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Abstract

Objective: To examine the impact of race and ethnicity on financial charges associated with radical cystectomy (RC).

Data Sources/Study Setting: The Nationwide Inpatient Sample was used to identify patients who underwent RC for bladder cancer between 1998 and 2010.

Study Design: The primary outcome was total hospital charges adjusted for inflation. Multivariate analysis was performed using a generalized linear model on the logarithmically transformed outcome variable (total hospital charges) after adjusting for age, sex, race, Elixhauser comorbidities, surgical approach, year, primary payer, hospital and surgeon annual RC volume, hospital characteristics, and postoperative complications.

Principle findings: A total of 14,873 patients were identified. Hispanic and black patients were more likely to be treated by low-volume surgeons and/or institutions (both P=.07).

Conclusions: Hispanic ethnicity but not black race predicts higher hospital charges after RC.

Keywords

Hospital Charges; Cystectomy; Surgery Outcomes; Race; Ethnicity

Cover Page Footnote

Mark Tyson, MD, had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. The authors would like to thank Desert Mountain's C.A.R.E (Cancer Awareness Through Research and Education) organization (Scottsdale, Arizona) for its generous support of the genitourinary research program at Mayo Clinic, Scottsdale, Arizona.

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ABSTRACT

Objective: To examine the impact of race and ethnicity on financial charges associated with radical cystectomy (RC).

Methods: The Nationwide Inpatient Sample was used to identify patients who underwent RC between January 1st 1998 and December 31st 2010. The primary outcome was hospital charges adjusted for inflation. Multivariable analysis was performed using a fully-adjusted generalized linear model on the logarithmically transformed outcome variable (total hospital charges).

Results: Hispanic and black patients were more likely to be treated by low-volume surgeons and/or institutions (*P*<.001) and to be uninsured (*P*0.001). After adjustment for inflation, the median charge for RC overall was $64,480 and was higher for Black patients ($71,671) and Hispanic patients ($87,485) than for White patients ($63,307) (*P*<.001). By multivariable analysis, Hispanic ethnicity was independently associated with higher charges (exponentiated coefficient, 1.21; 95% CI, 1.15-1.28) (*P*<.001), whereas black race was not (exponentiated coefficient, 1.04; 95% CI, 0.99-1.08) (*P*=.07).

Conclusions: Hispanic ethnicity independently predicted higher hospital charges after RC.

Keywords: charges; cystectomy; racial disparity

INTRODUCTION

Over the past several decades, health care–related spending has outpaced economic growth in the US, which poses a major fiscal problem not only to federal health care entitlement programs such as Medicare, but also to state and local governments and the private sector. The most recent data from the World Health Organization indicate that the US spent 17.9% of its gross domestic product on health care in 2010. The US ranks third among all nations in health care expenditures, which have markedly increased from 4.7% of the gross domestic product in 1960; only Liberia (19.5%) and Sierra Leone (18.8%) spend more. Despite widespread agreement that rising costs must be contained, there is considerable disagreement about the driving factors behind this adverse trend.

Bladder cancer holds a unique position in the health care cost-containment debate, given that it has the highest lifetime treatment costs per patient of all malignancies. This has largely been

attributed to the use of surveillance endoscopy and the morbidity associated with radical treatments. Radical cystectomy (RC) has remained the definitive local therapy for muscle-invasive bladder cancer and is a complex procedure with significant perioperative morbidity, including complication and mortality rates as high as 57% and 3%, respectively. Furthermore, significant racial disparities in health outcomes exist, with higher complications among minority populations. Black patients are more likely to be treated at low-volume institutions and to have more advanced stages at presentation, higher inpatient mortality, longer hospitalizations, and worse overall cancer-related outcomes. However, no study has systematically evaluated the impact of race/ethnicity on hospital charges in the context of these findings. While intuitively race and ethnicity would seem to have a neutral impact on charges, reports from the vascular and neurosurgical literature indicate otherwise.

