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Enhancing Nurses' Pain Assessment to Improve Patient Satisfaction

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Patient satisfaction with pain management has increasing importance with Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores tied to reimbursement. Previous studies indicate patient satisfaction is influenced by staff interactions. This single-group pre/post design study aimed to improve satisfaction with pain management in older adults undergoing total joint replacement. This was a single-group pre-/posttest design. Nurse (knowledge assessment) and patient (American Pain Society Patient Outcomes Questionnaire Revised [APS-POQ-R], HCAHPS) responses evaluated pre- and postimplementation of the online educational program. Nurse focus group followed intervention. Nurses' knowledge improved significantly ($p < .006$) postintervention. HCAHPS scores (3-month average) for items reflecting patient satisfaction improved from 70.2 ± 9.5 to 73.9 ± 6.0. APS-POQ-R scores did not change. Focus group comments indicated need for education regarding linkages between pain management and patient satisfaction. Education on linkages between patient satisfaction and pain management can improve outcomes; education on strategies to further improve practice may enhance ability to achieve benchmarks.

Background

The extended life expectancy of Americans, coupled with increasing obesity rates, has significantly expanded the number of total joint replacement surgeries performed each year. Between 1991 and 2010, the number of total knee arthroplasties increased by 161.5% (Cram et al., 2012). In 2011, the Healthcare Cost and Utilization Project reported that more than 700,000 total knee arthroplasties and 460,000 total hip arthroplasties were performed in the United States. The mean charge for those two procedures was $54,158 and $59,499, respectively (hcupnet.ahrq.gov). Based on these trends, costs to Medicare for these procedures have been projected to reach $50 billion annually by 2030 (Kurtz, Ong, Lau, Mowat, & Halpern, 2007).

Healthcare providers and payers have been examining ways to improve patient outcomes and decrease costs after surgical intervention. These initiatives include early mobility protocols that have resulted in more rapid rehabilitation and earlier discharge. Pain management has also become an important focus. After total joint replacement surgery, pain levels are consistently reported as higher than other surgical procedures (Fetherston & Ward, 2011; Liu et al., 2012), an important consideration as pain influences patient willingness to fully engage in rehabilitation activities, which impacts surgical outcomes. The presence of pain also influences patient satisfaction, and federal agencies have created systems that link reimbursements to patient satisfaction scores.

Reimbursement Factors

Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores are among the measures used to calculate incentive payments under the Medicare Hospital Value-Based Purchasing program. When carrying out this process, 1% of the normal reimbursement for a procedure is allocated to an incentive bonus fund. A substantial portion (30%) of the calculated weight of this bonus fund is determined by the patient's perceptions of quality of care while in the hospital (http://www.hcahpsonline.org/files/HCAHPS%20Fact%20Sheet%20May%202012.pdf). HCAHPS scores are a primary determinant of the hospital's ability to receive payments from the incentive bonus fund, and patient satisfaction with pain management is a mandatory reporting point. Two specific questions in the HCAHPS

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survey address pain management and patient satisfaction: "During this hospital stay … how often was your pain well controlled?" (Q13) and "How often did the hospital staff do everything they could to help you with your pain?" (Q14).

These reporting requirements establish an important linkage. Early initiation of mobility and rehabilitation services has resulted in decreased length of stay and cost reductions in patient care, thereby meeting the goals of the payers. However, in order to carry out the required mobility regimen, patients need to have their pain effectively managed. Without this advantage, postoperative recovery and patient satisfaction may be compromised. Reimbursements tied to patient satisfaction therefore incentivize providers to improve pain management and patient satisfaction.

Pain and Patient Satisfaction

Prior studies suggest that patient satisfaction with pain management is influenced by a number of factors, including personal beliefs, expectations, and interactions with healthcare providers (Chow, Mayer, Darzi, & Athanasiou, 2009; Liu et al., 2012; Niemi-Murola et al., 2007; Wadensten, Frojd, Swenne, Gordh, & Gunningberg, 2011). Patients who undergo joint replacement procedures are typically older than 65 years and often have differing perceptions of pain compared to younger patients, including whether pain should be accepted and/or tolerated (Alm & Norbergh, 2013; Hadjistavropoulos et al., 2007; Herr, 2011, Prowse, 2007). Older adults tend to be more concerned about becoming addicted or impaired due to opiate use compared to younger patients (Dunwoody, Krenzischek, Pasero, Rathmell, & Polamano, 2008). Regardless of age, pain associated with total joint replacement is often greater than expected, an outcome that has been identified as a possible contributing factor to decreased patient satisfaction with pain management in patients undergoing joint replacement (Pulido, Hardwick, Munro, May, & Dupies-Rosa, 2010).

Pain Assessment

Because nursing care has a central role in ensuring optimal pain management and patient satisfaction with pain management, these factors create an important opportunity for nursing. Ineffective pain management influences patient recovery. Ineffective pain management may also impact the organization as a consequence of increased readmissions, prolonged length of stay, and poor clinical outcomes (Dunwoody et al., 2008; Gillaspie, 2010; Gupta, Daigle, Mojica, & Hurley, 2009). Innis, Bikaunieks, Petryshen, Zellermeyer, and Ciccarelli (2004) maintain that the "most common barrier to successful pain management is the failure to assess. That is, clinicians may not inquire about the presence of pain." (p. 322). Jamison et al. (1997), early investigators of the relationship between pain management and patient satisfaction, noted that although patients who experienced lower pain ratings were most satisfied with their postoperative care, those who experienced less pain than expected had higher satisfaction with their overall care. They further note that patients who perceive their care providers to be concerned with their pain levels reported greater satisfaction with their care. Hanna, González-Fernández, Barrett, Williams, and Pronovost (2012) contributed to this insight by reporting that patient satisfaction does not correlate strongly with pain intensity but, rather, patient satisfaction is more dependent on how the patient perceives that caregivers respond to their pain.

