

Relationship Between Patient Satisfaction And Physician Characteristics

J Gene Chen, MD, MHS^{1,2}, Baiming Zou, PhD³,
and Jonathan Shuster, PhD⁴

Journal of Patient Experience
2017, Vol. 4(4) 177-184
© The Author(s) 2017
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/2374373517714453
journals.sagepub.com/home/jpx


Abstract

Background: Physician care influences patient satisfaction. Inherent physician attributes may also affect scores. **Objective:** To determine the relationship between physician characteristics and patient satisfaction regarding physician care and communication. **Method:** Observational retrospective study. We examined patient satisfaction surveys from inpatient adults across 9 questions (HCAHPS: Courtesy, Listen, and Explain; Press Ganey: Time, Concern, Informed, Friendliness, Skill, Rating) in relation to physician gender, age, ethnicity, race, and specialty. **Results:** We analyzed 51 896 surveys on 914 physicians. In univariate analysis, males were rated significantly more often in the highest category (top box) compared to females on Informed and Skill, and whites were rated in the top box more often than nonwhites on all questions. In multivariate analysis, there were no significant associations between ratings and physician gender, ethnicity, and race. On all questions, the odds of being rated in the top box were highest for obstetricians, second highest for surgeons, and lowest for medicine providers. On the question of Skill, the odds of being rated in the top box were higher with increasing age. **Conclusion:** Patient satisfaction regarding physicians is associated with physician specialty and age.

Keywords

patient satisfaction, HCAHPS, clinician–patient relationship, health-care planning or policy, leadership

Introduction

Patient-centered care is a key component of health-care quality (1). In the United States, the Centers for Medicare and Medicaid Services (CMS) publicly report results of patient satisfaction regarding hospital care on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey (2). In addition, ratings of physicians on online websites are increasing in prevalence (3), and 59% of survey respondents in a US poll reported physician rating sites to be “somewhat important” or “very important” when choosing a physician (4).

However, the relationship between patient satisfaction and clinical outcomes remains unclear. Some studies show that patient satisfaction correlates positively with clinical outcomes (4-8), while others show no correlation or an inverse correlation (9-12). These contradictory data suggest that there are contributors to patient satisfaction other than the quality of care received.

Physicians play a large role in patient satisfaction since they lead the health-care team, offer diagnosis and treatment, and communicate with patients regularly (13). To date, no one has examined if patient satisfaction is related to

physician characteristics. The objective of this study was to investigate the relationship between patient satisfaction regarding care and communication and physician attributes.

Methods

Design

This study was an observational retrospective study of patient satisfaction survey results from adults admitted to inpatient services in our hospital system. The Arnold Palmer

¹ Department of Pediatrics, University of Florida College of Medicine, Orlando, FL, USA

² Arnold Palmer Hospital for Children, Orlando Health, Orlando, FL, USA

³ Department of Biostatistics, Colleges of Medicine and Public Health, University of Florida, Gainesville, FL, USA

⁴ Department of Health Outcomes and Policy, University of Florida College of Medicine, Gainesville, FL, USA

Corresponding Author:

J Gene Chen, Arnold Palmer Medical Center, Orlando Health, 86 W Underwood St, STE 202, MP 336, Orlando, FL 32806, USA.
Email: jerome.chen@orlandohealth.com



Table 1. Patient Satisfaction Survey Questions.

Source	Question	Abbreviation	Possible Answers
HCAHPS	During this hospital stay, how often did doctors treat you with courtesy and respect?	Courtesy	Never, sometimes, usually, always
HCAHPS	During this hospital stay, how often did doctors listen carefully to you?	Listen	Never, sometimes, usually, always
HCAHPS	During this hospital stay, how often did doctors explain things in a way you could understand?	Explain	Never, sometimes, usually, always
Press Ganey	Time physician spent with you	Time	Very poor, poor, fair, good, very good
Press Ganey	Physician's concern for your questions and worries	Concern	Very poor, poor, fair, good, very good
Press Ganey	How well physician kept you informed	Informed	Very poor, poor, fair, good, very good
Press Ganey	Friendliness / courtesy of physician	Friendliness	Very poor, poor, fair, good, very good
Press Ganey	Skill of physician	Skill	Very poor, poor, fair, good, very good
Press Ganey	Your rating of the hospitalist ^a	Rating	Very poor, poor, fair, good, very good

^aThe survey was worded in this manner, regardless of the specialty or practice location of the physician.