In this study, the relationship of race/ethnicity to total hospital charges was explored after adjustment for preoperative morbidity, postoperative complications, primary payer status, length of hospitalization, surgical approach (minimally invasive versus open), and hospital and surgeon characteristics, including annual RC volume. It was hypothesized that the increased complications documented previously would translate into additional charges for minorities. Addressing the social determinants of health care–related expenses offers an opportunity to promote population health and cost-containment by identifying and reducing social risk factors for individual patients.

METHODS

Data

Data from the Nationwide Inpatient Sample (NIS) for the period between January 1, 1998, and December 31, 2010 was assembled. The NIS is an administrative database maintained by the Healthcare Cost and Utilization Project via the Agency for Healthcare Research and Quality within the US Department of Health and Human Services. The NIS is the largest publicly available all-payer inpatient care database in the US. It contains annual discharge data from approximately 8 million hospital admissions. For 2010, the NIS contains all discharge data from 1,051 hospitals in 45 states, encompassing a 20% stratified sample of US community hospitals. The NIS includes information on the charges for all patients, regardless of payer, including uninsured persons and persons covered by Medicare, Medicaid, and private insurance.

Study Population

Patients undergoing RC through the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* (Atlanta, GA: Centers for Disease Control and Prevention, 2013) procedure code for RC (57.71) were identified. Patients were included only if they also had diagnosis codes for malignant neoplasm of the bladder (188.0-188.9), carcinoma in situ of the bladder (233.7), and/or a personal history of bladder cancer (v10.51). Patients were stratified by race/ethnicity: white, black, or Hispanic. Data on other minority populations were excluded due to small sample sizes.

Patient and Hospital Level Variables

Case-mix differences were accounted for by extracting baseline patient characteristics (age, sex, and medical comorbidity) from the database. A comorbidity score was assigned to every patient using the Elixhauser comorbidity index . Hospital-level data, including information on hospital region (Northeast, Midwest, South, or West), location (rural or urban), hospital size by number of beds (small, medium, or large), and teaching status were extracted. Hospital and

surgeon annual volumes were calculated by dividing the total number of RCs performed by a surgeon or in a hospital by how long (number of years) each had been included in the data set. Surgeons and hospitals were then stratified into 5 approximately equal quintiles, with quintile 1 defining low volume, quintiles 2 to 4 defining medium volume, and quintile 5 defining high volume.

Adverse Events

Short-term outcomes that were examined included in-hospital mortality and intraoperative complications, such as injury to adjacent organs, retained foreign object, and intraoperative hemorrhage. Postoperative complications were broadly categorized using *ICD-9-CM* diagnosis and procedure codes: wound, infection, renal/urologic, pulmonary, gastrointestinal, pancreatic, cardiovascular, and systemic complications. Blood product transfusion rates (red blood cells, platelets, and coagulation factors) were also compared. This methodology has been described previously.

Statistical Analysis

The primary outcome was total hospital charges. The conversion of charges to 2013 dollars was done by multiplying the total charge by the consumer price index from the US Bureau of Labor and Statistics for the calendar year. Secondary outcomes included postoperative complications, reintervention rates, and death (all dichotomous). Postoperative death was defined as death that occurred during the same hospitalization, regardless of its duration.

Since total hospital charges were found to be non-normally distributed (positively skewed and leptokurtic), a logarithmic transformation of total charges adjusted for inflation was performed. A generalized linear model using a γ family of distribution with iteratively reweighted least squares methods was constructed to examine the transformed data. The model included terms for age, sex, race, Elixhauser comorbidity index ≥ 3, surgical approach (minimally invasive [conventional laparoscopic and robotic] versus open), year, primary payer status, postoperative complications (including death), length of stay, and hospital and surgeon characteristics (including annual RC volume), teaching status of hospital, hospital size by number of beds, urban location, and geographic region. The results of the model were validated by examining the plots of observed versus fitted residuals.