Findings of these and other studies support the concept that improving patient satisfaction with pain management can be achieved by greater collaboration and communication with the patient regarding their pain status and the effect of pain interventions (Chow et al., 2009; Gordon, Dahl, & Stevenson, 2000; Innis et al., 2004; JCAHO, 2000; Quinlan-Colwell, 2009; Wadensten et al., 2011). Improved pain assessment and communication can assist in reaching the goal of improving patient satisfaction.

Improving Patient Satisfaction

In 2013, the project site for this study identified a decline in patient satisfaction with pain management based on HCAHPS survey results and, more specifically, among patients admitted for orthopaedic total joint surgery. This decline appeared to be linked to responses to pain management questions. This finding prompted a search for ways to improve pain management and patient satisfaction by improving the nursing care provided.

We therefore initiated a quality improvement project to improve the nurse's assessment of a patient's pain in the postoperative total joint patient population with the end objective of improving patient satisfaction with pain management. The specific aims of the project were to:

1. Develop an online educational tool to instruct nurses in use of an expanded pain assessment protocol specific to joint replacement surgical patients that incorporated pain assessment relative to mobility and specifically addressed pain management concerns of older adults.
2. Evaluate change in nurses' knowledge pre- and postintervention related to pain assessment in joint replacement surgical patients and strategies to improve patient satisfaction with pain management.
3. Evaluate patient satisfaction with pain management after implementation of the instructional project.

Methods

Design

This quality improvement project utilized a single-group pre-/posttest design. Approval was obtained from the Exempt Institutional Review Board at the healthcare system.

Setting and Sample

The project was initiated on the 15-bed orthopaedic unit of a 325-bed community hospital located in southwestern Pennsylvania. An average of 75 joint replacement surgeries are performed each month in this facility. All registered nurses (n = 30) assigned to the orthopaedic unit were encouraged to participate in the online education course. Patients were included in the study if they were admitted to the orthopaedic unit and underwent total joint replacement surgery. Patients were excluded if they were scheduled for a revision arthroplasty (more complex procedure), unable/unwilling to complete the survey independently (not primary data source), or did not speak English (questionnaires in English).

Project Implementation

The project was conducted in four steps.

Phase 1

Before instruction of nursing staff, the American Pain Society Patient Outcomes Questionnaire Revised (APS-POQ-R) was given to 100 patients who had total joint replacement (Gordon et al., 2010). Questionnaires were distributed over a 3-month period and used to establish baseline patient satisfaction scores. In addition, HCAHPS scores for the two previously identified questions that focused on pain management were retrieved from the hospital database for the same 3-month period. These questions were as follows: "During this hospital stay … how often was your pain well controlled?" (Q13) and "How often did the hospital staff do everything they could to help you with your pain?" (Q14).

Phase 2

To provide staff nurse education, an online learning module was developed that summarized evidence-based literature regarding enhanced pain assessment in the postoperative total joint patient. Three major areas of assessment were addressed including current best practices in postoperative pain management in the total joint population, considerations in pain assessment in the older adult patient, and specific strategies that enhance patient satisfaction. The module introduced eight steps identified from the literature to ensure enhanced pain assessment. In addition, laminated posters were placed on portable computer modules used for charting and medication administration as reminders. Each nurse also received a pocket-sized laminated card with the 8 steps to assist them in implementing changes to the pain assessment protocol (see Figure 1). To assess changes in knowledge, nursing staff were asked to anonymously complete a researcher-compiled pre and posttest. The posttest content was identical to the pretest. This phase of the study was conducted over 2 weeks.

Phase 3

After 80% of nursing staff on the unit had completed the module, patient satisfaction with pain management was assessed by again administering the APS-POQ-R to 100 patients on the selected unit to determine postimplementation patient satisfaction with pain management. This phase of the study was conducted over 3 months. HCAHPS scores were retrieved from the hospital database for the two previously identified questions that focused on pain management for the same 3-month period.

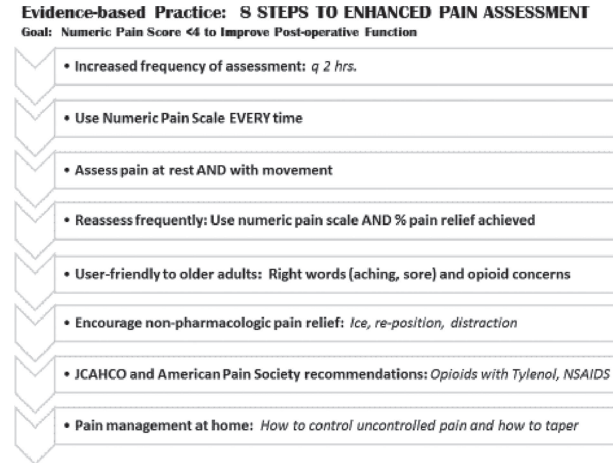

Figure 1. Summary of eight steps to enhanced pain assessment from evidence-based guidelines.