Medical Center Institutional Review Board determined that the study did not meet the definition of human participant research and was therefore exempt from review.

Setting

Our organization is a not-for-profit, multihospital system in a major metropolitan area and includes the regional level-1 trauma center. Two weeks after the discharge, patient satisfaction surveys regarding the hospital stay are sent by e-mail to patients discharged from our inpatient medical, surgical, and maternity care service lines. Surveys evaluate physicians, nurses, the hospital environment, and the hospital experience. The physician credited with the survey results is the attending physician at the time of discharge. The name of the physician does not appear in the cover letter or survey itself.

Outcomes

We collected survey data from September 2010 to March 2016. We focused on questions regarding physician care and communication. Three questions (Courtesy, Listen, and Explain) were derived from the HCAHPS survey, the US national standard for reporting hospital patient experience, and 6 (Time, Concern, Informed, Friendliness, Skill, and Rating) were derived from Press Ganey, a US-based patient experience research organization (Table 1). Outcome measures were patient satisfaction scores across the HCAHPS and Press Ganey questions in relation to physician gender, age, ethnicity, race, and specialty. We chose to analyze answers marked in the highest category (“Always” for HCAHPS, “Very Good” for Press Ganey) in comparison to all other answers because (1) the distribution of survey results skewed toward positive survey answers and (2) CMS reports HCAHPS data nationally in this manner. Hospital Consumer Assessment of Healthcare Providers and Systems designates this highest category as “top box”. Only surveys that were filled out completely were included in the analysis.

A list of physician providers was obtained through the Medical Staff Services department. The list included gender, age, specialty, and a picture. Specialties were grouped into medicine, obstetrics and gynecology, surgery, and other (anesthesiology, pathology, radiology, and radiation oncology). To determine ethnicity and race, 3 “assigners” (MAB, CG, and LB) independently looked at names and pictures and assigned ethnicity and race according to the Institute of Medicine Recommended Variables for Standardized Collection of Race and Hispanic Ethnicity (14). Possibilities for ethnicity were Hispanic (or Latino) and non-Hispanic, and possibilities for race were white, black or African American, American Indian or Native American, Asian, Native Hawaiian or other Pacific Islander, and some other race. We intentionally did not provide any instructions prior to the task, and the assigners were blinded to the survey results. If 2 or more assigners agreed on ethnicity or race, that ethnicity or race was assigned to the physician; if all 3 disagreed, then fourth and fifth assigners were the tie-breakers. If a physician did not have an associated picture, neither ethnicity nor race was assigned.

Statistical Analysis

Demographics were reported for physicians as numbers and percentages for all variables except age, which was reported as mean and standard deviation. Agreements on 3 selected pairs of reviewers of physician race and ethnicity were obtained. Univariate and multivariate methods were based on binary variables for “Always” versus all other responses for HCAHPS questions and “Very Good” versus all other responses for Press Ganey questions. All independent variables were thus binary. For each physician, we obtained his or her success rate as the fraction with “Always” or “Very Good” on the measure of interest. For univariate analysis, we used weighted least squares with weights proportional to the physician’s personal sample size and no intercept term to obtain an overall rate and standard error within each of the positives and negatives for each independent variable.

Table 2. Physician Demographics.

N, physicians	914
Age, mean, years	49.1 (SD 10.6)
Gender	
Male	699 (76.5%)
Female	215 (23.5%)
Ethnicity	
Non-Hispanic	721 (84.4%)
Hispanic	133 (15.6%)
Race ^a	
White	564 (66.0%)
Black or African American	74 (8.7%)
American Indian or Native American	0 (0.0%)
Asian	44 (5.2%)
Native Hawaiian or other Pacific Islander	4 (0.5%)
Some other race	168 (19.7%)
Specialty	
Medicine	489 (53.3%)
Obstetrics/gynecology	167 (18.2%)
Surgery	248 (27.0%)
Other	14 (1.5%)

^aWhite physicians numbered 564 (66.0%), nonwhite physicians 290 (34.0%).

