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## How Much Do Patients Value Total Hip and Knee Arthroplasty? A Prospective, Multicenter Study



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## ABSTRACT

**Background:** With increasing health care expenditures, reform has largely focused on cost containment, particularly in elective procedures such as total hip and knee arthroplasty (THA and TKA, respectively). The primary objective of this study is to determine what financial value patients place on these highly successful procedures.

**Methods:** An anonymous survey was administered to 670 patients at 4 different institutions (2 private practice and 2 academic centers) in the outpatient setting over a 15-month period. Patients were asked what reimbursement a surgeon should receive for a primary total joint arthroplasty (TJA), their perception of how much Medicare actually reimburses for TJA, how much they would pay out of pocket for the procedure, and their opinion of current Medicare reimbursement rates.

**Results:** Of the 557 patients who participated in the survey (83% response rate), patients on average felt that orthopedic surgeons should be reimbursed \$27,430 for a THA and \$19,830 for a TKA. Patients would be willing to pay a significant amount of out-of-pocket costs for their procedure, mean of \$14,397 for THA (50.3% of total costs) and \$12,797 for TKA (46.3% of total costs). Although patients in private practice groups had higher education and household income ( $P < .001$ ), patients in academic centers would be willing to pay more out-of-pocket costs (\$15,922 vs \$5782,  $P = .034$  for THA, \$14,419 vs \$4556,  $P = .052$  for TKA).

**Conclusion:** Patients in both private practice and academic centers feel that surgeons are underpaid for primary THA and TKA. As controversy continues to surround orthopedic surgeons' participation in Medicare, many patients are still willing to pay a significant amount of out-of-pocket expenses for TJA.

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With increasing health care expenditures, reform has largely focused on cost containment, particularly in elective procedures such as total hip and total knee arthroplasty (THA and TKA, respectively). The demand for primary joint arthroplasty is expected to increase 4-fold by the year 2030 [1]. Despite attempts at decreasing costs, hip and knee arthroplasties continue to make up a large part of the health care budget, Medicare hospital payments

for joint arthroplasty accounting for \$7 billion in 2013 alone [2]. Declining reimbursements and the introduction of alternative payment models have introduced more complexity into how the public views surgeons' reimbursement.

Physician reimbursement has been a recent target for budget cuts and accounts for a decreasingly smaller percentage of health care expenses [3]. Over the past decade, the proportion of payments for physician services has continued to decline, whereas the proportion of payments to hospitals has increased [4]. Despite increasing demand for musculoskeletal care, orthopedic surgeons have seen drastic cuts in Medicare reimbursements. From 1992–2007, Medicare has cut orthopedic reimbursements for the 25 most commonly performed procedures by 28% [5]. Total joint reimbursement, in particular, has sustained reimbursement cuts of 45% since 1992 [5].

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Studies have shown that patients do not have a realistic understanding of reimbursement rates for primary total joint arthroplasty, but it is not clear what financial value patients place on these highly successful procedures [6]. The primary objective of this study was to determine what patients in both private and academic practices across the country feel an orthopedic surgeon should receive as reimbursement for primary total joint arthroplasty (TJA). The secondary objectives were to determine how much patients would be willing to pay out of pocket for these procedures and whether the patients' perceived value of TJA differed by practice type (academic or private). With an increasing amount of orthopedic surgeons considering opting out of Medicare and the evolving changes to the Medicare program [7], we hope that our study will provide physicians, patients, and policymakers an insight into how much the public values hip and knee arthroplasty procedures.

## Methods

A deidentified survey was administered to 670 patients in the outpatient setting over a 15-month period from January 2014 to April 2015. Patients were seen in clinic by 1 of 4 fellowship-trained arthroplasty surgeons at 4 different institutions (2 private practices and 2 academic centers) in different geographical areas of the country. Geographic area was defined using the United States Census Bureau–designated regions [14]. One center was located in the Northeast, one in the South, and two in the West (Appendix I). An academic center was defined as the one with an affiliation with both a university and medical school. The survey was given in the waiting room by the office staff and returned by the patient in a sealed envelope to maintain anonymity and confidentiality. All preoperative, postoperative, and nonoperative patients were included in the study. This study was conducted according to guidelines set forth from each hospital's institutional review board, and no outside funding was received for the study.

The survey included demographic information including age, primary insurance, household income, education level, prior history of TJA, and satisfaction with their prior surgery if applicable. Patients were then asked what a surgeon should receive as reimbursement for a primary TJA, their perception of how much Medicare actually reimburses for TJA, and how much they would pay out of pocket for a TJA procedure. For comparison, patients were also asked the same questions regarding other commonly performed surgical procedures such as coronary artery bypass and appendectomy. Patients were specifically instructed that Medicare reimbursement only covers the surgeon's fee and 90 days of physician postoperative care and does not include preoperative evaluation or the hospital and implant fees. Patients were then informed of the current Medicare reimbursement rates at the time of the survey (approximately \$1375 for THA and \$1450 for TKA) [8,9] and asked their opinion of current Medicare reimbursement rates. A space for comments was left at the end of the survey and was optional (Appendix II).