Phase 4

At the conclusion of data collection, a focus group was held with six nursing staff participants to determine perceptions of changes in pain assessment on their unit, satisfaction with the implementation process and suggested modifications. These six participants were nurses from the unit who volunteered to participate.

Instruments

APS-POQ-R

The APS-POQ-R, designed for use in adult hospital pain management quality improvement activities, measures 6 aspects of quality, including (1) pain severity and relief; (2) impact of pain on activity, sleep, and negative emotions; (3) side effects of treatment; (4) helpfulness of information about pain treatment; (5) ability to participate in pain treatment decisions; and (6) use of nonpharmacologic strategies. The version used in this study was developed in response to revised (2005) guidelines for pain management published by the American Pain Society (Gordon et al., 2010). Content validity was determined by a 10-member multidisciplinary panel who also evaluated its psychometrics. Testing in 299 patients supported internal consistency of instrument subscales and construct validity (Cronbach α of .85) (Gordon et al., 2010). Internal consistency (Cronbach α) in the present study was .81

The APS-POQ-R has 12 questions, with four having subquestions. This results in a total of 22 items: four items relate to pain severity and relief of pain; four relate to adverse effects of pain management; eight items reflect effects of pain on emotions, activity levels, and sleep; four items focus on participation in treatment

decision, education/information received about pain management, and satisfaction with pain management; and two items pertain to nonpharmacologic treatment of pain. Questions about pain relief and time spent in severe pain are answered using a numbered rating scale that ranges from 0% to 100%. Questions about pain severity and pain interference are answered using a numbered rating scale that ranges from 0 to 10. Three additional questions elicit responses regarding provision of information about pain treatment options, nonpharmacologic options, and encouragement to use these options (Wang, Sherwood, Gong, & Liu, 2013).

Nurse Knowledge Questionnaire

The Nurse Knowledge Questionnaire was developed from a review of the literature and published instruments designed to assess nursing knowledge in the older adult, with an emphasis on evidence-based practice in regard to pain management (Brockopp et al., 2004; McCaffery & Robinson, 2002; Phillips, Gift, Gelot, Duong, & Tapp, 2013; Wells, Pasero, & McCaffery, 2008; Zanolin et al., 2007). Items included in the test were reviewed for content validity by two clinical nurse pain specialists employed at a regional healthcare center and modified in response to their recommendations. The final version included 15 items that could be answered strongly agree, agree, neither agree or disagree, disagree, or strongly disagree. Of these, 11 items had an appropriate response of strongly disagree/disagree and 4 items had an appropriate response of strongly agree/agree. The instrument also requested demographic data (e.g., gender, age, educational background, years since graduation, and years working on the project unit).

HCAHPS

HCAHPS scores are designed to provide a standardized survey instrument and data collection methodology used nationally to measure patients' perspectives on hospital care. The HCAHPS survey contains 21 patient perspectives on care and patient rating items that encompass nine key topics: communication with doctors, communication with nurses, responsiveness of hospital staff, pain management, communication about medicines, discharge information, cleanliness of the hospital environment, quietness of the hospital environment, and transition of care (http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/HospitalHCAHPSFactSheet201007.pdf).

HCAHPS scores are reported monthly. For the present study, data collection was restricted to the designated orthopaedic unit and two previously identified questions.

Focus Group

Nurses who participated in the focus group were asked to respond to five questions designed to elicit perceptions of the value of the online educational program and ways to improve its content (see Table 1). These questions were developed by the research team from a review of studies designed to evaluate educational interventions. The focus group was held in the unit's common room and led by a research team member (DS).

Table 1. Nurses' Focus Group Questions

1. What did you learn that could change your practice of pain assessment?
2. What component of the project was helpful or beneficial to you?
3. What was not helpful to you in the process of this project?
4. If you were in charge and you could make one change that would make pain assessment better on this unit, what would you do?
5. Will enhancing pain assessment improve patient satisfaction with pain management?

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences v21 (SPSS v 21). Descriptive statistics were calculated for all measures including nurse and patient demographics and items included in the APS-POQ-R and Nurse Knowledge Questionnaire. In addition, comparisons were made between selected nurse and patient demographic characteristics. When there were small differences in pre- and postcharacteristics (e.g., race), a chi-square value for continuity correction was used. Otherwise, Pearson chi-square values were used.

To determine whether nurse knowledge changed significantly postintervention, each item was scored (5 = expected response, and 1 = incorrect response) and a mean total score obtained for respondents who appropriately strongly agreed/agreed or strongly disagreed/disagreed with each statement. Responses on the Nurse Knowledge Questionnaire were analyzed by comparing summed scores on the pre- and posttest. Because nurse surveys were anonymous and all respondents did not answer the posttest, it was not possible to perform a *t*-test for paired comparisons and, instead, the independent samples *t*-test was utilized. To determine whether there were differences in responses of nurses based on educational preparation (BSN, other) or years of experience, responses were compared using *t*-tests or Mann-Whitney *U* tests, as appropriate.

APS-POQ-R items with a response of 0%–100% or 0–10 (initial 19 items) were analyzed using an independent samples *t*-test. Because analysis entailed 19 individual *t*-tests, a p value of .0026 was required to achieve significance after the Bonferroni correction. In addition, multivariate analysis of variance was performed to determine whether there were differences in pain responses by type of surgery (total knee vs. total hip). The remaining 3 items were analyzed descriptively.

