CE

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The Effect of Early Ambulation on Patient Outcomes for Total Joint Replacement

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The National Association of Orthopaedic Nurses published clinical practice guidelines in 2010 to improve outcomes with day of surgery mobilization in the total joint replacement patient (B. Morris, M. Benetti, H. Marro, & C. Rosenthal, 2010). With the cost of healthcare skyrocketing and reimbursement marginally covering costs, healthcare professionals must look for ways to reduce length of stay for elective procedures. The purpose of this change project was to provide and measure the effectiveness of an educational intervention on the benefits of day of surgery mobility for nurses and physical therapy staff. Acquisition of caregivers' knowledge, attitudes, and practice was measured along with three patient outcomes (length of stay, discharge destination, and day of ambulation). The findings from this change project resulted in improvements in structure (new practice protocol), processes (nursing and physical therapy care processes), and patient and organization outcomes.

"I just had surgery! You want me to get up now?" In 2010, the National Association of Orthopaedic Nurses published clinical practice guidelines for the total joint patient population. The guidelines indicate improved patient outcomes with day of surgery mobilization in the total joint replacement patient. Although most programs, including the program at this hospital, provide ambulation on the first postoperative day, very few programs have day of surgery mobility as a standard of care. Day of surgery mobility has been shown to decrease length of stay in this patient population significantly (Morris, Benetti, Marro, Rosenthal, 2010). With the cost of healthcare skyrocketing and reimbursement marginally covering costs, healthcare professionals must look for innovative ways to reduce the length of stay for elective procedures. The purpose of this change project was to report the effectiveness of education of nursing and physical therapy staff regarding day of surgery ambulation and its effect on patient outcomes.

Theoretical Framework

Three theories guided the implementation of this change project. Evidence-based practice was used to frame a clinical question, search the evidence, and design the process changes (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010). Lewin's change theory was used for the planning and implementation of the project. The theory of constructivism was used in the development and teaching of educational content.

Evidence-Based Practice Theory

Evidence-based practice is used by nurses to provide quality care based on current evidence rather than practice based on tradition (Melnyk & Fineout-Overholt, 2005). Melnyk et al. (2010) describe evidence-based practice in seven steps. The initial step is that of inquiry; a nurse must start by asking a clinical question. Once a question is developed, it should be put into a PICO (Population, Intervention, Comparison, Outcome) format. By using this format, the nurse is able to use the question as a framework for searching the literature. For this change project, the PICO question was as follows:

> In the total joint replacement population will day of surgery ambulation versus first post-operative day ambulation result in improved clinical outcomes.

After a search of the evidence, the nurse must critically appraise each study for validity, reliability, and applicability. The evidence is then integrated with expert opinion and patient preferences. Finally, the evidence is evaluated to provide the highest quality nursing practice (Melnyk et al., 2010).

Change Theory

Kurt Lewin began publishing on change theory in 1947, investigating the factors influencing people to change (Connelly, 2011). Lewin developed a three-stage theory,

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using the principles of unfreezing, change, and refreezing. This change theory has been used successfully in nursing practice to motivate and engage nurses in process changes (Kassean & Jagoo, 2005).

The first stage, unfreezing, is used to upset the current culture on the unit. This step identifies a current problem and causes caregivers to become uncomfortable with their current practice.

Lewin calls this exploration a force field analysis, which was subsequently used by Bozak (2003) to implement bedside handoff on a nursing unit where many barriers to the change were present. The discomfort caused by the force field analysis increases motivation to change. The force field analysis step is also used to identify potential barriers that may be viewed as a threat to the process, although others may see them as an opportunity for growth. The change agent can begin to eliminate or minimize the barriers to change. Once the motivation to change outweighs the barriers, the change can take place. In the current project, the nursing and physical therapy staff were exposed to the new practice standards that framed the "unfreezing" stage described by Lewin.

The second step is the change itself. During this step, the educator will develop a detailed plan to help support the staff through the change process. The plan can include training, encouragement, and new process steps. The staff need to visualize and personally adopt the goal for the change to take place, and the educator's role is to facilitate this process. In this change project, the educator led the staff in an exercise to visualize opportunities for improved outcomes related to early ambulation. Video was used to demonstrate process steps. Then return demonstration was employed to increase the staff's comfort level with the new process.

The final step in Lewin's change theory is the freezing or refreezing step as stated in more recent literature (Kassean & Jagoo, 2005). During this step, it is important to identify any workflow issues that may result and lead to resistance. The educator must remain open to feedback and address issues to facilitate refreezing. The change is reinforced during refreezing to ensure enculturation of the practice as the norm. In this project, a number of potential barriers were anticipated and were addressed in the educational content. The educator asked open-ended questions of participants, and potential barriers were discussed within the group. The educator empowered and encouraged the staff to offer solutions to their peers throughout this discussion.