Specifically, for physician i , who contributes N_i surveys, with Y_i of these top box, we fit the linear model $Y_i = \beta N_i + \epsilon_i$. The weighted least squares estimate is $\Sigma Y_i / \Sigma N_i$, which is the fraction of all surveys in the group in question that are rated as top box, the same estimate one would get if repeated measures by physician was ignored. However, the error properties take clustering by physician into account.

The comparison for positive versus negative was conducted by obtaining the z score for the difference between 2 independent estimates, which yielded point estimates, 95% confidence limits, and P values for the differences. For multivariate analysis, we fit mixed-effects logistic regression models for different outcomes by adjusting all the covariates available, including a class variable for the physician to account for clustering of responses and to regard each physician as a cluster. All covariates were at the physician level, as patient data were restricted to the survey results. $P < .05$ was considered statistically significant.

Results

In total, 51 896 complete surveys on 914 physicians were included in the analysis. Response rates varied from 10% to 27% depending on the facility.

Physician demographics are portrayed in Table 2. In total, 3 assigners ascribed ethnicity and race to 854 (93.4%) physicians. For race, 37 (4.3%) required a fourth assigner and 3 (0.4%) required a fifth assigner. For ethnicity, simple κ coefficients between each pair of assigners were 0.53 (95% confidence interval [CI]: 0.45-0.60), 0.56 (95% CI: 0.49-0.63), and 0.65 (95% CI: 0.58-0.72). For race, simple κ coefficients between each pair of assigners were 0.47 (95% CI: 0.43-0.50), 0.48 (95% CI: 0.44-0.51), and 0.82 (95% CI:

0.78-0.86). When race was collapsed into white and non-white, simple κ coefficients between each pair of assigners were 0.81 (95% CI: 0.77-0.86), 0.87 (95% CI: 0.84-0.90), and 0.77 (95% CI: 0.73-0.82).

Survey results by physician gender, age, ethnicity, race, and specialty are portrayed in Table 3. In univariate analysis, males were rated more often in the top box compared to females on Informed, with a difference of 1.7% (95% CI: 0.1%-3.3%, $P = .039$) and Skill, with a difference of 2.4% (95% CI: 0.9%-3.9%, $P = .002$). Survey results increased as age increased for almost all questions but most particularly for Skill (age >60 years compared to others—difference 3.9%, 95% CI: 2.3%-5.6%, $P < .001$). There were no significant differences in top-box percentages between ethnicities. White physicians were rated in the top box more often than nonwhite physicians across all questions, with a range of differences from 2.6% for Courtesy (95% CI: 1.7%-3.6%) to 5.5% for skill (95% CI: 4.0%-6.9%; $P < .001$ all comparisons). Obstetricians, surgeons, and other physicians were rated in the top box more often than medicine physicians, with a range of 6.6% (95% CI: 5.8%-7.3%) for Courtesy to 13.6% (95% CI: 12.5%-14.7%) for Skill ($P < .001$ all comparisons).

The multivariate analysis is presented in Table 4. There were no significant associations between top-box ratings and physician gender, ethnicity, or race on all questions. On HCAHPS questions, the odds of being rated in the top box were highest for obstetricians (adjusted odds ratio [aOR] for Courtesy 1.99, 95% CI: 1.78-2.22; Listen 2.36, 95% CI: 2.14-2.60; Explain 2.71, 95% CI: 2.47-2.97), second highest for surgeons (Courtesy 1.61, 95% CI: 1.45-1.79; Listen 1.58, 95% CI: 1.44-1.73; Explain 1.63, 95% CI: 1.49-1.78), and lowest for medicine providers (reference 1; $P < .001$ all comparisons). For Press Ganey questions, findings were similar to the exception of Skill, in which surgeons were rated in the top box more often (surgery aOR 1.94, 95% CI: 1.76-2.15; Obstetrics 1.84, 95% CI: 1.66-2.03; $P < .001$ all comparisons). On the question of Skill, the odds of being rated in the top box were higher with increasing age (aOR 1.05, 95% CI: 1.01-1.09, $P = .03$).

Discussion

In this study, we demonstrate that patient satisfaction among inpatient adults regarding physician communication and care is associated with physician specialty and age. This is the first study to show that patient satisfaction ratings of physicians are related to inherent physician characteristics.