HCAPHS scores were analyzed by comparing mean monthly responses to the two previously identified items. Scores were averaged over a 3-month period pre- and postintervention. Focus group responses were audiotaped, transcribed, and coded according to the themes by two members of the research team not involved in delivery of the intervention (LAH, PKT).

Results

Nurse Participants

Nurse participants were 100% female, primarily between the ages of 26 and 35 years (37.9%), white (79.3%), and prepared at the associate (55.6%) or bachelor (29.6%) level. Most (60.7%) had 0–5 years of experience (see Table 2). Of the 30 staff nurses employed on the unit, 29 (97%) participated in the preknowledge test and 19 (63.3%) in the posttest.

The mean total score on the Nurse Knowledge Questionnaire increased significantly from pre- to posttest ($t = -3.7$, $df = 45$, $p = .001$). When the percent change in scores for individual items was compared from pre- to posttest, scores for 13 of the 15 items increased (range 1%–51%) (see Table 3). Scores decreased for the items assessing accuracy of an older patient's pain assessment and use of a numeric rating scale.

Patient Participants

Patient participants were primarily older adults, whose age ranged from 55 to more than 75 years (see Table 4). Body mass index values indicated that 75% were overweight or obese. Most (75%) patients underwent a total knee replacement. Patients in the pre- and postimplementation phases were demographically similar, with no significant differences in age ($p = .789$), gender ($p = .540$), body mass index ($p = .671$), or type of surgery ($p = .629$).

A total of 190 surveys were distributed pre- ($n = 100$) and postimplementation ($n = 90$). Of these, 151 were returned (79% response rate), with 87 (87%) in the preimplementation phase and 64 (71%) in the postimplementation phase. One survey was eliminated because only demographic data were completed, and one survey was eliminated because the patient had revision total joint surgery, which was an exclusion criterion. Therefore, 149 surveys were analyzed (see Table 5).

No significant between-group differences were found for any APS-POQ-R items. Ratings of pain in the first 24 hours after surgery decreased (4.6–4.3), but minimally. The most frequent nonpharmacologic methods utilized by patients included cold packs, deep breathing, and relaxation. Types of nonpharmacologic methods that demonstrated the greatest increase between pre- and postimplementation include listening to music, prayer, and walking. When comparisons based upon type of surgery (knee vs. hip arthroplasty) were made, no significant between-group differences were found for any APS-POQ-R items.

Table 2. Nurse Demographics

Measure	*n* (%)
Gender[a]	
Female	28 (100.0)
Age	
19–25 years	8 (27.6)
26–35 years	11 (37.9)
36–45 years	8 (27.6)
>45 years	2 (6.9)
Race/ethnicity	
White	23 (79.3)
African-American	2 (6.9)
Other	4 (13.8)
Highest education[a]	
Associate degree	15 (55.6)
Diploma	4 (14.8)
BSN	8 (29.6)
Experience[a]	
0–5 years	17 (60.7)
6–10 years	5 (17.0)
11–15 years	3 (10.7)
16–20 years	1 (3.6)
>20 years	2 (7.1)

Note. BSN = Bachelor of Science in Nursing.
[a]Data not provided by all respondents.

Nurse Focus Group

Three themes were identified: educational benefit, individualized assessment, and outcome clarity (see Table 6). The nurses viewed the online learning module very positively, commenting that it allowed flexibility to determine when to complete the program. Nurses commented that, although they recognized the need to individualize care, the many factors that influenced differences in patients' experiences and patient satisfaction were less well understood. Notably, nurses were unaware that patient ratings (HCAHPS scores) were linked to reimbursement. Nurses were consistent in their responses regarding the need for additional educational programs related to pain assessment, pain management, and patient satisfaction.

HCAHPS Scores

Mean HCAHPS scores for the two items ranged from 60.5 to 79.5 pre- and 67.7 to 79.6 postimplementation of the project. When comparison was made between responses for the 3 months before and after the intervention, mean scores increased from 70.2 ± 9.5 to 73.9 ± 6.0. Comparing preimplementation pain management HCAHPS scores to postimplementation revealed a 5% relative change (see Figure 2).

Discussion

This project had several major findings. Implementation of the educational module significantly increased nurses' knowledge regarding pain assessment and the online format was viewed positively, evidenced by focus group comments. HCAHPS scores improved, although the change was relatively small. The focus group format elicited information that suggested the need for ongoing education on the topic of pain management and linkages with patient satisfaction. Patient ratings of pain did not change significantly from pre- to postimplementation of

Table 3. Change in Responses on the Nurse Knowledge Test Before and After Completion of the Educational Program