An a priori power analysis was determined to ensure an adequate sample size. Because the primary objective in this study was to examine patient opinion on how much surgeon's should be reimbursed and involved the use of descriptive statistics, our power analysis involved comparing means of patients' perceived value of TJA between private and academic practices in the study. To detect a standard effect size of 0.3 with a type I error rate of 0.05, we would need to enroll a minimum of 352 patients in this study to achieve a power of 0.80. Continuous data were analyzed with paired and unpaired 2-tailed Student's *t* tests, whereas categorical data were analyzed with a chi-square test to determine whether patient opinions differed by practice type (private or academic).

Surveys without complete paired data for what a surgeon should be paid and what they are actually paid were omitted from analysis. Differences in patients perceived value of TJA by education level, insurance status, and household income were compared using 1-way analysis of variance. Statistical analysis was performed using Excel (Microsoft, Redmond, WA) and SPSS (IBM, Armonk, NY).

## Results

Of the 670 patients, who received the survey, 557 chose to participate (83% response rate). There were 325 females (59%) and 232 males (41%) with a mean age of 60.7 years (range: 18–96 years). Of all patients, 174 had a prior THA (31%) with 149 of those patients reporting they are satisfied with their surgery outcomes (86%). Similarly, 172 patients underwent a prior TKA (31%) with 140 patients reporting satisfaction with their surgery outcomes (81%). Twenty-five patients (4%) had both a prior hip and knee arthroplasty, whereas 236 patients (42%) had neither procedure before completing the questionnaire. One hundred eighty-six survey respondents (33%) were patients at an academic medical center, and 371 survey respondents (67%) were patients at a private practice. Complete demographic information including household income, insurance status, and education level for all patients is detailed in Table 1.

When asked what physicians should receive for the surgeon's fee alone, exclusive of any hospital and implant costs, patients felt that, on average, an orthopedic surgeon should receive a reimbursement of \$27,430 for a THA (median: \$10,000, interquartile range: \$4500–\$12,000) and \$19,830 for a TKA (median: \$6000, interquartile range: \$3000–\$15,000). For comparison, patients felt that, on average, a surgeon should receive a mean of \$44,211 (median: \$12,000, interquartile range: \$7000–\$50,000) for a coronary artery bypass and a mean of \$17,738 (median: \$5000, interquartile range: \$2500–\$10,000) for an appendectomy. Patients

**Table 1**  
Demographic Data Compared by Practice Setting.

Demographics	Total Patients (N = 557)	Academic (N = 186)	Private Practice (N = 371)	P Value
Age (y), mean (SD)	60.7 (12.7)	55.4 (15.5)	63.3 (10.1)	<.001
Male gender (%)	232 (42)	73 (39)	159 (43)	.415
Education level (%)				
Did not graduate high school	10 (2)	7 (4)	3 (1)	<.001
High school or GED	58 (10)	17 (9)	41 (11)	
Some college/university	129 (23)	44 (24)	85 (23)	
Undergraduate degree	123 (22)	21 (11)	102 (27)	
Graduate degree	175 (31)	39 (20)	136 (37)	
No answer	62 (11)	58 (32)	4 (1)	
Annual household income (%)				
<\$20k/y	39 (7)	29 (16)	10 (3)	<.001
\$20k–\$75k/y	124 (22)	39 (21)	85 (23)	
\$75k–\$150k/y	152 (27)	26 (14)	126 (34)	
>\$150k/y	141 (25)	22 (12)	119 (32)	
No answer	101 (18)	70 (38)	31 (8)	
Primary health insurance (%)				
Medicare	198 (36)	52 (28)	146 (39)	<.001
Medicaid	15 (3)	10 (5)	5 (1)	
HMO	52 (9)	24 (13)	28 (8)	
PPO	215 (39)	41 (22)	174 (47)	
None	8 (1)	3 (2)	5 (1)	
Don't know/no answer	69 (12)	56 (30)	13 (3)	
Previous THA (%)	174 (31)	46 (25)	128 (35)	.019
Happy with outcome	149 (86)	39 (89)	110 (85)	.810
Previous TKA (%)	172 (31)	56 (30)	116 (31)	.078
Happy with outcome	140 (81)	42 (79)	98 (86)	.134

GED, graduate education degree; HME, Health Maintenance Organization; PPO, Preferred Provider Organization; SD, standard deviation; THA, total hip arthroplasty; TKA, total knee arthroplasty.

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