



Barriers to Completion of Patient Reported Outcome Measures

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ABSTRACT

Patient Reported Outcomes Measures (PROMs) are commonly used in total joint arthroplasty (TJA) to assess surgical outcomes. However certain patient populations may be underrepresented due to lower survey completion rates. The purpose of this study is to evaluate factors that influence PROM completion rates for 1997 TJA patients between 7/1/2007 and 12/31/2010. Completion rates were lower among patients who were over 75, Hispanic or Black, had Medicare or Medicaid, TKA patients and revision TJA patients ($P < 0.05$ for all comparisons). Having multiple risk factors further reduced completion rates ($P < 0.001$). Overall participation increased significantly during the study period, after electronic data capture methods were introduced. Awareness of these factors may help physicians and researchers improve participation of all patient populations so they are well represented in TJA outcomes research.

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Clinical outcomes research is an important tool for determining the efficacy and value of various healthcare interventions [1–4]. The Patient Protection and Affordable Care Act of 2010 created the Patient-Centered Outcomes Research Institute (PCORI) which uses outcomes assessment as a key component of comparative effectiveness research to determine best practices in medicine [2]. The increasing emphasis on patient reported outcomes (PROs) makes the evaluation and improvement of our current tools and techniques especially timely. Outcomes assessment is an important and widely used tool in the field of orthopedic surgery in general, and total joint arthroplasty (TJA) in particular [5–8]. However, there may be discrepancies in participation rates among certain patient populations, which could lessen the value and generalizability of outcomes measurement.

Researchers have noted that implant survivorship and other traditional outcome parameters (e.g., range of motion, radiographic findings) often fail to adequately capture patients' perception of the impact of surgical procedures on their overall functional status and quality of life [9,10]. For instance, two years after surgery, although an implant may be well fixed and well-aligned, a patient may continue to experience pain and limitations in mobility. A number of studies have emphasized the importance of adding the patient perspective to comparative effectiveness research in order to provide a complete

assessment of treatment impact [11–15]. This perspective is usually ascertained by having patients complete surveys about factors such as pain level, degree of disability, and how their condition limits their functioning or affects their quality of life [16,17]. The increasing focus on patient experience as a measure of the effectiveness of medical interventions has led to the inclusion of patient reported outcome measures (PROMs) in TJA registries such as those in New Zealand, Sweden, and Great Britain, and those that are currently being implemented in the United States.

Despite efforts to obtain PROM information for all TJA patients, there has been little study of which patients have the highest response rates to outcomes questionnaires and what methods are most successful in obtaining a truly representative sample of the patient population. A 2011 study by Gayet-Ageron et al evaluated patient characteristics, including literacy, language and cultural differences, physical and cognitive disabilities, mental illness, and drug abuse as potential barriers to participation in a patient satisfaction survey [18]. We expanded on this research to examine patient age, gender, race, comorbidities, primary language, mental disability, type of insurance, type of surgery and number of previous surgeries as potential factors that may influence PROM participation. This study also evaluated the impact of the introduction of electronic surveys at our institution on PROM participation rates.

Our goal was to assess possible barriers and facilitators to participation in patient reported outcomes measurement for TJA patients at a large urban academic medical center. In doing so, we speculate about possible ways to overcome these barriers, as part of a larger strategy to increase reporting rates.

The Conflict of Interest statement associated with this article can be found at <http://dx.doi.org/10.1016/j.arth.2013.06.025>.

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Materials and Methods

All 1,997 patients from a single academic medical center (University of California, San Francisco) who underwent primary or revision TJA between July 1, 2007 and December 31, 2010 were asked to complete PROM surveys pre-operatively, 6 months after surgery, and annually from the date of surgery for as long as the implant remained in place. PROM instruments administered were: Hip dysfunction and Osteoarthritis Outcome Score (HOOS) and Harris Hip score (for total hip arthroplasty [THA] patients only); Knee injury and Osteoarthritis Outcome Score (KOOS) and Knee Society Score (for total knee arthroplasty [TKA] patients only); and Current Health Status, UCLA activity score, EQ-5D Visual Analogue Scale, and SF-12 (for both THA and TKA patients). Only English language surveys were available, however translators (typically staff or family members) were used to help non-English-speaking patients complete surveys when possible.