Response Item	Expected Response	Before Correct (n = 28)	After Correct (n = 19)
When a patient requests increasing amounts of analgesics to control pain, this usually indicates that the patient is psychologically dependent (addicted)	Disagree/strongly disagree	78%	89%
25% of patients receiving opioids around the clock become addicted	Disagree/strongly disagree	64%	85%
Estimation of pain by an MD or RN is as valid a measure of pain as a patient's self-report	Disagree/strongly disagree	79%	84%
Older adult patients are more reluctant to use opioids for pain relief because of their fear of addiction	Agree/strongly agree	79%	84%
Assessing a patient's pain level needs to include questions about the patient's level of pain at rest and while moving around in bed or when ambulating	Agree/strongly agree	79%	80%
A patient should experience discomfort before giving the next dose of pain medication	Disagree/strongly disagree	36%	79%
The pain experience is less intense for the older adults than for younger patients	Disagree/strongly disagree	68%	74%
It is not always necessary to use a standardized pain scale (Numeric Rating Scale) when asking patients about their pain. Asking if they are doing OK and observing them is also a reliable measure	Disagree/strongly disagree	79%	68%
Respiratory depression (less than seven breaths/minute for an adult) probably occurs in at least 10% of patients who receive one or more doses of an opioid for relief of severe pain	Disagree/strongly disagree	29%	63%
The most important factor that positively influences patient satisfaction surveys is giving patient's pain medication within 15 minutes of the patient's request for pain medication	Disagree/strongly disagree	11%	58%
If a patient (and/or family member) reports that an opioid is causing euphoria, she or he should be given a lower dose of the analgesic	Disagree/strongly disagree	25%	53%
Older adult patients can reliably use a numeric rating scale for measuring and reporting their pain levels	Agree/strongly agree	29%	40%
An older adult patient's report of his or her pain is generally accurate	Agree/strongly agree	21%	5%

the project. However, the majority of patients indicated satisfaction with their pain management.

Staff Nurse Knowledge

Two aims of this project focused on improving the pain assessment capabilities of the nursing staff, specifically targeting the needs of the older adult who required total joint replacement. The online training module was popular with the nursing staff, with a high percentage voluntarily participating. There was a statistically significant improvement in knowledge of evidence-based approaches to enhance pain management. In focus group discussion, nurses identified areas of new knowledge that focused on greater understanding of the impact of their assessment of pain on satisfaction scores. Questions related to patient satisfaction indicated the highest percentage of change from pre- to posttest. Additional areas in which knowledge improved included recognition of the need for consistent utilization of a pain rating scale, addressing pain medication concerns of the older adult patient, and use of mobility questions to assess pain with movement, which is critical to enhanced physical therapy in this group of patients. One question on the nurse knowledge test (an older adult patient's report of his pain is generally accurate) demonstrated a decrease in correct responses from pre- to posttest. During the online education module, one segment emphasized a need to query older adults carefully about their pain levels as they may underreport their pain. The focus group participants felt that this statement was false if there were not additional supportive findings during the pain assessment.

Patient Satisfaction

There were no significant differences in patient responses on the APS-POQ-R when comparing pre- and postimplementation results of this quality improvement project. There are several possible reasons for this finding. Patients' reports of pain intensity (least and worst pain), pain relief, and satisfaction with pain management remained fairly consistent pre- and postimplementation. Similar effects were noted with the presence of side effects and emotional responses to pain. When trends were examined, mean scores indicated very little difference with the exception of improvement in management of side effects, with scores decreasing from 4.2 to 3.7 for drowsiness and 3.0 to 2.3 for nausea. Patients rated the percentage of pain relief achieved within the first

Table 4. Patient Demographics

	Before	After
Age		
<55 years	15.9%	15.2%
55–60 years	14.8%	19.7%
61–65 years	12.5%	10.6%
66–70 years	17.0%	16.7%
71–75 years	19.3%	16.7%
>75 years	20.5%	21.2%
Gender		
Male	43.7%	50%
Female	56.3%	50%
Body mass index		
<18.5	0.0%	1.6%
18.6–24.9	11.9%	14.1%
25–29.9	31.0%	28.1%
>30	57.1%	56.2%
Surgery		
Knee	72.1%	76.9%
Hip	27.9%	23.1%

24 hours pre- and postimplementation of the intervention as 68.7% ± 23.4% and 63.5% ± 24.8%, respectively, and the percentage of time spent in severe pain in the 24 hours pre- and postimplementation as 37.4% ± 28% and 36.4% ± 29%, respectively. Although these ratings suggest pain may not have been adequately relieved, both groups reported a high level of satisfaction with their pain management, suggesting that they felt care was as anticipated. In addition, ratings of ability to participate in decisions about treatment preand postimplementation were high (8.4 ± 2.5 and 8.2 ± 2.5, respectively).

Our findings paint a picture of acute, high-intensity, and persistent pain in the patient's first 24 hours postoperatively. Yet, patients reported a high level of satisfaction with their pain management. These findings are consistent with other studies on patient satisfaction with pain management (Hanna et al., 2012; Phillips et al., 2013) and reinforce findings from other studies that attempted to improve patient satisfaction with pain management in postoperative patients (Akyol, Karayurt, & Salmond, 2009; Gillaspie, 2010). Hanna et al. (2012) surveyed 4,349 adult patients over 18 months on a variety of surgical units in their tertiary care facility and found that the odds of a patient being satisfied with their pain management were 4.86 times greater if their pain was relieved and 9.92 times greater if the staff performed well in trying to address their pain. Phillips et al. (2013)

Table 5. Change in Patient Pain Survey Responses Before and After the Educational Program