Differences in patient demographics and clinical characteristics were evaluated using the χ^2 test or the exact test for categorical data and the Kruskal-Wallis test for continuous variables. A significance level of $P>.05$ was used, and P values for all tests were 2-sided. All statistical calculations were performed using Stata/MP 12 (StataCorp LP).

RESULTS

Overall, a total of 14,873 patients underwent RC between 1998 and 2010. Of these patients, 13,621 were White (91.6%), 712 Black (4.8%), and 540 Hispanic (3.6%). Patient demographics differed significantly across racial groups (Table 1). White patients were older than Black or Hispanic patients, and the proportion of women was highest among Black patients (both *P*<.001). Rates of preoperative hypertension and diabetes mellitus were highest among Black patients (54.2% [386/712] and 20.9% [149/712]) and Hispanic patients (44.6% [241/540] and 21.5% [116/540]), whereas chronic pulmonary disease was highest among White patients and liver disease was highest among Hispanic patients. No significant differences were found across the groups with respect to the proportion with ≥3 Elixhauser comorbidities (*P*=.15).

Table 1. Demographics and Clinical Characteristics of 14,873 Patients Who Underwent RC[a]

Variable	White (n=13,621)	Black (n=712)	Hispanic (n=540)	*P* Value
Median age (IQR)	70 (62,76)	65 (56,73)	67 (58,74)	<.001
Female sex	2,147 (15.8)	195 (27.4)	95 (17.6)	<.001
Medical comorbidity				
Heart Failure	724 (5.3)	28 (3.9)	19 (3.5)	.06
Hypertension	6,335 (46.5)	386 (54.2)	241 (44.6)	<.001
CPD	2,838 (20.8)	103 (14.5)	67 (12.4)	<.001
Diabetes mellitus	2,159 (15.9)	149 (20.9)	116 (21.5)	<.001
Renal failure	533 (3.9)	36 (5.1)	21 (3.9)	.31
Liver disease	97 (0.7)	9 (1.3)	10 (1.9)	.004
Metastatic cancer	1,446 (10.6)	81 (11.4)	73 (13.5)	.09
Obesity	594 (4.4)	34 (4.8)	33 (6.1)	.14
≥3 Comorbidities	3,785 (27.8)	220 (30.9)	159 (29.4)	.15
Minimally invasive[b]	362 (2.7)	20 (2.8)	20 (3.7)	.33
LOS, days (IQR)	9 (7,12)	10 (7,16)	9 (7,13)	<.001

Abbreviations: CPD, chronic pulmonary disease; IQR, interquartile range; LOS, length of stay.

[a] Values are number (percentage) unless indicated otherwise.

[b] Minimally invasive approaches include robot-assisted and conventional laparoscopy.

Hospital and insurance characteristics also differed significantly across the races/ethnicities (Table 2). Approximately 76% of Black patients (542/712) and 76% of Hispanic patients (412/540) underwent surgery at a teaching hospital, compared to 67.9% (9,248/13,621) of White patients (*P*<.001). Black and Hispanic patients were more likely to be treated in urban hospitals in the South (both *P*<.001). However, Black patients were least likely to be treated by a high-volume surgeon and/or in a high-volume hospital as defined by the highest quartile for annual cystectomy volume. Approximately one-tenth (10.7% [1,453/13,621]) of White patients were treated in high-volume hospitals, compared to 9.1% (49/540) of Hispanic patients and 6.2% (44/712) of Black patients (*P*<.001). Black and Hispanic patients were considerably more likely to be uninsured (6.5% [46/712] and 9.6% [52/540], respectively, versus 3.7% [502/13,621] for White patients) (*P*<.001).

