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Patient Perception of Physician Reimbursement in Elective Total Hip and Knee Arthroplasty

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Abstract: The purpose of this study was to evaluate patient perception of orthopedic surgeon reimbursement for total hip (THA) and knee (TKA) arthroplasty. A total of 1120 consecutive patients were asked what they believed a surgeon *should* be paid for performing THA and TKA. Patients were then asked to estimate what Medicare *actually* reimbursed for each of these procedures. On average, patients thought that surgeons should receive $14 358 for THA and $13 332 for TKA. Patients estimated actual Medicare reimbursement to be $8212 for THA and $7196 for TKA. Most of the patients stated that Medicare reimbursement was "much lower" than what it should be. Many patients commented that given this discrepancy, surgeons may drop Medicare, which may decrease access to quality hip and knee arthroplasties. **Keywords:** reimbursement, hip arthroplasty, knee arthroplasty, Medicare, patient perceptions.
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Medical economics have become increasingly important in the United States over the past decade. Health care reform has largely dominated the sociopolitical landscape over the past several years. Medicare reimbursement as a function of the sustainable growth rate has been a particularly pressing issue in Washington DC and in the popular media [1].

In an effort to curtail rising health care costs associated with an aging population, Medicare physician reimbursement has been gradually declining [2]. Elective total hip and knee arthroplasty has been particularly affected by this decline because the population requiring joint arthroplasty tends to be older and, consequently, frequently use Medicare as their primary insurance. Between 1998 and 2007, the average Medicare reimbursement decreased 21% for a total hip arthroplasty (THA) and 20% for a total knee arthroplasty (TKA) [3]. During this same period, physicians' operating expenses and overall cost of living have increased in the absence of substantial liability reform. As such, many joint arthroplasty surgeons have considered opting out of Medicare [4]. However, it appears that, currently, most surgeons still accept Medicare. A 2009 survey of the American Orthopaedic Association found that only 3% of orthopedic surgeons polled had opted out of Medicare, and an additional 4% were nonparticipating providers [4].

It is unclear if patients have a realistic understanding of current Medicare reimbursement rates to orthopedic surgeons. The purpose of this study was to determine what patients believe orthopedic surgeons should be paid to perform THA and TKA and to gauge their awareness of actual Medicare reimbursement for these procedures in 2010. We hypothesized that patients would, on average, overestimate the actual amount that Medicare pays for hip and knee arthroplasties and would believe that orthopedic surgeons are underpaid for these procedures.

Materials and Methods

After obtaining institutional review board approval, 1120 surveys were administered to consecutive preoperative and postoperative patients in an outpatient office setting between April 1, 2010, and May 21, 2010. Patients were seen by 1 of 6 joint arthroplasty subspecialists at a single institution (covering 3 distinct office locations within the same practice). Anonymous surveys were given to patients in the waiting room by the front office staff. Surveys were returned in sealed

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envelopes to maintain confidentiality. Surveys were divided into 3 sections. The first section elicited demographic information including age, sex, history of previous hip or knee arthroplasty, education level, annual household income, and primary medical insurance. In the second section, patients were asked the following open-ended questions:

1. What do you think is a *reasonable fee* that an orthopedic surgeon should receive to perform a THA?
2. How much do you estimate that Medicare actually pays an orthopedic surgeon for performing a THA and 90 days of care after surgery?
3. What do you think is a *reasonable fee* that an orthopedic surgeon should receive to perform a TKA?
4. How much do you estimate that Medicare actually pays an orthopedic surgeon for performing a TKA and 90 days of care after surgery?

For comparison to other commonly performed nonorthopedic surgical procedures, patients were also asked the following open-ended questions:

1. What do you think is a *reasonable fee* that a cardiac surgeon *should* receive to perform an open heart coronary bypass surgery?
2. How much do you estimate that Medicare *actually pays* a cardiac surgeon for performing an open heart coronary bypass surgery and 90 days of care after surgery?
3. What do you think is a *reasonable fee* that a general surgeon *should* receive to perform an appendectomy, that is, removing the appendix?
4. How much do you estimate that Medicare *actually pays* a general surgeon for performing an appendectomy and 90 days of care after surgery?