Question	*M* ± *SD* Before	*M* ± *SD* After	*t*-test	*df*	*p*
1. Least pain in first 24 hours	4.6 ± 2.5	4.3 ± 2.6	0.729	146	.467
2. Most pain in first 24 hours	7.7 ± 2.1	7.6 ± 2.3	0.048	148	.962
3. What time in severe pain during first 24 hours	37.4% ± 28%	36.4% ± 29%	0.215	147	.83
4. Pain interfered with/prevented you from					
A. Activities in bed	5.4 ± 2.7	5.89 ± 2.8	1.053	149	.294
B. Activities out of bed	5.1 ± 2.8	5.4 ± 2.9	0.717	147	.474
C. Falling asleep	4.3 ± 3.0	4.4 ± 3.1	0.225	144	.822
D. Staying asleep	4.5 ± 3.0	4.5 ± 3.2	0.032	144	.974
5. How much pain caused you to feel?					
A. Anxious	3.7 ± 3.2	3.7 ± 3.3	0.023	147	.982
B. Depressed	2.6 ± 2.9	2.3 ± 2.5	0.587	149	.558
C. Frightened	1.7 ± 2.3	2.2 ± 2.8	1.192	149	.235
D. Helpless	3.0 ± 3.4	3.7 ± 3.4	1.283	149	.201
6. Severity of side effects					
A. Nausea	3.0 ± 3.4	2.3 ± 3.4	1.162	148	.247
B. Drowsiness	4.2 ± 3.2	3.7 ± 3.0	1.047	147	.297
C. Itching	1.8 ± 2.5	2.0 ± 2.8	0.333	149	.74
D. Dizziness	1.6 ± 2.3	1.9 ± 2.4	0.604	148	.547
7. How much pain relief did you receive in first 24 hours?	68.7% ± 23.4%	63.5% ± 24.8%	1.314	147	.191
8. Were you allowed to participate in decisions about pain treatment as much as you wanted?	8.4 ± 2.5	8.2 ± 2.5	0.427	149	.67
9. How satisfied were you with the results of your pain treatment?	9.1 ± 1.3	8.6 ± 1.7	1.944	114.392	.054

Table 6. Nurse Focus Group Themes and Supporting Comments

Educational benefit	"I liked the online module. I could do it when I could focus"
	"…there were a lot of questions that I got wrong to begin with…. that I had no idea."
	"…we talked about pain management all of the time in school, but I don't really remember talking about it like this…more practical you know?"
Outcome clarity	"That was not anything that I ever understood before…. definitely need more information about that sort of stuff."
	"…make sure that you talk about the money part … how those scores are how people decide how much to pay the hospital. That was sort of a surprise to me, but then it made sense as to why everyone is so obsessed with the scores. But why don't they just tell us that?"
Individualized assessment	"that each patient's pain is individualized…. some people have a higher tolerance of pain and some people have a not so good tolerance of pain. So you just have to be in tune with that person and see what you can do to get them at a comfortable pain level. So you just can't standardize every pain regime."
	"I had … never thought that I should always ask about the pain in the same way … like always ask for a scale".

utilized a pain survey similar to the APS-POQ-R and reported no association between pain intensity scores and patient satisfaction with overall pain management. Like our project, Phillips et al. (2013) found that the majority of patients were satisfied or very satisfied with their pain management, regardless of their pain intensity scores. Gillaspie (2010) utilized a comprehensive patient education tool to improve patient satisfaction with pain management with total joint patients. The study reinforced the need for patient education and improved communication between the nurse and the patient about pain but reported that patient satisfaction scores were not correlated with patient pain levels and suggested they not be used as an outcome measure for pain control. Akyol et al. (2009) in their study of 120 patients undergoing total knee replacement found that patient satisfaction with pain management was high at 8.88/10 although the patients reported moderate pain levels (mean worst pain = 7.2/10). Findings of our and prior studies therefore demonstrate that patient satisfaction and pain are not as directly linked as many healthcare professionals have assumed.

Healthcare organizations have a great level of concern in regard to underperforming HCAHPS scores because of the economic impact on reimbursement. Findings of this study identified a discrepancy between the APS-POQ-R and HCAHPS, given that ASP-POQ-R scores were unchanged whereas HCAPHs scores improved. The survey methodology utilized in each case was different, a possible reason for this finding. The APS-POQ-R was given to patients immediately before discharge, whereas HCAHPS was sent after discharge to a randomly selected group. The difference in timing and site (home vs. hospital) may have been a contributing factor, or wording of questions related to patient satisfaction with pain management may have influenced responses. Many nurses perceive that HCAHPS surveys are more likely to be returned by dissatisfied patients whereas satisfied patients are less likely to complete the survey, resulting in a nonresponse bias. Although plausible, supporting data provided by the HCAHPS survey indicates that patient responses are adjusted for nonresponse bias if specific criteria are met, which diminishes the impact of nonresponse bias (http://www.hcahpsonline.org/files/Final%20Draft%20Description%20of%20HCAHPS%20Mode%20and%20PMA%20with%20bottom%20box%20modedoc%20April%2030,%202008.pdf).

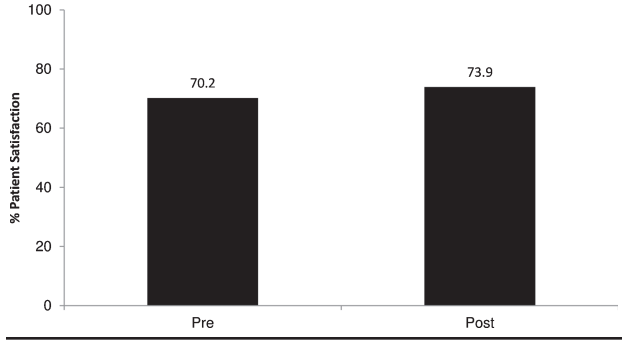

Figure 2. Change in HCAHPS scores for two items related to satisfaction with pain management before and after the educational program.