Table 2. Hospital, Surgeon, and Insurance Characteristics

Variable	**White (n=13,621)**	**Black (n=712)**	**Hispanic (n=540)**	***P* Value**
Teaching hospital[a]	9,248 (67.9)	542 (76.1)	412 (76.3)	<.001
Hospital size[b]	(n=13,539)	(n=707)		
Small	1,473 (10.9)	50 (7.1)	47 (8.7)	.01
Medium	2,401 (17.7)	140 (19.8)	94 (17.4)	
Large	9,665 (71.4)	517 (73.1)	399 (73.9)	
Hospital region				
Northeast	3,376 (24.8)	146 (20.5)	80 (14.8)	<.001
Midwest	2,614 (19.2)	114 (16.0)	11 (2.0)	
South	4,900 (36.0)	364 (51.1)	253 (46.9)	
West	2,731 (20.0)	88 (12.4)	196 (36.3)	
Urban hospital[c]	12,813 (94.1)	682 (95.8)	532 (98.5)	<.001
Hospital annual volume				
Low (≤4 RCs)	4,072 (29.9)	244 (34.3)[d]	179 (33.1)	<.001
Medium (5-59 RCs)	8,096 (59.4)	424 (59.6)[d]	312 (57.8)	
High (≥60 RCs)	1,453 (10.7)	44 (6.2)[d]	49 (9.1)	

Surgeon annual volume[e]	(n=8,023)	(n=457)	(n=298)	
Low (≤3 RCs)	4,903 (61.1)	312 (68.3)	192 (64.4)	<.001
Medium (4-14 RCs)	2,124 (26.5)	119 (26.0)	70 (23.5)	
High (≥15 RCs)	996 (12.4)	26 (5.7)	36 (12.1)	
Primary payer				
Medicare	8,574 (62.9)	352 (49.4)	271 (50.2)	<.001
Medicaid	401 (2.9)	89 (12.5)	67 (12.4)	
Private insurance	4,144 (30.4)	225 (31.6)	150 (27.8)	
Uninsured/other	502 (3.7)	46 (6.5)	52 (9.6)	

Abbreviation: RCs, radical cystectomies.

[a] No data available for 4,543 patients (4,373 white and 170 black).

[b] No data available for 87 patients (82 white and 5 black).

[c] No data available for 846 patients (808 white, 30 black, and 8 Hispanic).

[d] Percentages for hospital annual volume for black patients total >100% due to rounding.

[e] No data available for 6,095 patients (5,598 white, 255 black, and 242 Hispanic)

Univariate comparisons were performed to evaluate differences in postoperative complications and mortality (Table 3). Black patients had a significantly higher rate of blood transfusions than White patients (37.6% [268/712] versus 30.2% [4,120/13,621]) (*P*<.001). Hispanic patients had a higher rate of retained foreign objects than White patients (0.4% [2/540] versus 0.04% [5/13,621]) (*P*=.03). Hispanic and Black patients had higher rates of renal/urologic complications (11.9% [64/540] and 11.8% [84/712], respectively) than White patients (9.4% [1,280/13,621]) (*P*=.02). However, there were no other significant differences for other postoperative complications or for in-hospital mortality rates. Black patients had a significantly higher proportion of at least 1 postoperative complication than White patients (61.0% [434/712] versus 54.7% [7,454/13,621]) (*P*=.002). Black and Hispanic patients were also more likely to have ≥3 complications (14.2% [101/712] and 13.7% [74/540], respectively) than White patients (11.3% [1,544/13,621]) (*P*=.02).

Table 3. Perioperative Complications By Race[a]