Appendectomy and coronary artery bypass surgery were chosen because they were felt to be well-known procedures that encompassed a broad spectrum of complexity. The following statement was written after each of the 8 proceeding questions to ensure that patients understood that their answers should only include the surgeon's fees and not the total fee for the operation:

> "The fee includes the operation itself, the time your surgeon spends with you in the hospital and his or her care for you for 90 days after surgery. The fee DOES NOT include preoperative evaluation or the fee the hospital gets paid."

In the third section (on the last page of the survey—in order not to influence previous answers) patients were told, "on average, Medicare pays an orthopaedic surgeon $1375 for performing a THA [5]." Patients were then asked to indicate their feelings about this fee based on the following ordinal scale: $1375 is (1) "much lower," (2) "somewhat lower," (3) "about right," (4) "somewhat higher," or (5) "much higher" than what a surgeon should earn for a THA.

Next, patients were told, "on average, Medicare pays an orthopaedic surgeon $1470 for performing a TKA [6]." They were again asked to indicate their feelings about this fee based on the ordinal scale as described above.

Finally, patients were given space at the end of the survey to write any additional comments that they saw fit.

Data were screened for the assumptions of parametric statistics. Extremely high perceived values for THA and TKA (>3 times the interquartile range) were omitted from subsequent analysis. Surveys without paired values for what a surgeon should be paid and what they are actually paid were also omitted. Statistical comparisons between patients' perceptions of what a surgeon *should* be paid and what they are *actually* paid were made using repeated-measures analysis of variance with post hoc Tukey tests. Differences in patients' perceptions of what a surgeon should be paid as a function of income level, education, and primary insurance provider were made using 1-way analysis of variance with post hoc Tukey tests. Demographic data are presented in pie chart form to express percentages of respondents, and values for perceived reimbursement are expressed as mean ± SE.

Results

Of 1120 surveys, 812 were completed for a 72.5% response rate. The mean age of respondents was 63.2 years (range, 22-93 years). There were 468 females (59.3%) and 321 males (40.7%) (23 patients did not state their sex). Of all respondents, 279 (34.4%) and 348 (42.9%) had received a THA or TKA, respectively, whereas the remainder had not received a THA or TKA but were being evaluated for hip or knee arthritis. Demographic data are summarized in Fig. 1A-C.

On average, respondents believed that orthopedic surgeons should be paid $14 358 for performing a THA (range, $1000-$60 000) and estimated that Medicare actually paid $8212 (range, $200-$80 000). These values were significantly different ($P < .001$). On average, respondents believed that orthopedic surgeons should be paid $13 332 (range, $1000-$60 000) for a TKA, and estimated that Medicare actually paid $7196 (range, $150-$65 000). These values were significantly different ($P < .001$). In comparison, respondents believed, on average, that general surgeons should be paid $6716 (range, $500-$40 000) for performing an appendectomy and that Medicare actually paid $4643 (range, $100-$85 000), whereas they felt, on average, that cardiac surgeons should be paid $22 788 (range, $1000-$100 000) for performing a coronary artery bypass surgery and that Medicare actually paid $11 924 (range, $200-$150 000) (Figs. 2 and 3).