In light of these different methodologies, it is not appropriate to draw direct comparisons, but rather to utilize study findings to elicit better understanding of the varied factors that may influence satisfaction with pain management. Although there were no statistically significant differences pre- and postimplementation in any category utilizing the APS-POQ-R, there was a fairly wide standard deviation in most categories. It is possible that the changes in HCAHPS scores may reflect an improvement in patient satisfaction in the patient who is more dissatisfied than the average, or that patients who felt satisfied with their pain management were more compelled to respond to the HCAHPS survey.

An important finding related to the limited knowledge of nurses regarding the potential impact of HCAPHS scores on institutional finances. Focus group comments also indicated a need for greater understanding of how nurse interactions regarding pain management can influence patient satisfaction. The online educational module developed for this project was successful in increasing knowledge and could be easily adapted to include additional topics. Findings of this project strongly support the need to seek additional information from nurse respondents using focus group methodology. Nuances that influence behavior, not realized from other assessment sources, are more likely to be determined using this strategy.

Practice Implications

Nurses have a key role in positively or negatively impacting patient satisfaction. Although these nurses were aware of the expectations for meeting patient satisfaction benchmarks, there was a clearly identified need for education that focused specifically on evidence-based strategies to improve patient satisfaction scores and the impact that nursing care has on the financial bottom line of their organization through meeting patient satisfaction benchmarks. The online learning module was preferable to in-person education as it afforded an opportunity to access the module at one's convenience and was a preferred learning modality. Total joint surgery will likely become an increasingly common procedure in the future, and the need for high-quality, sustainable pain management will be even more pressing, particularly given the high pain levels that these patients experience in the immediate postoperative period. Nurse practice change begins with education and is sustained by nursing management support and institutional policy/procedure implementation. This institution plans to modify their electronic medical record protocol for pain management to imbed these evidence-based practices into nursing practice and to expand the online learning module institution-wide.

Limitations

The project was conducted in one institution, which limits generalizability of the results. The nurse knowledge test was developed by the researcher and not subjected to psychometric evaluation. Responses on the nurse knowledge test were anonymous, which prevented comparing changes from pre- to postintervention. Twenty-nine nurses completed the knowledge pretest, whereas 19 completed the posttest, which could affect findings of the study. Also, patients surveyed pre- and postimplementation were different, which could have contributed to inability to detect the change. Items included in the APS-POQ-R may not have been sufficiently sensitive to detect the change in patient satisfaction from pre- to postintervention.

Conclusion

In nurses' clinical practice, management of patients' pain is a priority. The ability to accurately and consistently assess and manage pain and support patients in ways that improve satisfaction with their pain management remains an ongoing educational and practice need. The evidence-based and patient population-specific strategies used in this study provided a positive change in nurses' knowledge. Positive changes in HCAHPS survey results were reported. The nurse focus group indicated a high level of awareness of the HCAHPS scores and need to reach benchmark levels. However, it was also apparent that the depth of knowledge about nursing's impact on patient satisfaction scores was vague and nonspecific to their patient population.

The educational approach used in this study was positively received and has the potential to provide additional education on this and other topics influencing nursing practice. Giving nurses specific tools and an understanding of how to positively change patient perceptions empowers them to effectively move toward meeting the benchmarks of patient satisfaction.

References

Agency for Healthcare Research and Quality, U.S. Dept. Health and Human Services. *Healthcare cost and utilization project, national statistics on all stays*. Retrieved August 15, 2014, from hcupnet.ahrq.gov

Akyol, O., Karayurt, O., & Salmond, S. (2009). Experiences of pain and satisfaction with pain management in patients undergoing total knee replacement. *Orthopaedic Nursing*, *28*(2), 79–85.

Alm, A., & Norbergh, K. (2013). Nurses opinions of pain and the assessed need for pain medication for the elderly. *Pain Management Nursing*, *14*(2), e31–e38.

Brockopp, D., Downey, E., Powers, P., Vanderverr, B., Warden, S., Ryan, P., & Saleh, U. (2004). Nurses' clinical decision-making regarding the management of pain. *International Journal of Nursing Studies*, *41*(6), 631–636.

Chow, A., Mayer, E., Darzi, A., & Athanasiou, T. (2009). Patient-reported outcome measures: The importance of patient satisfaction in surgery. *Surgery*, *146*, 435–443.

Cram, P., Lu, X., Kates, S., Singh, J., Li, Y., & Wolf, B. (2012). Total knee arthroplasty volume, utilization, and outcomes among Medicare beneficiaries, 1991–2010. *Journal of the American Medical Association*, *308*(12), 1227–1236.

Dunwoody, C., Krenzischek, D., Pasero, C., Rathmell, J., & Polomano, R. (2008). Assessment, physiological monitoring, and consequences of inadequately treated acute pain. *Journal of PeriAnesthesia Nursing*, *23*(1A), S15–S27.

Fetherston, C., & Ward, S. (2011). Relationships between post-operative pain management and short term functional mobility in total knee arthroplasty patients with a femoral nerve catheter: A preliminary study. *Journal of Orthopaedic Surgery and Research*, *6*(7). doi:10.1186/1749-799X-6-7

Gillaspie, M. (2010). Better pain management after total joint replacement surgery: A quality improvement approach. *Orthopaedic Nursing*, *29*, 20–24.

Gordon, D., Dahl, J. L., & Stevenson, K. K. (2000). *Building an institutional commitment to pain management* (2nd ed.). Madison, WI: University of Wisconsin-Madison Board of Regents.