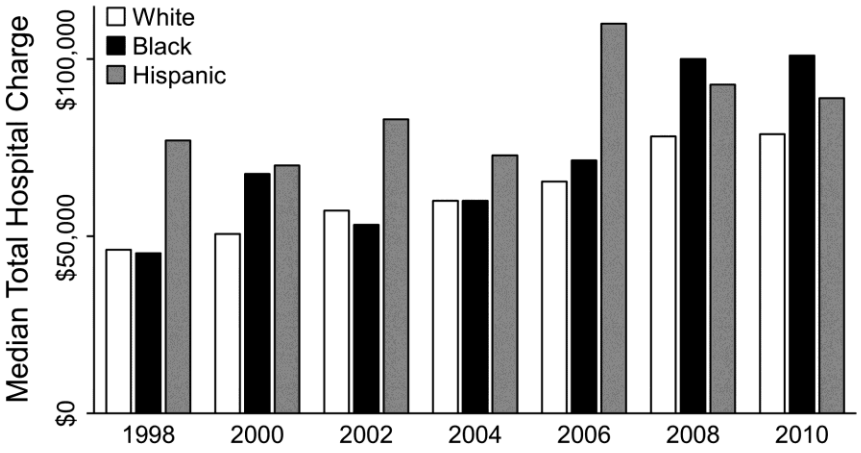
Complication	Total (N=14,873)	White (n=13,621)	Black (n=712)	Hispanic (n=540)	*P* Value
Intraoperative injury	406 (2.7)	368 (2.7)	22 (3.1)	16 (3.0)	.78
Retained object	7 (0.05)	5 (0.04)	0 (0)	2 (0.4)	.03
Intraoperative hemorrhage	367 (2.5)	335 (2.5)	19 (2.7)	13 (2.4)	.94
Wound	546 (3.7)	504 (3.7)	21 (3.0)	21 (3.9)	.56
Infection	1,521 (10.2)	1,389 (10.2)	76 (10.7)	56 (10.4)	.91
Pulmonary	1,484 (10.0)	1,358 (10.0)	68 (9.6)	58 (10.7)	.78
Gastroenterology	2,500 (16.8)	2,281 (16.7)	136 (19.1)	83 (15.4)	.17
Renal/urologic	1,428 (9.6)	1,280 (9.4)	84 (11.8)	64 (11.9)	.02
Pancreatic	34 (0.2)	29 (0.2)	2 (0.3)	3 (0.6)	.25
Cardiovascular	1,143 (7.7)	1,030 (7.6)	68 (9.6)	45 (8.3)	.13
Systemic	250 (1.7)	219 (1.6)	18 (2.5)	13 (2.4)	.07
In-hospital death	353 (2.4)	314 (2.3)	23 (3.2)	16 (3.0)	.19
Transfusion					
Blood	4,574 (30.8)	4,120 (30.2)	268 (37.6)	186 (34.4)	<.001
Platelet	125 (0.8)	113 (0.8)	7 (1.0)	5 (0.9)	.89
Coagulation factor	376 (2.5)	333 (2.4)	23 (3.2)	20 (3.7)	.09
Reintervention	478 (3.2)	433 (3.2)	29 (4.1)	16 (3.0)	.40
≥1 Complication	8,202 (55.1)	7,454 (54.7)	434 (61.0)	314 (58.1)	.002
≥3 Complications	1,719 (11.6)	1,544 (11.3)	101 (14.2)	74 (13.7)	.02

[a] Values are number (percentage) unless indicated otherwise.

In terms of cost analysis, the median total hospital charge for the cohort was $64,480 (in 2013 dollars) and it varied significantly by racial group. The median hospital charge for Black ($71,671) and Hispanic patients ($87,485) was significantly higher than that for White patients ($63,307) (*P*<.001). For patients undergoing minimally invasive approaches, the median hospital charge adjusted for inflation also varied significantly by race (Black patients, $93,418; Hispanic patients, $123,179; and White patients, $90,692) (*P*<.001).

Over time, the overall median hospital charge adjusted for inflation increased significantly from $46,514 in 1998 to $79,998 in 2010. Likewise, when hospital charges were stratified by minimally invasive approaches, the median total hospital charge over time increased significantly (from $59,225 in 2005 to $92,374 in 2010). The Figure represents the biannual trends in hospital charges over time stratified by race/ethnicity (*P*<.001).