Education Theory

The education portion of this change project was guided by the theory of constructivism. This theory states that the basic operating processes of learning are assimilation, accommodation, and construction and the learner builds on experience with new knowledge (Billings & Halstead, 2005). This theory explains how the educational intervention builds on the nurses' prior knowledge and experience. This is ideal for experienced nurses, new graduates, and assistive personnel who have valuable knowledge to connect with learning, making the content meaningful and practical. By building on existing knowledge about the benefits of early mobilization in other patient populations, the participants were able to apply prior learning to the new process that was proposed in the change project. The educator may also further engage those with higher levels of knowledge and experience by presenting the theory behind the material (Billings & Halstead, 2005). In this change project, the evidence related to early mobility, improved outcomes, and reduction of complications was presented in the early stages of education. The educator engaged the staff by asking questions about their knowledge on the subject and then validated their answers with a presentation of the evidence. This helped the staff apply prior knowledge directly to the new process change.

Review of Literature

A review of the literature was conducted to identify articles that discussed the effect of early ambulation on potential outcomes and the use of an educational intervention to improve staff's acceptance of a new practice change. The search used CINAHL, Cochrane database, ProQuest, Google Scholar, and Google search engines and employed key words such as joint replacement, orthopaedic, total hip replacement, total knee replacement, arthroplasty, early ambulation, fast-track, mobilization, activity, length of stay, postoperative function, functional indicators, and discharge destination. Ultimately, the review of the literature focused on early intervention with three outcomes, length of stay, discharge destination, and time of postoperative ambulation.

Postoperative Time to Ambulation

One outcome examined was the length of time from a patient's arrival on the unit from the recovery room until the time of first mobilization. The mobilization can be as little as a dangle out of bed to mobilization to a chair, but few studies looked at this measure of time. Most begin to measure "time" on the first postoperative day rather than the day of surgery. In a descriptive study of (n = 100 patients), researchers found that only seven patients were unable to meet the minimum mobilization on the first postoperative day (Holm et al., 2010). In a meta-analysis, the outcome was examined by measuring the time to mobility on the first postoperative day (Khan, Ng, Gonzalez, Hale, & Turner-Stokes, 2009), but in a study by Morris et al. (2010), time was measured in hours rather than days. In this study, after implementing clinical practice guidelines, the time to mobilization was reduced from 16.8 hours to 6 hours with 79% of the patients dangling on the day of surgery.

Length of Stay

Length of stay is an important factor to review for hospitalized patients because of the cost per day in providing acute care. Several studies have shown a relationship between early ambulation and a decreased length of stay. Lawson (2009) showed a decrease in length of stay from 2.7 days in the control group (activity once per day) to 2.0 days in the experimental group with increased activity (twice per day). The National Association

of Orthopaedic Nurses published clinical practice guidelines for early mobilization after surgery, which were used by Morris et al. (2010) to guide their study reducing length of stay from 4.3 days to 2.8 days by implementing day of surgery ambulation/dangle by nursing.

A meta-analysis reviewed 202 studies related to postoperative activity programs with total joint replacement patients. Of the 202 studies, eight studies met criteria to be included in the report (Khan et al., 2009). The analysis reviewed several outcomes, including a reduction in hospital stay, fewer postoperative complications, and reduced hospital costs using standardized multidisciplinary patient mobilization in the hospital.

Some hospitals have developed "fast-track" programs for hip and knee surgery that includes standardized preoperative education and postoperative activity. Kehlet and Wilmore (2008) conducted a meta-analysis that looked at fast-track surgical programs. The studies showed that the length of stay was reduced to an average of 3–4 days with a fast-track program in place for total joint replacement patients, resulting in a significant reduction in hospital-related costs. Another study reported that after implementation of a fast-track program including early ambulation within 24 hours of surgery for total knee and hip arthroplasty, the length of stay was reduced to 2.7 days for total knee and 2.5 days for the total hip population (Andersen, Gaarn-Larsen, Kristensen, & Otte, 2009).

Discharge Destination

Readiness to discharge home is an important consideration following total joint surgery. In a meta-analysis, functional milestones were measured using the Functional Independence Measure to assess postoperative mobility (Khan et al., 2009). Clinical pathways, including early ambulation, led to a more rapid attainment of functional milestones and quality of life. Functional Independence Measure measures the level of independence in a number of activities of daily living, including ambulation, transfers, and the ability to bathe and dress oneself. Functional milestones are one criterion used to determine the need for skilled nursing following acute discharge. After implementation of a fast-track program, another study found that patients were discharged home much earlier than with traditional programs (Andersen et al., 2009). In another study, patients reported an increase in their preparedness to care for self (m = 3.9 to m = 4.1 on a 5-point Likert scale) after implementation of day of surgery mobilization (Morris et al., 2010).

The review of literature indicates that implementation of a standardized approach to early ambulation can decrease the time from surgery to mobilization and decrease hospital length of stay, complications, and subsequent hospital costs. Using early ambulation as an intervention may prepare patients to care for themselves at home with a higher level of independent functioning.