Overall patient experience concerning doctors, nurses, the hospital environment, the hospital experience, and discharge process is a complex construct. Previous literature has shown that higher general patient satisfaction is correlated with patient characteristics such as female gender (15), older age (15), language concordance (16), lower level of disability (17), higher degree of chronic illness (18), hospital stay attributes such as the patient being admitted electively rather

Table 3. Univariate Analysis of Patient Satisfaction Top-Box Scores Versus Physician Characteristics.

	Courtesy	Listen	Explain	Time	Concern	Informed	Friendliness	Skill	Rating
Overall top-box percentage	87.2%	79.8%	77.1%	51.8%	61.4%	60.9%	69.8%	74.3%	69.5%
Gender									
Male	87.4%	79.9%	77.2%	52.1%	61.7%	61.4%	69.8%	75.0%	69.5%
Female	86.7%	79.4%	77.0%	51.3%	61.0%	59.7%	69.6%	72.5%	69.6%
Difference (95% CI)	0.7% (-0.2% to 1.7%)	0.5% (-0.8% to 1.8%)	0.2% (-1.3% to 1.7%)	0.7% (-0.8% to 2.2%)	0.7% (-0.9% to 2.3%)	1.7% (0.1% to 3.3%)	0.2% (-1.2% to 1.7%)	2.4% (0.9% to 3.9%)	-0.2% (-1.5% to 1.2%)
P value	.13	.45	.77	.35	.40	.04	.75	.00	.82
Age, years									
Less than 39	86.0%	78.3%	75.4%	50.6%	60.3%	59.3%	68.6%	71.4%	68.3%
40 to 49	87.0%	79.3%	76.6%	51.6%	61.3%	60.7%	69.5%	74.0%	69.6%
50 to 59	87.4%	80.4%	77.9%	52.0%	61.8%	61.1%	70.3%	74.6%	69.8%
More than 60	88.5% a, b, c	81.2% a, b, c	78.7% a, b, c	53.4% a, c	62.5%	62.8% a, b, c	70.8% b	77.5% a, b, c	70.2% c
P value									
Ethnicity									
Non-Hispanic	87.2%	79.9%	77.3%	51.9%	61.6%	61.1%	69.9%	74.7%	69.5%
Hispanic	88.1%	80.8%	77.9%	53.2%	62.4%	61.9%	70.5%	73.9%	70.5%
Difference (95% CI)	-0.9% (-2.1% to 0.3%)	-0.9% (-2.5% to 0.7%)	-0.6% (-2.4% to 1.3%)	-1.4% (-3.2% to 0.5%)	-0.8% (-2.8% to 1.2%)	-0.8% (-2.9% to 1.2%)	-0.5% (-2.3% to 1.3%)	0.8% (-1.1% to 2.7%)	-1.0% (-2.6% to 0.7%)
P value	.13	.26	.54	.15	.46	.44	.56	.41	.25
Race									
White	88.2%	81.2%	78.9%	53.6%	63.3%	62.9%	71.6%	76.4%	70.6%
Nonwhite	85.6%	77.8%	74.5%	49.2%	58.6%	57.9%	67.0%	71.0%	67.9%
Difference (95% CI)	2.6% (1.7%-3.6%)	3.4% (2.2%-4.7%)	4.4% (3.0%-5.7%)	4.4% (3.0%-5.9%)	4.7% (3.2%-6.3%)	5.0% (3.5%-6.5%)	4.5% (3.1%-5.9%)	5.5% (4.0%-6.9%)	2.7% (1.4%-4.0%)
P value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Specialty									
Medicine	83.9%	74.8%	70.9%	47.2%	55.6%	55.0%	64.2%	67.5%	65.4%
Obstetrics and Gynecology	91.1%	87.2%	86.6%	57.9%	68.8%	68.1%	76.8%	79.7%	75.6%
Surgery	90.1%	83.1%	80.6%	55.6%	66.4%	66.1%	74.3%	82.3%	72.1%
Other	85.8%	83.2%	85.0%	47.8%	60.2%	61.1%	68.1%	73.5%	70.8%
Difference, obstetrics, surgery and other versus medicine (95% CI)	6.6% (5.8%-7.3%)	12.4% (11.4%-13.4%)	10.1% (9.2%-11.1%)	9.4% (8.2%-10.7%)	11.9% (10.6%-13.1%)	11.9% (10.7%-13.2%)	11.2% (10.1%-12.3%)	13.6% (12.5%-14.7%)	8.2% (7.2%-9.3%)
P value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Abbreviation: CI, confidence interval.

p* < .05 for 60 or older, compared to younger.p* < .05 for 50 or older, compared to younger.**p* < .05 for 40 or older, compared to younger.