Gordon, D., Polomano, R., Pellino, T., Turk, D., McCracken, L, Sherwood, G., … Farra, J. T. (2010). Revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) for quality improvement of pain management in hospitalized adults: Preliminary Psychometric Evaluation. *The Journal of Pain*, *11*(11), 1172–1186. doi:10.1016/j.jpain.2010.02.012

Gupta, A., Daigle, S, Mojica, J., & Hurley, R. (2009). Patient perception of pain care in hospitals in the United States. *Journal of Pain Research*, *2*, 157–164.

Hadjistavropoulos, T., Herr, K., Turk, D., Fine, P., Dworkin, R., Helme, R., … Williams, J. (2007). An interdisciplinary expert consensus statement on assessment of pain in older persons. *The Clinical Journal of Pain*, *23*(Supp l 1), SI–S43.

Hanna, M., González-Fernández, M., Barrett, A., Williams, K., & Pronovost, P. (2012). Does patient perception of pain control affect patient satisfaction across surgical units in a tertiary teaching hospital? *American Journal of Medical Quality*, *27*, 411–416.

HCAHPS Online. (2008a). *Mode and patient-mix adjustment of the CAHPS® hospital survey (HCAHPS)*. Retrieved August 19, 2014, from http://www.hcahpsonline.org/files/Final%20Draft%20Description%20of%20HCAHPS%20Mode%20and%20PMA%20with%20bottom%20box%20modedoc%20April%2030,%202008.pdf

HCAHPS Online. (2008b). *HCAHPS survey—frequently asked questions*. Retrieved August 19, 2014, from http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/HospitalHCAHPSFactSheet201007.pdf

HCAHPS Online. (2012). HCAHPS Fact Sheet. Retrieved August 19, 2014, from http://www.hcahpsonline.org/files/HCAHPS%20Fact%20Sheet%20May%20212.pdf

Herr, K. (2011). Pain assessment strategies in older patients. *The Journal of Pain*, *27*(3), S3–S13.

Innis, J., Bikaunieks, N., Petryshen, P., Zellermeyer, V., & Ciccarelli, L. (2004). Patient satisfaction and pain management: An educational approach. *Journal of Nursing Care Quality*, *19*(4), 322–327.

Jamison, R. N., Ross, M. J., Hoopman, P., Griffin, F., Levy, J., Daly, M., & Schaffer, J. L. (1997). Assessment of postoperative pain management: Patient satisfaction and perceived helpfulness. *Clinical Journal of Pain*, *13*(3), 229–236.

JCAHO. (2000). *Pain assessment and management: An organizational approach*. IL: Oakbrook Terrace.

Kurtz, S., Ong, K., Lau, E., Mowat, F., & Halpern, M. (2007). Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030. *Journal of Bone and Joint Surgery*, *89*(4), 780–785.

McCaffery, M, & Robinson, E. (2002). Your patient is in pain: Here's how you respond. *Nursing*, *32*, 36–47.

Liu, S., Buvenendran, A., Rathmell, J., Sawhney, M., Bae, J., Moric, M., … Sculco, T. P. (2012). Predictors for moderate to severe acute postoperative pain after total hip and knee replacement. *International Orthopaedics*, *36*, 2261–2267.

Niemi-Murola, L., Poyhia, R., Onkinen, K., Rhen, B., Makela, A., & Niemi, T. T. (2007). Patient satisfaction with postoperative pain management—effect of preoperative factors. *Pain Management in Nursing*, *8*(3), 122–129.

Phillips, S., Gift, M., Gelot, S., Duong, M., & Tapp, H. (2013). Assessing the relationship between the level of pain control and patient satisfaction. *Journal of Pain Research*, *6*, 683–689.

Prowse, M. (2007). Postoperative pain in older people: A review of the literature. *Journal of Clinical Nursing*, *16*(1), 84–97.

Pulido, P., Hardwick, M. E., Munro, M., May, L., & Dupies-Rosa, D. (2010). Patients speak out: Development of an evidence-based model for managing orthopaedic postoperative pain. *Orthopedic Nursing*, *29*(2), 92–98. doi:10.1097/NOR.0b013e3181d24399

Quinlan-Colwell, A. (2009). Understanding the paradox of patient pain and patient satisfaction. *Journal of Holistic Nursing*, *27*(3), 177–182.

Wadensten, B., Frojd, C., Swenne, C., Gordh, T., & Gunningberg, L. (2011). Why is pain still not being assessed adequately? Results of a pain prevalence study in a university hospital in Sweden. *Journal of Clinical Nursing*, *20*, 624–634. doi:10.1111/j.1365-2702.2010.03482.x

Wang, H., Sherwood, G., Gong, Z., & Liu, H. (2013). Psychometric evaluation of the revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) in postoperative patients. *Laboratory and Clinical Investigations FAM*, *20*(4), 285–291.

Wells, N., Pasero, C., & McCaffery, M. (2008). Improving the quality of care through pain assessment and management. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses*. Rockville, MD: Agency for Healthcare Research and Quality (US). Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK2658/

Zanolin, E., Visentin, M., Trentin, L., Saiani, L., Brugnolli, A., & Grassi, M. (2007). A questionnaire to evaluate the knowledge and attitudes of healthcare providers on pain. *Journal of Pain and Symptom Management*, *6*(33), 727–736.