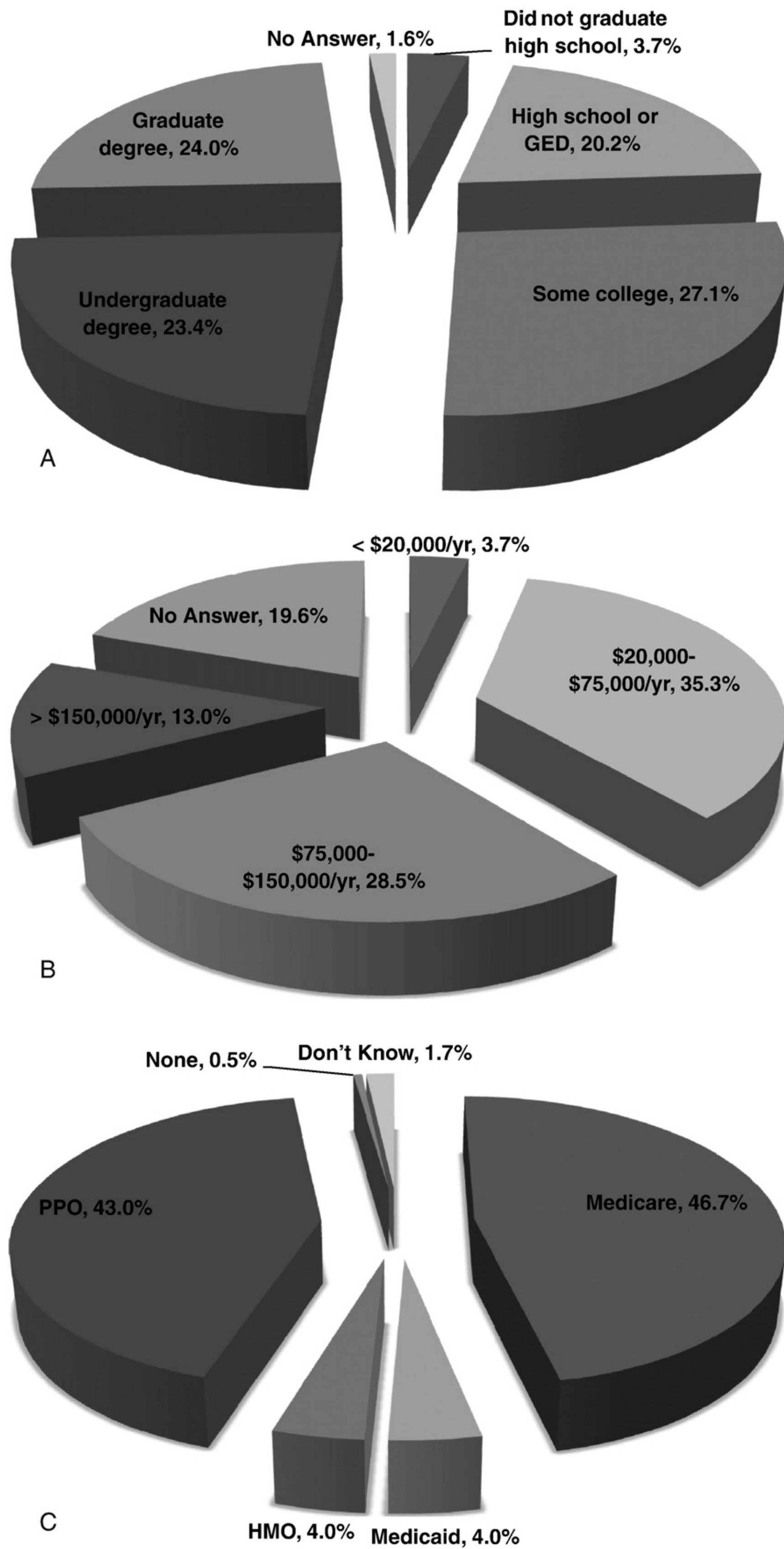

Fig. 1. (A) The highest education level of all respondents. GED: General Equivalency Diploma (B) The annual household income of all respondents. (C) The primary insurance held by all respondents. HMO: Health Maintenance Organization. PPO: Preferred Provider Organization.