Table 4. Multivariate Analysis of Patient Satisfaction Top-Box Scores Versus Physician Characteristics.^a

	Courtesy	Listen	Explain	Time	Concern	Informed	Friendliness	Skill	Rating
Gender, female (reference)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Gender, male (95% CI)	1.07 (0.96-1.18)	1.05 (0.95-1.15)	1.06 (0.97-1.16)	1.03 (0.94-1.12)	1.03 (0.95-1.13)	1.08 (0.98-1.18)	1.02 (0.93-1.11)	1.04 (0.94-1.15)	0.99 (0.92-1.08)
P value	.23	.34	.18	.56	.47	.11	.73	.42	.88
Age (aOR for 1 year increase) (95% CI)	1.03 (0.99-1.07)	1.02 (0.99-1.06)	1.01 (0.97-1.04)	1.02 (0.99-1.05)	1.00 (0.96-1.04)	1.01 (0.98-1.05)	1.00 (0.97-1.04)	1.05 (1.01-1.09)	1.01 (0.98-1.04)
P value	.18	.23	.76	.28	.95	.55	.96	.03	.69
Ethnicity, Hispanic (reference)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Ethnicity, non-Hispanic (95% CI)	0.91 (0.81-1.03)	0.93 (0.84-1.03)	0.96 (0.87-1.06)	0.97 (0.88-1.06)	0.97 (0.88-1.07)	0.97 (0.87-1.07)	0.98 (0.89-1.09)	0.99 (0.88-1.10)	0.95 (0.87-1.03)
P value	.13	.15	.40	.50	.50	.48	.73	.82	.21
Race, Nonwhite (reference)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Race, white (95% CI)	1.04 (0.95-1.15)	1.02 (0.93-1.11)	1.02 (0.94-1.11)	1.05 (0.98-1.14)	1.05 (0.97-1.14)	1.05 (0.97-1.14)	1.04 (0.96-1.13)	1.05 (0.96-1.15)	1.00 (0.93-1.08)
P value	.36	.69	.60	.18	.24	.23	.29	.27	.97
Specialty, medicine (reference)	ref	ref	ref	ref	ref	ref	ref	ref	ref
Specialty, obstetrics (95% CI)	1.99 (1.78 to 2.22)	2.36 (2.14 to 2.60)	2.71 (2.47 to 2.97)	1.54 (1.42 to 1.67)	1.75 (1.59 to 1.91)	1.75 (1.60 to 1.92)	1.84 (1.68 to 2.01)	1.84 (1.66 to 2.03)	1.63 (1.51 to 1.77)
P value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Specialty, surgery (95% CI)	1.61 (1.45-1.79)	1.58 (1.44-1.73)	1.63 (1.49-1.78)	1.35 (1.24-1.47)	1.51 (1.38-1.65)	1.51 (1.38-1.65)	1.55 (1.42-1.69)	1.94 (1.76-2.15)	1.35 (1.25-1.46)
P value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Abbreviations: CI, confidence interval; aOR, adjusted odds ratio.

^aData are presented as adjusted odds ratios.

than emergently (19), and incurring higher health-care expenditures (12,20); hospital traits themselves like being a nonteaching facility and having a smaller local population size (21); and hospitality issues like room amenities and cleanliness (22,23).

