

Association Between *Newsweek's* Global Hospital Ranking and Patient Outcomes in the USA

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INTRODUCTION

Although several hospital rankings have been available in the USA,^{1, 2} there has not been a “global” hospital ranking that assesses hospitals around the world. Recently, *Newsweek* partnered with a global market research company Statista and ranked the top 1000 hospitals worldwide, including both the USA and foreign hospitals. The ranking was based on three factors: recommendations from peers (55%), patient experience (15%), and quality indicators (e.g., hygiene and patient safety measures, number of patients per doctor/nurse) (30%).³ While informative, this ranking did not account for direct measures of patient outcomes, and it relied heavily on recommendations from peers, despite limited evidence supporting the accuracy of peer evaluations about the quality of hospitals.⁴ To address this issue, we investigated whether the *Newsweek's* global hospital ranking of US hospitals was associated with risk-adjusted patient outcomes.

METHODS

We linked three datasets: (1) the *Newsweek's* global hospital ranking, (2) the Center for Medicare and Medicaid Services (CMS) Hospital Compare database (for patient outcomes),⁵ and (3) the American Hospital Association Annual Survey database (for hospital characteristics). Patient outcomes were defined as patients' risk-adjusted 30-day mortality and readmission rates of four major conditions: acute myocardial infarction, heart failure, pneumonia, and chronic obstructive pulmonary diseases (COPD). We calculated composite mortality and readmission rates for each hospital, by calculating the weighted average based on the number of patients with each condition for a given hospital (using 100% Medicare

Inpatient File 2015). We restricted to acute care hospitals with 25 or more hospitalizations.

Using this hospital-level-linked dataset, we examined the association between the *Newsweek's* global hospital ranking and patient outcomes using multivariate linear regressions with Huber-White heteroscedasticity robust standard errors (Stata 15.1, College Station, TX). We adjusted for hospital size, teaching status, profit status, hospital region, rural/urban status, the presence of ICU, and hospital referral region fixed effects. We weighted the regression models by the total number of admissions for the four conditions for each hospital. The study was approved by the UCLA Institutional Review Board.

RESULTS

Of the 3008 acute care hospitals studied, we found that higher ranked hospitals were more likely to be large, urban, and major teaching hospitals located in the Northeast region (Table 1). After adjusting for hospital characteristics, we found that patients who were treated at the higher ranked hospitals had a lower mortality rate than those treated at the lower ranked hospitals (Table 2). The top 50 hospitals had the lowest risk-adjusted mortality rate of 11.3% (95% CI, 10.9–11.7%), followed by 11.9% (95% CI, 11.5–12.2%) for hospitals ranked 51–100, 12.1% (95% CI, 11.8–12.3%) for 101–150, 12.1% (95% CI, 11.8–12.5%) for 151–200, and 12.4% (95% CI, 12.3–12.4%) for hospitals ranked 201 or lower (*P*-for-trend < 0.001). Although the association was somewhat weaker, we found a similar pattern for patients' readmission rate (*P*-for-trend = 0.004).

DISCUSSION

Using a nationally representative sample of acute care hospitals in the USA, we found that patients who were treated at the high-ranked hospitals in the *Newsweek's* ranking had lower mortality and readmission rates compared with those treated at the lower ranked hospitals. These findings support the validity of *Newsweek's* global hospital ranking, developed based on peer recommendations, patient experience, and the structural and process-of-care measures of quality.

To date, this work has not been presented or shared elsewhere in any form.

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Table 1 Characteristics of Hospitals by Newsweek's Hospital Ranking Category

Hospital characteristics	Rank category				
	1–50 (n = 50)	51–100 (n = 50)	101–150 (n = 50)	151–200 (n = 50)	201 or lower (n = 2808)
Hospital size (%)					
Small (< 100 beds)	0.0	0.0	2.0	0.0	29.6
Medium (100–399 beds)	17.0	22.4	44.0	66.0	58.5
Large (≥ 400 beds)	83.0	77.6	54.0	34.0	12.0
Hospital profit status (%)					
For-profit	0.0	2.0	4.0	4.0	21.2
Nonprofit	80.9	87.8	82.0	84.0	63.2
Public	19.1	10.2	14.0	12.0	15.7
Hospital teaching status (%)					
Major	91.5	63.3	34.0	20.0	5.3
Minor	6.4	30.6	36.0	40.0	26.4
Not teaching	2.1	6.1	30.0	40.0	68.3
Hospital region (%)					
Northeast	21.3	16.3	18.0	18.0	15.9
Midwest	31.9	40.8	18.0	28.0	23.1
South	19.1	20.4	38.0	30.0	42.7
West	27.7	22.4	26.0	24.0	18.7
RUCA (%)					
Urban	100.0	95.9	100.0	96.0	60.6
Suburban	0.0	2.0	0.0	0.0	4.8
Large rural	0.0	2.0	0.0	4.0	21.6
Small rural	0.0	0.0	0.0	0.0	13.0
ICU (%)					
Yes	92.0	96.0	100	92.0	75.7
No	8.0	4.0	0.0	8.0	24.3

RUCA, rural-urban commuting area; ICU, intensive care unit

Hospitals that were unranked in the Newsweek's hospital ranking were included in the lowest rank category. Hospitals were placed into one of three categories of teaching status based on their response to the American Hospital Association Survey: major teaching hospitals (those that are members of the Council of Teaching Hospitals [COTH]), minor teaching hospitals (non-COTH members that had a medical school affiliation reported to the American Medical Association), and nonteaching hospitals (all other institutions)

Our study has limitations. First, although we adjusted for a broad set of hospital characteristics, we could not preclude the possibility of the residual confounding. Second, our sample included only hospitals in the USA, and therefore, Newsweek's hospital rankings may not be associated with patient outcomes in other countries. Finally, since our analysis was based on the

outcomes of Medicare beneficiaries, these findings may not be generalizable to a younger population.

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Table 2 Adjusted Association Between the Rank Categories and Patient's Outcomes

Rank category	Risk-adjusted outcomes* (%)	95% confidence interval (%)	P-for-trend
30-day mortality rate			
1–50	11.3	(10.9, 11.7)	< 0.001
51–100	11.9	(11.5, 12.2)	
101–150	12.1	(11.8, 12.3)	
151–200	12.1	(11.8, 12.5)	
201 or lower	12.4	(12.3, 12.4)	
30-day readmission rate			
1–50	18.7	(18.4, 19.1)	0.004
51–100	18.5	(18.2, 18.8)	
101–150	18.8	(18.5, 19.0)	
151–200	18.9	(18.2, 19.5)	
201 or lower	19.0	(19.0, 19.1)	

*Adjusted for hospital size, teaching status, profit status, hospital region, rural/urban status, the presence of intensive care unit (ICU), and hospital referral region (HRR) fixed effects. Risk-adjusted outcomes were estimated using marginal standardization (also known as predictive margins or margins of responses). Our final sample consisted of 2212 hospitals for the analysis of mortality and 2040 hospitals for the analysis of readmission, after excluding hospitals with missing data on outcome or adjustment variables

Compliance with Ethical Standards:

The study was approved by the UCLA Institutional Review Board.

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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