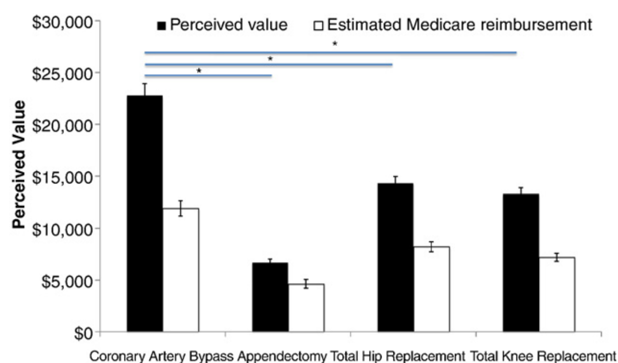

Fig. 2. Black bars: average amount that patients believe surgeons should be paid for each operation. White bars: average amount that patients estimate Medicare actually reimburses for each operation (asterisk indicates $P < .05$).

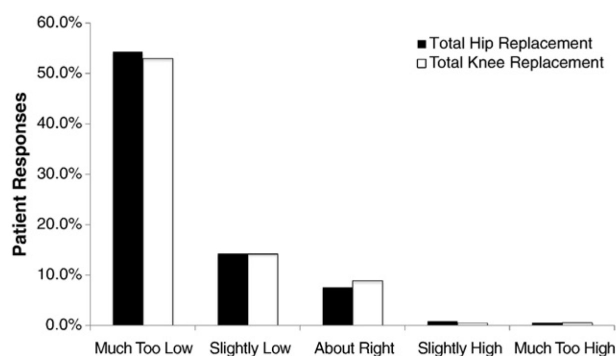

Fig. 4. Percentage of patients who felt that Medicare reimbursement was too low, about right, or too high. Black bars: total hip replacement. White bars: total knee replacement.

Most of the respondents believed that the average national Medicare reimbursement for a THA and TKA ($1375 and $1450, respectively) was too low. Of the patients, 68.5% believed that $1375 for a THA was either “much lower” or “somewhat lower” than what a surgeon should earn, 7.7% believed that $1375 was “about right,” and only 1.4% believed that $1375 was either “much higher” or “slightly higher” than what a surgeon should earn (22.3% “did not know”). Likewise, 67.2% of patients believed that $1450 for a TKA was either “much lower” or “somewhat lower” than what a surgeon should earn, 8.9% believed that $1450 was “about right,” and only 1% believed that $1450 was either “much higher” or “slightly higher” than what a surgeon should earn (22.8% of patients “did not know”) (Fig. 4).

The large variability in the data (ie, responses regarding the amount surgeons should earn for TKA ranged from $1000 to $60 000) made finding statistical differences in responses between various demographic groups difficult. However, certain nonsignificant patterns did emerge. Patients with higher education levels tended to perceive the value of TKA higher than those with lower education levels. Patients who had a PPO or HMO as their primary insurance tended to perceive the value of TKA higher than those with no insurance, Medicare, or Medicaid (Table 1A-C). Patients with a history of knee arthroplasty perceived the value of the operation higher than those without a history of the surgery, and this difference achieved statistical significance (P = .031). Those that were happy with the outcome of their hip or knee arthroplasty tended to perceive the value of each surgery higher than those that were unhappy, although the differences were not statistically significant (Table 1 D-E).

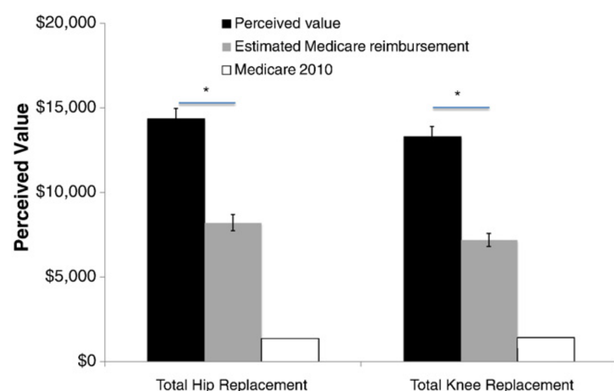

Fig. 3. Black bars: average amount that patients believe surgeons should be paid. Grey bars: average amount patients estimate that Medicare actually reimburses. White bars: national Medicare reimbursement in 2010 (asterisk indicates $P < .05$).