Figure. Median Total Hospital Charges for Radical Cystectomy by Race/Ethnicity Over Time



A multivariable generalized linear model was used to examine predictors of hospital charges (Table 4). Notably, Hispanic ethnicity proved to be an independent predictor of higher charges after RC (exponentiated coefficient, 1.21; 95% CI, 1.15-1.28) (*P*<.001). However, black race was not independently associated with higher charges after RC (exponentiated coefficient, 1.04; 95% CI, 0.99-1.08) (*P*=.07). As expected, length of hospitalization, postoperative complications, in-hospital mortality, and preoperative comorbidity were associated with higher charges (all *P*<.001). High-volume hospitals (≥60 RCs/year) had overall lower hospital charges than low-volume centers (exponentiated coefficient for highest quintile, 0.88; 95% CI, 0.84-0.92) (*P*<.001). However, for high-volume surgeons (≥15 RCs/year), there was an unexpected paradoxical relationship to hospital charges (exponentiated coefficient, 1.05; 95% CI, 1.01-1.10) (*P*=.02).

Table 4. Generalized Linear Model of Log Transformed Total Hospital Charges for Radical Cystectomy

Variable	Exponentiated Coefficient	95% CI	*P* Value
Race			
Black	1.04	0.99-1.08	.07
Hispanic	1.21	1.15-1.28	<.001
Age	1.00	0.99-1.01	.30
Female sex	1.04	1.01-1.06	.01
Elixhauser comorbidities, No.			
1	1.02	0.99-1.05	.15
2	1.07	1.04-1.10	<.001
≥3	1.09	1.06-1.12	<.001
Laparoscopic approach	1.10	1.02-1.19	.01
Year	1.04	1.04-1.05	<.001
Teaching hospital	1.04	1.02-1.07	<.001
Region			
Midwest	0.87	0.84-0.90	<.001
South	0.96	0.94-0.98	<.001
West	1.13	1.09-1.17	<.001
Hospital size			
Medium	1.10	1.06-1.15	<.001
Large	1.21	1.17-1.26	<.001
Urban location	1.19	1.14-1.24	<.001
Primary payer			

Medicaid	0.97	0.92-1.03	.31
Private insurance	1.00	0.98-1.03	.72
Uninsured/other	1.04	0.99-1.09	.14
Hospital volume			
Medium (5-59 RCs)	0.94	0.92-0.97	<.001
High (≥60 RCs)	0.88	0.84-0.92	<.001
Surgeon volume			
Medium (4-14 RCs)	1.06	1.04-1.09	<.001
High (≥15 RCs)	1.05	1.01-1.10	.02
Length of stay	1.04	1.04-1.05	<.001
Death	1.27	1.19-1.35	<.001
All complications	1.08	1.07-1.09	<.001

DISCUSSION

Disparities in hospital charges among various racial populations is a controversial, yet important, area of research. The relationship between race and hospital charges is undoubtedly influenced by several factors, including different hospital systems, geographic regions, preoperative and perioperative morbidity, and insurance status. It is well documented that different hospitals charge Medicare vastly differing amounts (29). Furthermore, patients who can at least afford it (ie, lacking health insurance) are often charged far more than what most insurers actually pay and up to three times Medicare-allowable costs. Thus, it stands to reason that minority populations (with inherently higher rates of little or no insurance and a propensity to receive treatment from low-volume surgeons at low-volume institutions) will have higher RC charges. Our study documented several interesting findings related to RC charges in the US.

First, Hispanic ethnicity was independently associated with increased charges even after adjustment for several covariates, including length of hospitalization, postoperative complications, preoperative medical comorbidity, mortality, and insurance status. The overall difference in the median hospital charge for Hispanic patients compared to that for White patients was $24,178, whereas the difference between Black and White patients was substantially less ($8,364). However, unlike Hispanic ethnicity, black race did not independently predict increased hospital charges, which indicates that this difference is likely mostly attributable to one or more covariates in the model (eg, postoperative complications). Previous studies have demonstrated that length of hospitalization, postoperative complications, death, and surgical approach can significantly increase RC charges, whereas other studies have shown that Black patients have worse outcomes

after RC. However, no study has examined whether race/ethnicity can predict hospital charges independent of preoperative and perioperative morbidity, making our findings uniquely informative.

