application of pain management principles are essential to clinical nursing practice as they directly and positively impact patient outcomes.

**REFERENCES**


**ADDITIONAL READING**