A total of 189 patients provided comments at the end of the survey. Although the comments were varied, certain themes recurred frequently. Forty patients (21.2%) indicated that they were shocked or alarmed at how little Medicare reimbursed. Twenty-five patients (13.2%) expressed concern that there will be a shortage of physicians in the future and/or that physicians will stop taking Medicare, thus creating difficulty with future access to health care. Nineteen patients (10.1%) wondered why orthopedic surgeons would even accept Medicare at the current rates. Eight patients commented that Medicare reimbursement was unfair given the amount of malpractice insurance that surgeons must carry.

Discussion

On March 23, 2010, a landmark health care reform bill was signed into law. In the months leading to the bill's passage, both policymakers and the American public were strongly opinionated and passionate over the issues at hand. However, throughout the debate, the public's understanding of Medicare reimbursement to physicians has been unclear.

Patients in need of hip and knee arthroplasties tend to be older, and a high percentage use Medicare as their primary insurance. As such, this patient population appears uniquely suited to help understand patient awareness regarding Medicare reimbursement. We undertook this study to help understand patient perceptions regarding the monetary value of hip and knee

Table 1. Demographics vs Perceived Value of TKA and THA

A. Education vs Perceived Value of TKA and THA (All Values in Dollars)

	DNGHS	HS/GED	Some College	UG	GR	NA	*P*
TKA	5000 ± 0	9971 ± 9840	13 505 ± 13 132	14 927 ± 13 181	15 185 ± 13 095	12 808 ± 11 150	.584
THA	5000 ± 0	17 671 ± 20 655	16 412 ± 16 515	15 656 ± 13 404	16 542 ± 13 947	13 333 ± 11 385	.515

DNGHS indicates did not graduate high school; HS/GED (general equivalency diploma), high school diploma or GED; UG, undergraduate degree; GR, graduate degree; NA, no response.
Values are presented as mean ± SD.

B. Household Income vs Perceived Value of TKA and THA (All Values in Dollars)

	NA	<$20 000	$20 000-$75 000	$75 000-$150 000	>$150 000	*P*
TKA	11 336 ± 10 220	12 740 ± 11 467	15 779 ± 13 899	13 907 ± 11 915	13 401 ± 13 123	.270
THA	13 160 ± 11 907	14 367 ± 14 594	17 636 ± 15 691	14 344 ± 11 940	15 538 ± 14 723	.231

Values are in mean ± SD.

C. Primary Insurance vs Perceived Value of TKA and THA (All Values in Dollars)

	None	Medicare	Medicaid	HMO	PPO	Unknown	*P*
TKA	3500 ± 707	13 242 ± 11 567	11 542 ± 14 017	20 909 ± 14 862	14 546 ± 12 073	14 200 ± 15 352	.284
THA	3000 ± 0	15 328 ± 13 656	13 250 ± 13 783	22 181 ± 14 309	15 329 ± 13 881	15 300 ± 19 728	.469

HMO indicates Health Maintenance Organization; PPO, Preferred Provider Organization. Values are in mean ± SD.

D. History of Previous Surgery vs Perceived Value of THA and TKA (All Values in Dollars)

	Perception of Surgical Outcome		
	Had the Surgery	Did Not Have the Surgery	*P*
THA	15 057 ± 13 620 (n = 136)	14 669 ± 14 003 (n = 255)	.678
TKA	15 678 ± 13 467 (n = 174)	12 882 ± 11 815 (n = 212)	.031

Values are in mean ± SD.

E. Satisfaction With Procedure Versus Perceived Value of THA and TKA (All Values in Dollars)

	Perception of Surgical Outcome		
	Happy	Not Happy	*P*
THA	15 347 ± 13 759 (n = 121)	14 527 ± 14 228 (n = 11)	.858
TKA	16 578 ± 13 998 (n = 137)	11 891 ± 11 274 (n = 26)	.069

Values are in mean ± SD.

arthroplasty surgery and to evaluate patient awareness of current Medicare reimbursement for these operations.

