Patient Education Before Hip or Knee Arthroplasty Lowers Length of Stay

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Abstract: From April 2006 to May 2007, 261 patients undergoing primary unilateral total hip arthroplasty or total knee arthroplasty were offered voluntary participation in a one-on-one preoperative educational program. Length of stay (LOS) and inpatient data were monitored and recorded, prospectively. Education participants enjoyed a significantly shorter LOS than non-participants for both total hip arthroplasty (3.1 ± 0.8 days vs 3.9 ± 1.4 days; $P = .0001$) and total knee arthroplasty (3.1 ± 0.9 days vs 4.1 ± 1.9 days; $P = .001$). **Keywords:** patient education, preoperative care, hip arthroplasty, knee arthroplasty, length of stay.

Osteoarthritis (OA) is ranked the second most common cause of long-term disability among American adults and affects well more than 60 million Americans. It is also one of the major contributors to health care–related economic cost in the United States and worldwide [1,2]. The incidence is growing rapidly with the number affected expected to double by the year 2020, further adding to already rising health care costs [3,4]. Of the millions who have the degenerative joint disease, many fail conservative, nonsurgical management necessitating joint arthroplasty. In the United States per year, more than 600 000 patients elect to undergo hip or knee arthroplasty to help alleviate their debilitating joint pain [5,6], and this number is expected to rise significantly [7].

In efforts to combat the rising costs of treating OA with hip and knee arthroplasty, many centers have developed clinical pathway programs and reported their results [8-18]. With hopes of achieving efficiency while still administering the highest quality of care, these programs were founded on the premise that preoperative preparation may potentially reduce stress and anxiety translating to a faster recovery and a lower length of stay (LOS) [10,14,19-21]. Such programs, despite the use of a variety of media, have met mixed success.

The present study examines the effect of real-time voluntary participation in a one-on-one individualized preoperative teaching program and how that affected LOS in those patients undergoing primary unilateral total hip arthroplasty (THA) or total knee arthroplasty (TKA). The teaching was offered to patients by phone or in person, tailored to patient availability and preference. We hypothesize that mean LOS will be reduced in patients who chose to participate vs those who do not participate in a preoperative educational program. Additional analyses evaluated incidence of complications, the impact of specific days of the week of surgery on LOS, and individual procedural comparisons.

Materials and Methods

Preoperative Education

Patients undergoing primary unilateral THA or TKA between April 2006 (the educational program's inaugural month) and May 2007 were eligible for voluntary participation in our Center for Hip and Knee Replacement (CHKR) Preoperative Patient Education Program. Patients undergoing revision procedures, having undergone previous hip or knee arthroplasty, bilateral THA or TKA, or other forms of arthroplasty (ie, hip resurfacing, unicondylar knee arthroplasty), were excluded. Performance of the study was Health Insurance Portability and Accounting Act compliant and institutional review board approved. It is also important to note that a randomized study design was deliberately not chosen as denying a patient the option to participate in an interactive, preoperative education session was considered inappropriate. Furthermore, a randomized study design would have masked a realistic view on the

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willingness of patients to participate in an already ongoing hospital initiative.

Approximately 3 weeks before the patients' scheduled day of surgery (DOS), our CHKR preoperative patient educator (PPE: M.R.J.) contacted the patients via phone to offer a one-on-one education session regarding the specifics of their scheduled procedure, hospital stay, and recovery. A structured script was used by the PPE during recruitment. Upon acceptance of the education session, the patient also chose their preference as to whether they wished to interact with the PPE in person or over the phone. This session was a one-on-one educational review of the 60 to 70-page booklet entitled "What to Expect," which are available to all patients scheduled for THA or TKA. All patients who chose to receive preoperative education were screened and were logged using Microsoft Excel 2007 (Microsoft Corp, Redmond, WA).

If initial phone contact was not successful, the PPE would leave a message and make additional attempts every 2 days while awaiting a return phone call. If no return phone call was received, repeat contact attempts were continued until approximately 2 business days before the patient's scheduled surgical date. If a patient did return the phone call even 1 day before their DOS and participated in the education session via phone, they were deemed an education participant (EP). Standardization between phone and in person education was ensured at the time of surgical consent, when education material was provided and used as the structure for the education session. Patients who did not participate (nonparticipants [NPs]) in the preoperative education program were tabulated for inclusion in the current investigation and the reason for nonparticipation documented.

The educational program provided by the PPE followed the material in the respective "What to Expect" patient binders (Table 1). All in-hospital teaching sessions were supplemented with anatomical models and DVD media upon patient request. Duration of the education session was typically 1 hour but varied per patient; time constraints were always flexible as the primary goal was to answer remaining questions. In addition, the PPE's contact information was provided for simple questions that might arise outside to a teaching session.

Table 1. Topics Covered in the "What to Expect" Binder (ie, THA)

THA
What is THA?
How the normal hip works
Realistic expectations
About the surgery/your new hip
Preoperative checklist (ie, medications, clothing, etc)
Planning your hospital stay
Initial recovery in the postanesthesia care unit
Recovery & rehabilitation
Progress guidelines
Discharge instructions
Home recovery & exercise
Nutrition
Other (ie, pastoral/religious care, hospital contact numbers, etc)

THA indicates total hip arthroplasty.

Data Collection

All data were collected retrospectively by a blinded third party (A.D.K.) research assistant and stored within Microsoft Excel (Microsoft Corp, Redmond, Wash). Data were collected from electronic patient charts and cross-referenced with inpatient hard copy charts during their surgical stays. Primary parameters noted and recorded included LOS. Patients, in either the NP or EP groups, observed to display any confounding factors that could have potentially influenced LOS unrelated to the patient education, surgery, or medical condition (ie, insurance discrepancies, logistical issues, and others) was excluded from this study. Secondary parameters included preexisting comorbidities based on International Classification of Disease, Ninth Revision, coding, surgical history, type of insurance, day of week of surgery, and adverse events that occurred in hospital.

Power Analysis

Because study goals consisted of comparisons between EPs and NPs and not the impact of the education program before and after implementation, already existing data extrapolated from the literature were used to determine the sample sizes of each group [22]. Study goals consisted of the "real-time" group comparisons not only because the preimplementation and postimplementation impact of an education program had already been reported [22], but also the desired data that were hoped to be extrapolated was the impact of patients who chose not to participate. These data, it was hypothesized, could be extremely useful in helping to achieve future 100% program participation, further ensuring increased efficiency during the perioperative period. Thus, because this type of "real-time" comparative data did not exist in the literature, the classical preimplementation and postimplementation data reported by Walter et al [22] were used. Using 1 day as a clinically significant difference in LOS, powered to 0.80 with an α of .05, the SDs from the findings of Walter et al [22] were used to determine that 22 patients would be needed in each EP and NP groups for both THAs and TKAs. Because this was already an implemented hospital initiative, data collection did not stop once adequate power was achieved. Instead, a 12-month data collection period was set not only to achieve appropriate statistical significance but also to gain a realistic view on the success of the education initiative.

Statistical Methods

Comparisons between the EP and NP cohorts were examined using an independent samples *t* test for each of the independent variables. The variables of sex, age, number of comorbidities, and surgeon were then used in a stepwise forward regression using SPSS (SPSS Inc,