Patient satisfaction specifically regarding physicians also incorporates factors other than quality of care received. In an inpatient study of patient–physician satisfaction in trauma patients, higher physician ratings were correlated with patients being older, having a higher degree of acute illness, and having surgery (24). In an outpatient spine clinic, low physician scores were associated with patients having younger age, less formal education, smoking, and the presence of a worker’s compensation claim (25). Physicians can actively improve their satisfaction with certain interventions, such as communicating preoperatively in an effective manner on the day of a surgery (26); calling fewer inpatient consultations during a prolonged hospital stay (27); exhibiting provider empathy in a clinic setting (28,29); explaining a medical condition and treatment; and ensuring reliable follow-up communication (29). Physicians may also improve patient satisfaction through targeted interventions such as education and real-time feedback (30). This study demonstrates that satisfaction regarding physician care also depends on inherent physician attributes.

The most significant finding in this study is that patient satisfaction ratings of their physicians differ by specialty. Obstetricians and surgeons were consistently rated higher than medicine providers. This finding is compatible with CMS data. For example, on the July 2017 HCAHPS Mode and Patient Mix Adjustment report, compared to patients on medical services, top-box ratings regarding “communication with doctors” from patients on maternity services were 13.4% higher, and top-box ratings from patients on surgical services were 8.7% higher (31).

This finding is surprising. Traits that are associated with practitioners in medicine, such as courtesy, listening carefully, explaining difficult concepts, and spending time with patients, were less likely to be rated in the top box by patients under the care of a medicine physician. In obstetrics, this result may be due to the fact that having a baby is a joyous occasion and may boost patients’ opinions of their physicians. In surgery, a patient who requires an operation may perceive himself as more ill and thus reward a surgeon with higher scores at discharge. In both obstetrics and surgery, a patient may be admitted with a diagnosis and have that problem fully resolved before discharge, while in medicine, a patient’s condition may simply be controlled to the point where they can leave the hospital safely.

On the question of Skill, 2 interesting findings emerged. Older physicians were more likely to be rated in the top box, perhaps due to patients equating experience with skill. Surgeons were rated in the top box more often than obstetricians, perhaps due to patients relating skill in the operating room to overall skill as a physician.

Univariate analysis of the data revealed that white physicians were rated higher than nonwhite physicians. However, in the multivariate analysis, race no longer demonstrated a relationship with scores. This finding likely occurred due to the confounding effect of specialty. More physicians in medical specialties were nonwhite. Thus, the lower ratings in nonwhite physicians result from practicing in the medicine specialty, not from being nonwhite.

The results of this study suggest that patient satisfaction demonstrates unconscious bias. By definition, unconscious bias is ingrained but unintentional. We chose to evaluate gender, age, and race since these variables are frequently implicated in unconscious bias (32). However, specialty turned out to have the largest effect. It is important to be aware of unconscious bias in order to reduce its influence. Hospital systems should consider setting different patient satisfaction goals for certain physician specialties based on the results of this study.

Strengths and Limitations

Strengths of this study include its large sample size of surveys and physicians. Many of the differences seen in scores across physician attributes were highly statistically significant, but the absolute magnitude of the differences was generally low. In addition, our survey included questions from HCAHPS, the national hospital public reporting standard for patient satisfaction, and Press Ganey, a well-known patient satisfaction research organization. Many hospital systems use surveys with similar questions, which lends reproducibility.

There are some limitations to the study. Response rates to surveys were low but were comparable to national rates for HCAHPS (33). Surveys were attributed to the physician at the time of discharge, which may not have been the physician most involved in the care of the patient. Generalizability may also be limited, since these surveys were from patients in a specific region of the United States. We chose to assign ethnicity and race using a name and photograph in order to reflect a real-world setting, where patients may make similar assumptions upon meeting a physician for the first time. Our assigners disagreed often on exact race, although the agreement was stronger for the dichotomy of white versus nonwhite. Finally, all of the covariates used in the analysis were at the physician level. We did not have data at the patient level other than the surveys.

Conclusion

On inpatient adult surveys, patient satisfaction scores regarding physician care and communication are associated with physician specialty and age. These findings should be considered when setting patient satisfaction goals for inpatient physicians.

Authors’ Note

David Nykanen, MD, Department of Pediatrics, Arnold Palmer Medical Center, Orlando, FL, provided encouragement and

valuable suggestions regarding the study. No compensation was received.

M. Alan Brock, MD, Department of Pediatrics, Arnold Palmer Medical Center, Orlando, FL, was one of 3 assigners who assigned ethnicity and race to physicians. No compensation was received.