Methodology

The hospital involved in the change project was located in an urban setting of the Southwest region of the United States. The patient care unit has an orthopaedics specialty and is staffed by a combination of experienced nurses and new graduate nurses. Approval from the hospital institutional review board was obtained before the pretest and educational intervention was initiated. A three-step intervention was used: (1) the nursing and physical therapy staff were educated about the benefits of early postoperative mobilization for patients as documented in the literature; (2) a pretest/posttest was used to measure the change in knowledge, attitudes, and practice of the staff related to this educational intervention; and (3) a new standardized practice of early ambulation of patients was implemented. After the institutional review board approval from San Diego State University for retrospective data review, subsequent review of existing hospital data determined the differences in patient outcomes (length of stay, discharge destination, and day of ambulation) before and after the implementation of the new standard practice.

Educational Intervention for Nursing and Physical Therapy Staff

Multidisciplinary staff education took place with the nursing and physical therapy staff over a 2-week period during work time. The education included a review of the literature to help staff recognize a need for change (Bozak, 2003). Following this review, the educator conducted a threats and opportunity discussion, similar to a force field analysis, which helped identify barriers and move staff to be motivated to change (Kassean & Jagoo, 2005). Following the force field analysis, the education focused on implementation of a new process for postoperative ambulation. Last, a demonstration and return demonstration concluded the class. Acquisition of knowledge was measured using a six-item pretest and posttest with 3 multiple-choice and 3 items using a Likert-like scale with a 4-choice response set. The pretest was the same as the posttest.

During the initial stage of the process change, feedback was encouraged so unanticipated barriers could be addressed. The clinical nurse specialist rounded daily with staff and patients to ensure that the process was adopted.

Data Analysis and Results

Knowledge, attitudes, and practice were measured using a pretest and posttest. Three patient outcomes (length of stay, discharge destination, and day of ambulation) were measured using existing hospital data. Data from all total hip replacement and total knee replacement patients were included.

Pretest, Posttest

The multiple-choice questions on the pre- and posttest were coded as correct = 1 or incorrect = 0. The pretest and posttest were analyzed using SPSS version 19 (IBM, New York). A total mean score was calculated for each test. A paired t test was used to determine differences in the mean scores between the pre- and posttests, and there was a statistically significant difference on the

attitude scale ($t = -2.762$, $df = 49$, $p = .008$). No significant difference was found ($p = .42$) in the pre- and posttest knowledge scale.

Patient Outcomes

Data were reviewed prior to the staff education and for a year after the education. Length of hospital stay was measured in days and showed slight improvement from 3.43 days to 3.36 days 1 year after implementation. An improvement of 17% was seen for patients discharged home; the predata showed that 68.6% of patients were "discharged home," whereas the postdata showed that 85.6% "discharged home" Discharge destination was measured as either "home" or "skilled nursing facility." Early ambulation was measured as patient ambulation or dangle at bedside by physical therapy or nursing on the day of surgery, postoperative day 1 or postoperative day 2 with the new goal of ambulation or dangling at the bedside on the day of surgery. Day of surgery ambulation increased from 10% of patients to 94% of patients after the education and practice change demonstrating an 840% improvement.

Discussion

Although the staff did not obtain new knowledge related to early ambulation as evidenced by comparison of the pretest/posttest results of the knowledge assessment test ($p = .42$), staff were able to apply prior knowledge to the total joint population through this change project. The change in attitude toward postoperative ambulation experienced by staff was significant ($p = .008$) and motivated staff to participate in the practice change. The early results show improvement, but further measurement will need to be collected to determine the full effect on patient outcomes.

One of the lessons learned in this project was related to the knowledge test. A pilot of the knowledge test prior to implementation on a broad scale would have been helpful. Some of the questions seemed to have ambiguous wording that may have contributed to the nonsignificant findings related to attainment of knowledge.

Perceived barriers to early ambulation voiced by staff during the education phase included the patient's postoperative pain, time it took to mobilize the patient, and patient stability. Pain experienced by patients was not a barrier to the process; in fact, patients, nurses, and therapists have reported decreased pain due to surgical anesthetics still in effect in the early postoperative phase.

To address the nurse's concerns of patient stability in early ambulation (a perceived barrier), nursing and physical therapy assessed the patient together during the first postoperative ambulation including orthostatic blood pressures. This collaborative process improved the comfort level for both nurses and therapists and eliminated their fear of early ambulation.

Currently, 6% of the patients on the unit are not able to participate in early ambulation on the day of surgery because of symptoms of hypotension, nausea, or inadequate time for the nursing staff to complete the task. Further practice change may be needed to address the lack of nursing time.

Implications for Orthopaedic Nursing

Nurses learn in schools that early ambulation prevents numerous complications in postoperative patients. Nursing has been satisfied that the standard of practice for most total joint programs is to start ambulation on the first postoperative day. The findings from this change project support ambulation on the day of surgery results in improved patient outcomes, reduced length of stay, and reduced hospital costs. Overall, this evidence-based change project resulted in improvements in structure (new practice protocol), processes (nursing and physical therapy care processes), and patient and organization outcomes.

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