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Association between surgical patient satisfaction and nonmodifiable factors

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ABSTRACT

Background: Patient satisfaction surveys are an important tool in measuring physician performance. We hypothesized that nonmodifiable factors would be associated with surgical outpatient satisfaction scores.

Methods: Press Ganey Consumer Assessment of Health Providers and Systems outpatient satisfaction scores from completed surveys (18,373) at an academic department of surgery were reviewed. Data were collected on patient factors, provider specialty, practice setting, and first visit status. Patients were divided into groups based on satisfaction scores—completely satisfied (score = 100) or less satisfied (score ≤99). Generalized estimating equation logistic regression analysis was performed to identify factors predictive of patient satisfaction.

Results: Patients less likely to be completely satisfied were younger (odds ratio [OR] 0.54; confidence interval [CI] 0.43-0.69, $P < 0.001$ for 18-29 y *versus* >80 y) and were more likely to be seeing their surgeon for the first time (OR 0.84; CI 0.78-0.89, $P < 0.001$ for first *versus* return patients). Compared with patients seen at hospital subspecialty clinics, patients were more likely to be satisfied if seen at a cancer center clinic (OR 1.22; CI 1.13-1.32, $P < 0.001$) or a community ambulatory clinic (OR 1.30; CI 1.18-1.43, $P < 0.001$). There was no difference in satisfaction among patients seen in General Surgery, Plastic Surgery, or Otolaryngology Clinics. Patients were less likely to be satisfied when seen in Urology (OR 0.82; CI 0.75-0.91, $P < 0.001$) and Vascular Surgery (OR 0.75; CI 0.62-0.92, $P = 0.006$) clinics compared with General Surgery Clinics.

Conclusions: Using satisfaction scores to evaluate providers should take into account nonmodifiable factors of the underlying patient population, the specialty of the provider, and the practice setting of the visit.

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Introduction

Patient satisfaction has become an important aspect of health care delivery in the United States. The Patient Protection and Affordable Care Act of 2010 established incentive payments to hospitals based on quality domains.[1] One such quality domain is patient experience, which may be evaluated using the Hospital Consumer Assessment of Healthcare Providers and Systems survey.[2] While inpatient, hospital-level reporting of patient satisfaction has already been mandated, future mandates exist for physician-level assessment.[3,4] On an outpatient basis, a number of health care organizations have already begun using patient satisfaction to evaluate physician performance; some make scores publically available, whereas others use them to determine compensation.[5,6]

Although legislative action has been taken, knowledge regarding the underlying determinants of patient satisfaction lags policy mandates. Furthermore, the determinants of patient satisfaction among surgical patients are believed to be distinct from medical patients.[3] Among various but largely nonsurgical patient populations, prior studies have found higher levels of patient satisfaction to be associated with older age,[7-18] longer travel distance,[7] nonacademic practice setting,[13,19] better self-reported health status,[9,11,16,19] male sex,[15,20,21] White race,[16,17] lower education level,[8,9,18] health insurance coverage,[10] and employment status.[20] Understanding the factors that drive patient satisfaction is important both for targeting quality improvement initiatives and for potentially adjusting physician-level scores to account for nonmodifiable patient factors that influence these metrics.[7,8]

The purpose of this study was to examine the association between patient satisfaction scores from outpatient surgery clinical encounters and nonmodifiable factors such as patient age and gender, the specialty of the surgical provider, and the type of clinic in which the encounter occurred.

Materials and methods

After obtaining institutional review board approval, we retrospectively reviewed outpatient satisfaction scores (19,676) for encounters from January 1, 2011 through July 31, 2015, from a single academic department of surgery. All patients with a valid e-mail address on file received a link to the Press Ganey (PG) Consumer Assessment of Health Providers and Systems outpatient survey for each surgical encounter during this period.[22] We included patients who completed at least one survey (11,494) and were aged ≥18 y at the time of the surgical encounter. Completed surveys were linked to the electronic medical record, and we abstracted patient demographic variables such as age, sex, type of insurance, and home zip code. We further abstracted administrative data such as surgical provider specialty, first *versus* follow-up visit status, and the specialty focus of the clinic where the encounter occurred. The academic department of surgery where this study was conducted includes a division of General Surgery and eight additional surgical specialty divisions: Urology, Otolaryngology, Plastic and Reconstructive Surgery, Transplant, Vascular, Cardiothoracic, Pediatric Surgery, and Emergency Medicine (not included in this analysis). Outpatient clinics included subspecialty or referral clinics located at a large urban academic teaching hospital, specialty clinics at a dedicated cancer center, and a large number of community-based ambulatory clinics that serve the surrounding Salt Lake City–Provo–Ogden metropolitan area. For this study, clinics were categorized into one of three facility types: hospital subspecialty clinics, community ambulatory clinics, and cancer center clinics. Referral patterns are influenced by the health system's geographic location in the Intermountain West; the department provides surgical specialty care to >10% of the land area of the continental United States, with some patients travelling hundreds of miles for outpatient services. The patient's home zip code was used to estimate travel distance (shortest possible) to the clinic in which the encounter occurred.

The Press Ganey Medical Practice Survey consists of 24 questions within six subdomains. Responses are measured on a five category scale: very poor (score = 0), poor (25), fair (50), good (75), and very good (100). PG calculates the mean overall score from the mean scores for the six subdomains.[23] For our analysis, we categorized patients as completely satisfied (PG score = 100) or less satisfied (PG score ≤99). These categories were chosen because of the high frequency of encounters (41%, 7619) for which patients were completely satisfied.

Descriptive statistics were completed at the survey level. The association between each potential predictor and satisfaction was evaluated using generalized estimating equation logistic regression. An interchangeable correlation structure was assumed to account for correlation among surveys from the same patient. Results included odds ratios (ORs), 95% confidence intervals (CIs), and *P* values from univariate and multivariate models. For this descriptive analysis, the multivariate models controlled for age and division within the department of surgery. Age was modeled as natural cubic spline with a knot at the median (56 y), to allow for a nonlinear relationship.

Model averaging was used to construct a predictive model for complete patient satisfaction.[24] All predictors and *a priori* selected two-way interactions terms of complete patient satisfaction were explored. All possible models (60,496) including all or some of the terms were evaluated and ranked from best to worst according to quasi-likelihood under the independence model criterion (QIC). The final model was achieved by averaging over the top models (796), which were selected such that their cumulative QIC weight exceeded 95%. The prediction accuracy of this model and its 95% CI were calculated as the area under the receiver operating characteristic curve (AUC). Using this model, the predicted probability of complete satisfaction and the interquartile range were calculated for different values of age, subspecialty of the provider, and first visit status. Significance was assessed at $P < 0.05$, and all tests were two tailed.

Results

The analysis dataset consisted of patients aged ≥18 y who completed at least one survey (11,494). After linking surveys to