Cherece Grier, MD, Department of Pediatrics, Arnold Palmer Medical Center, Orlando, FL, was one of 3 assigners who assigned ethnicity and race to physicians. No compensation was received.

Lisa Bailey, Department of Pediatrics, Arnold Palmer Medical Center, Orlando, FL, was one of 3 assigners who assigned ethnicity and race to physicians. No compensation was received.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Research reported in this publication was partly supported by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1TR001427. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Corrigan JM, Donaldson MS, Kohn LT, Maguire SK, Pike KC, eds. *Crossing The Quality Chasm: A New Health System For the 21st Century*. Washington, DC: National Academy Press; 2001.
2. Hospital Consumer Assessment of Healthcare Providers and Systems. Baltimore, MD: Centers for Medicare & Medicaid Services. <http://hcahpsonline.org/home.aspx>. Accessed August 17, 2016.
3. Gao GG, McCullough JS, Agarwal R, Jha AK. A changing landscape of physician quality reporting. *J Med Internet Res*. 2012;14:e38.
4. Hanauer DA, Zheng K, Singer DC, Gebremariam A, Davis MM. Public awareness, perception, and use of online physician rating sites. *JAMA*. 2014;311:734-5.
5. Sacks GD, Lawson EH, Dawes AJ, Russell MM, Maggard-Gibbons M, Zingmond DS, et al. Relationship between hospital performance on a patient satisfaction survey and surgical quality. *JAMA Surg*. 2015;150:858-64.
6. Glickman SW, Boulding W, Manary M, Staelin R, Roe MT, Wolosin RJ, et al. Patient satisfaction and its relationship with clinical quality and inpatient mortality in acute myocardial infarction. *Circ Cardiovasc Qual Outcomes*. 2010;3:188-95.
7. Boulding W, Glickman SW, Manary MP, Schulman KA, Staelin R. Relationship between patient satisfaction with inpatient care and hospital readmission within 30 days. *Am J Manag Care*. 2011;17:41-8.
8. Kennedy GD, Tevis SE, Kent KC. Is there a relationship between patient satisfaction and favorable outcomes? *Ann Surg*. 2014;260:592-8.
9. Chang JT, Hays RD, Shekelle PG, MacLean CH, Solomon DH, Reuben DB, et al. Patients' global ratings of their health care are not associated with the technical quality of their care. *Ann Intern Med*. 2006;144:665-72.
10. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder EL. The implications of regional variations in Medicare spending, part 2: health outcomes and satisfaction with care. *Ann Intern Med*. 2003;138:288-98.
11. Sequist TD, Schneider EC, Anastario M, Odigie EG, Marshall R, Rogers WH, et al. Quality monitoring of physicians: linking patients' experiences of care to clinical quality and outcomes. *J Gen Intern Med*. 2008;23:1784-90.
12. Fenton JJ, Jerant AF, Bertakis KD, Franks P. The cost of satisfaction: a national study of patient satisfaction, health care utilization, expenditures, and mortality. *Arch Intern Med*. 2012;172:405-11.
13. Famiglietti RM, Neal EC, Edwards TJ, Allen PK, Buchholz TA. Determinants of patient satisfaction during receipt of radiation therapy. *Int J Radiation Oncol Biol Phys*. 2013;87:148-52.
14. Institute of Medicine. *Race, Ethnicity, and Language Data: Standardization for Healthcare Quality Improvement*. Washington, DC: National Academies Press; 2009.
15. Ku JH, Danve A, Pang H, Choi D, Rosenbaum JT. Determinants of patient satisfaction in an academic rheumatology practice. *J Clin Rheumatol*. 2015;21:256-62.
16. Dunlap JL, Jaramillo JD, Koppolu R, Wright R, Mendoza F, Bruzoni M. The effects of language concordant care on patient satisfaction and clinical understanding for Hispanic pediatric surgery patients. *J Pediatr Surg*. 2015;50:1586-9.
17. Jha A, Patrick DL, MacLehose RF, Doctor JN, Chan L. Dissatisfaction with medical services among Medicare beneficiaries with disabilities. *Arch Phys Med Rehabil*. 2002;83:1335-41.
18. Carlin CS, Christianson JB, Keenan P, Finch M. Chronic illness and patient satisfaction. *Health Serv Res*. 2012;47:2250-72.
19. Fenton JJ, Jerant AF, Franks P. Influence of elective versus emergent hospital admission on patient satisfaction. *J Am Board Fam Med*. 2014;27:249-57.
20. Biondi EA, Hall M, Leonard MS, et al. Association between resource utilization and patient satisfaction at a tertiary care medical center. *J Hosp Med*. 2016;11:785-91.
21. Mann RK, Siddiqui Z, Kurbanova N, Qayyum R. Effect of HCAHPS reporting on patient satisfaction with physician communication. *J Hosp Med*. 2016;11:105-10.
22. Schoenfelder T, Klewer J, Kugler J. Analysis of factors associated with patient satisfaction in ophthalmology: the influence of demographic data, visit characteristics, and perceptions of received care. *Ophthalmic Physiol Opt*. 2011;31:580-7.
23. Weidemann RR, Schonfelder T, Klewer J, Kugler J. Patient satisfaction in cardiology after cardiac catheterization: effects of treatment outcome, visit characteristics, and perception of received care. *Herz*. 2016;41:313-9.
24. Rogers F, Horst M, To T, Rogers A, Edavettal M, Wu D, et al. Factors associated with patient satisfaction scores for