Although we hypothesized that patients would overestimate the actual amount that Medicare reimburses for hip and knee arthroplasties and would believe that orthopedic surgeons are underpaid for these procedures, the amount by which patients overestimated was surprising. We are aware of only one other study of this kind. Hayden et al [7] randomly surveyed 1000 residents of a North Texas city. The 121 respondents believed that, on average, orthopedic surgeons should be paid $5080 for a TKA, which was significantly different than the actual Medicare reimbursement rate of $1443 at that time [7].

Our results were more dramatic. Patients felt, on average, that surgeons deserved to be paid $14 358 for performing a THA, which is over 10 times the average national Medicare reimbursement. In addition, they overestimated the actual Medicare reimbursement for THA by a factor of 6. Likewise, they felt, on average, that surgeons deserved to be paid $13 322 for performing a TKA, which is over 9 times the average national Medicare reimbursement. They overestimated the actual Medicare reimbursement by a factor of nearly 6. Less than 10% of patients felt that Medicare reimbursement for TKAs or THAs was "about right." Most (approximately 70%) felt that the actual Medicare reimbursement was much lower or slightly lower than what surgeons deserved. Less than 2% felt that Medicare reimbursement was too high for either operation. In contrast, in 1980, a national random sample of US English-speaking adults found that 70.1% of 843 respondents felt that physicians were overpaid, and only 2.4% felt that physicians were underpaid [8]. Based on our results, it may be that there has been a shift in patients' perceptions of physician reimbursement over the past 30 years. However, the generalizability of the perceptions of our patients to those of the general public is beyond the scope of this study.

Not surprisingly, patients felt that surgeons deserved greater compensation to perform a hip or knee arthroplasty than to perform an appendectomy, but

less than a coronary artery bypass operation. In addition, patients estimated actual Medicare reimbursement for a hip or knee arthroplasty to be greater than that for an appendectomy, but less than that for a coronary artery bypass operation. These results indicate that patients appreciate the relative complexity of each procedure.

Unexpectedly, nearly one fourth of respondents provided comments at the end of the survey. The comments were perhaps more telling about patient perceptions then were the numerical data. Comments were often several paragraphs long and often conveyed passionate opinions regarding the subject matter. Many patients expressed alarm at the low value of Medicare reimbursement. The following phrases frequently appeared: “I am shocked,” “I am surprised,” “I don't believe it,” “I am ashamed,” “this is unfair,” “it's a great injustice,” “this is scandalous,” “it is an insult,” and “it's a bargain.” One patient stated, “It shows how little public knowledge there is about this area.”

Many patients questioned why physicians accept Medicare. One patient commented, “It's amazing doctors are even willing to take Medicare.” Another stated, “That is a ridiculous amount of money to pay for a total hip or knee replacement. A surgeon should be paid for his worth and $1375 is not enough. It is a wonder that any surgeon even does it.”

Others expressed concern that current reimbursement rates might decrease access to care (either through physicians refusing to accept Medicare or through a decrease in qualified persons willing to enter the field of medicine). One patient said, “I feel that doctors have spent many years studying to be a doctor and spend a few hundred thousand dollars to become doctors. I feel it is an insult to pay a doctors with this much knowledge a little more than $1000 to perform surgery…If we don't start paying our doctors what they are worth there aren't going to be doctors when we need surgery.”

Thus, many patients were alarmed at current Medicare reimbursement rates and, as a result, were sincerely concerned about health care access issues in the future. Despite this apprehension, orthopedic surgeons have performed an increasing number of procedures in the face of continually decreasing reimbursement, which raises the question of if these patients' concerns will ultimately be validated. From 1992 to 2007, there was a 44% decrease in the consumer price index–adjusted Medicare reimbursent rate for hip and knee arthroplasties. Over this same period, the number of THA and TKA procedures increased significantly. Between 2000 and 2004, alone, the number of primary hip and knee arthroplasties performed in the United States increased by 37% and 53%, respectively. In the next 10 years, experts project the number of hip and knee arthroplasties to continue to dramatically increase [9]. The persistent large-scale participation in Medicare in the face of declining payment is, at least, partially because there are nonfinancial issues that affect a surgeon's decision to continue accepting Medicare. These include, but are not limited to, ethical obligations to take care of our elderly and needy population, lower administrative burden compared with private insurance, and reliable Medicare patient volume. It is unclear if the current trends will continue or if a reimbursement threshold will be reached that will ultimately discourage a large number of surgeons from performing these procedures.