Second, we found an association between high-volume hospitals, but not necessarily high-volume surgeons, and reduced RC charges. The results of the multivariable model indicate that high-volume hospitals can significantly reduce total hospital charges compared to low-volume and medium-volume institutions. This cost advantage likely results from operational efficiency (i.e., economy of scale). Individual surgeons alone cannot provide this degree of efficiency, but may, by virtue of experience and surgical expertise, reduce charges by having lower complication rates. To test this hypothesis, a subset analysis of high-volume and low-volume surgeons who performed RCs in a high-volume center was performed. The difference in the median total hospital charge was $19,200, favoring high-volume surgeons ($P<.001$). However, the difference in median hospital charges between high-volume and low-volume surgeons in low-volume centers was negligible. These data suggest that the annual cystectomy volume of a hospital may be more influential than that of an individual surgeon outside a high-volume center. It should be noted that only 61% of high-volume surgeons practiced in high-volume hospitals, which may partly explain the paradoxical observation of increased charges for high-volume surgeons in this analysis. For example, a surgeon may perform more than 15 cystectomies annually but in different hospitals. Unless those institutions are also high-volume centers, cost savings ordinarily associated with high-volume surgeons may not be realized.

Third, a comprehensive review of complications after RC was provided in what is, to our knowledge, the largest analysis of perioperative complications stratified by race. Although the primary outcome measure was total hospital charges, perioperative complications by organ system were reviewed to ensure that our model fully accounted for perioperative morbidity. These data show that Black and Hispanic patients were much more likely to develop renal and/or urologic complications. There were no baseline differences with respect to the percentage of patients with renal failure, but there were higher rates of diabetes and hypertension in the minority populations that may partially account for this difference. Black and Hispanic patients also had a higher rate of blood transfusions than White patients, but there were no other major differences in other complications classified by organ system. However, both black and Hispanic patients were much more likely to have at least one complication. Although Black patients are well studied in this regard, few data exist on the postoperative complications of Hispanic patients.

Despite these findings, our study had several limitations. First, how NIS defines racial groups may not be completely representative of a patient's racial/ethnic identity. For example, "Black patients" as a racial category is almost certainly inadequate to describe this tremendously heterogeneous group, which includes Black patients who are ethnically Hispanic (eg, Afro-Hispanic). Second, other factors absent from the data set may confound some of the study observations. Although Hispanic ethnicity predicted increased hospital charges independent of other variables, other unknown confounding variables might account for this finding. Third, cases and perioperative complications of interest were determined primarily through diagnosis and procedures codes. Although these methods have been validated, the data are only as accurate as the codes are reflective of the actual hospital course of patients. Fourth, this study is unable to include an analysis of charges of for-profit hospitals compared with those of not-for-profit hospitals. Since not-for-profit hospitals are required by US Internal Revenue Service regulations

to provide some charity care in order to maintain their nonprofit status, they would have little or no incentive to keep costs low for indigent and/or uninsured patients, which might lead to higher charges for services. Lastly, this was a study of US hospitals and may not be generalizable to other geographic regions.

Nonetheless, these claims regarding the effect of Hispanic ethnicity on increased hospital charges remain valid. This effect was independent of all other predictors of increased hospital charges. Determining what factors lead to increased charges for Hispanic patients represents an important step in neutralizing the cost disparities for this minority population.

CONCLUSION

Hispanic ethnicity but not black race independently predicts increased hospital charges after RC. Mitigating the harmful consequences of social factors that contribute to health disparities among disadvantaged populations may not only improve population health but also serve to reduce costs for the health care system at large.

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