- physician care in trauma patients. *J Trauma Acute Care Surg.* 2013;75:110-5.
25. Bible JE, Kay HF, Shau DN, O'Neill KR, Segebarth PB, Devin CJ. What patient characteristics could potentially affect patient satisfaction scores during spine clinic? *Spine (Phila Pa 1976).* 2015;40:1039-44.
26. Schmocker RK, Cherney Stafford LM, Siv AB, Levenson GE, Winslow ER. Understanding the determinants of patient satisfaction with surgical care using the Consumer Assessment of Healthcare Providers and Systems surgical care survey (S-CAHPS). *Surgery.* 2015;158:1724-33.
27. Schmocker RK, Holden SE, Vang X, Lumpkin ST, Cherney Stafford LM, Levenson GE, et al. The number of inpatient consultations is negatively correlated with patient satisfaction in patients with prolonged hospital stays. *Am J Surg.* 2016;212:282-8.
28. Parrish RC II, Menendez ME, Mudgal CS, Jupiter JB, Chen NC, Ring D. Patient satisfaction and its relation to perceived visit duration with a hand surgeon. *J Hand Surg Am.* 2016;41(2):257-62.
29. Bible JE, Shau DN, Kay HF, Cheng JS, Aaronson OS, Devin CJ. Are low patient satisfaction scores always due to the provider? Determinants of patient satisfaction scores during spine clinic visits [published online January 15, 2016]. *Spine (Phila Pa 1976).* DOI: 10.1097/BRS.0000000000001453.
30. Banka G, Edgington S, Kyulo N, Padilla T, Mosley V, Afsarmanesh N, et al. Improving patient satisfaction through physician education, feedback, and incentives. *J Hosp Med.* 2015;10:497-502.
31. Mode and Patient-mix Adjustment, Hospital Consumer Assessment of Healthcare Providers and Systems. Patient-Mix Coefficients for July 2017 Publicly Reported HCAHPS Results Document. Baltimore, MD: Centers for Medicare & Medicaid Services. <http://www.hcahpsonline.org/modeadjustment.aspx>. Accessed April 10, 2017.
32. Ross HJ. *Everyday Bias: Identifying and Navigating Unconscious Judgments in Our Daily Lives.* Lanham, MD: Rowman & Littlefield Publishers; 2014.
33. Medicare Hospital Compare. <https://www.medicare.gov/hospitalcompare/search.html>. Accessed August 17, 2016.

Author Biographies

J Gene Chen, MD, MHS, is an associate professor of Pediatrics in the University of Central Florida College of Medicine, a pediatric critical care physician at Arnold Palmer Hospital for Children, and the program director for the University of Florida Pediatric Residency at Orlando Health.

Baiming Zou, PhD, is a research assistant professor in the Department of Biostatistics in the University of Florida Colleges of Medicine and Public Health.

Jonathan Shuster, PhD, is a professor emeritus in the Department of Health Outcomes and Policy in the University of Florida College of Medicine.