Medicare remains the major source of payment for hip and knee arthroplasties (55.4% for primary hip arthroplasties, 59.3% for primary knee arthroplasties in 2004) [9]. A 2009 survey of the American Orthopaedic Association found that 88% of respondents were participating providers in the Medicare program, whereas 4% were nonparticipating providers, and only 3% had opted out. However, 25% of orthopedic surgeons acknowledged that they were considering opting out of the Medicare program, and 71% of those surveyed believed that without Medicare payment reform, a large number of orthopedic surgeons will opt out of Medicare in the near future, leaving many elderly patients with limited access to orthopedic health care [4].

This study had several limitations. First, the sample of patients was from a geographically distinct area, and all patients were being seen in a total joint subspecialty practice. Therefore, the generalizability of our findings to that of the American public is questionable.

In addition, we attempted to validate our method by asking patients to estimate the reimbursement for cardiac and general surgical procedures. Although this provides some level of internal control regarding patients' understanding of medical costs, it fails to control for whether or not patients have an accurate understanding of nonmedical costs in general (housing, automotive, legal, etc). It may be that this patient population would significantly overestimate these nonmedical costs as well, which would render our findings less specific. We do note that the population surveyed was relatively well educated with nearly 75% of those surveyed having completed at least some college, which should partially mitigate this concern. This also assumes that those with higher education have a better grasp of financial realities.

The setting in which the survey was administered may have introduced bias as well. Surveys were given to patients in the waiting room before seeing their orthopedic surgeon. Patient's may thus have answered how much “their surgeon should be paid” rather than how much “an orthopaedic surgeon should be paid.” The former question may lead to a more emotional response that, assuming the patients liked their surgeon, may have skewed the estimates higher. Patients may have also answered what they thought their surgeon wanted to hear, which would also skew the estimates higher. We attempted to diminish this effect by giving the patients anonymous surveys in the waiting room

and asking them to return them in sealed envelopes. We hoped that patients would understand that their surgeon would not know how they answered the questions, and thus answer more candidly.

The format of the survey may have also introduced bias. The order of the questions may have been leading. Asking "what a reasonable fee would be" immediately followed by a question asking for an estimate of actual reimbursement may generate a response in the second question that would automatically be a fraction of the first question. In addition, although we deliberately designed the survey to reveal the actual Medicare reimbursement value on the last page, some patients may have read ahead to last page, which could have then altered their answers to the earlier questions.

With these limitations in mind, we found the results of this study to be compelling. At least in our sample, patients believed that orthopedic surgeons who perform THAs and TKAs should be compensated approximately an order of magnitude greater than current Medicare reimbursement rates. In addition, patients overestimated the actual amount that Medicare reimburses for each of the procedures by a factor of nearly 6. Less than 10% of patients thought that the current Medicare payment to surgeons is about right, and less than 2% thought that surgeons are overpaid for the procedures.

Many patients feared that, given the current state of affairs, orthopedic surgeons might opt out of the Medicare system, and in many cases, patients would not necessarily fault them. However, in recent decades, an increasing number of hip and knee arthroplasties have been performed despite decreasing reimbursement, and there are nonfinancial reasons why physicians continue to accept Medicare. In the event that more orthopedic surgeons do opt out of Medicare, it is likely that less qualified surgeons will be faced with the responsibility of treating an increasing number of complex primary and revision total joint arthroplasty patients. The effect that this will have on the quality of joint arthroplasties in the United States, and the long-term financial impact on the health care system remains to be seen.

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