Data Collection Prior to May 2009

Paper surveys were collected during the pre-operative patient education class (1–4 weeks before surgery). If patients did not come to class they were mailed paper surveys to their home with a self-

addressed stamped envelope (SASE), as well as notified by telephone and asked to complete the survey and return before their surgery date. One week prior to surgery patients who still had not completed or returned surveys were called again and asked to do so. Post-op questionnaires were given to patients in the office by staff members at 6 month, one year, and subsequent annual follow up appointments. SASEs were given to patients who did not complete the questionnaire during the appointment, along with oral instructions to mail the completed survey back to the office at their earliest convenience.

Data Collection After May 2009

One week before the pre-op class, patients were emailed links to their pre-operative questionnaire (if email address was available) and notified by telephone to complete the questionnaire before the pre-op class, if possible. Those who had not completed their surveys electronically before the pre-op class were requested to do so on paper during the class. One week prior to surgery patients who still had not completed or returned surveys were called again and asked to do so. Post-op questionnaires were given to patients by research staff during their 6 month, one year, and subsequent annual follow up appointments. The only difference in protocol with follow up surveys

Table 1
Percent Cases With Completed Neither Pre/Post, Either Pre/Post, Or Both Pre/Post Disease-Specific and Generic PROM Surveys.

	Cases	Neither	Pre or Post	Both	P
Total # cases	1997	506	400	1088	
Total % cases		25.5	20.0	54.5	
Mean age in years (±SD)	61.3 (±14)		60.8 (±13)	0.482	
Age					0.035
<50	391	27.9	17.4	54.7	
51–65	850	23.5	20.9	55.5	
66–75	460	23.0	20.0	57.0	
76–98	296	32.1	20.6	47.3	
Gender					0.297
M	880	25.5	20.0	54.5	
F	1117	26.9	19.9	53.3	
Race					<0.001
White	1434	24.6	19.2	56.2	
Black	176	25.6	21.6	52.8	
Hispanic	151	31.8	21.2	47.0	
Asian	84	20.2	21.4	58.3	
Other/Unkn	152	30.9	23.7	45.4	
Type of Surgery					<0.001
Primary TKA	601	30.1	23.1	46.8	
Primary THA	676	16.3	13.8	70.0	
Hip Resurfacing	117	13.7	13.7	72.7	
Revision TKA	273	41.4	25.3	33.3	
Revision THA	330	27.3	24.9	47.9	
Comorbidities					0.069
0	819	24.2	18.2	57.6	
1	852	25.6	20.9	53.5	
2	278	27.0	21.9	51.1	
3 or more	48	39.6	22.9	37.5	
Revision Surgery					<0.001
no	1394	22.0	17.8	60.2	
yes	603	33.7	25.0	41.3	
Previous Ortho Surgeries					<0.001
0	1449	24.2	18.2	57.7	
1	364	26.1	22.0	51.9	
2–3	129	30.2	32.6	37.2	
>3	55	47.3	25.5	27.3	
English Primary Language					0.068
no	144	32.6	21.5	45.8	
yes	1853	25.0	19.9	55.2	
Psychiatric Diagnosis					0.579
no	1763	25.3	19.8	54.9	
yes	234	27.4	21.4	51.3	
Drug Dependency					0.644
no	1895	25.3	20.0	54.7	
yes	102	29.4	19.6	51.0	
Altered Mental Status					0.094
no	1938	25.3	19.8	54.9	
yes	59	32.2	27.1	40.7	
Type of Insurance					0.003
Commercial	828	21.0	21.0	58.0	
Medicare	233	33.9	18.0	48.1	
Medicaid	921	27.5	19.7	52.9	
Other	15	26.7	13.3	60.0	
Number of Barriers					<0.001
0	1194	22.5	19.3	58.2	
1	519	28.9	20.8	50.3	
2 or more	284	32.0	21.5	46.5	
Electronic Collection					<0.001
no	1840	27.7	21.7	50.6	
yes	157	0.0	0.0	100.0	

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