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Distinct enough? A national examination of Catholic hospital affiliation and patient perceptions of care

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Abstract

Background—Catholic hospitals play a critical role in the provision of health care in the United States; yet, empirical evidence of patient outcomes in these institutions is practically absent in the literature.

Purpose—The purpose of this study was to determine whether patient perceptions of care are more favorable in Catholic hospitals as compared with non-Catholic hospitals in a national sample of hospitals.

Methodology—This cross-sectional secondary analysis used linked data from the 2008 American Hospital Association Annual Survey, the 2008 Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, the 2008 Medicare Case Mix Index file, and the 2010 Religious Congregations and Membership Study. The study included over 3,400 hospitals nationwide, including 494 Catholic hospitals. Propensity score matching and ordinary least-squares regression models were used to examine the relationship between Catholic affiliation and various HCAHPS measures.

Findings—Our findings revealed that patients treated in Catholic hospitals appear to rate their hospital experience similar to patients treated in non-Catholic hospitals. Catholic hospitals maintain a very slight advantage above their non-Catholic peers on five HCAHPS measures related to nurse communication, receipt of discharge information, quietness of the room at night, overall rating, and recommendation of the hospital; yet, these differences were minimal.

This study was reviewed and approved by the institutional review board of the University of Pennsylvania.

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Practice Implications—If the survival of Catholic health care services is contingent upon how its provision of care is distinct, administrators of Catholic hospitals must show differences more clearly. Given the great importance of Catholic hospitals to the health of millions of patients in the United States, this study provides Catholic hospitals with a set of targeted areas on which to focus improvement efforts, especially in light of current pay-for-performance initiatives.

Keywords

Catholic hospitals; HCAHPS; patient satisfaction; perceptions of hospital care

Introduction

The Catholic Church owns or oversees the nation's largest group of not-for-profit health care sponsors, systems, and facilities, comprising nearly 12.4% of hospitals in the United States. One person in six receives care in a Catholic hospital each year; more than 5.5 million patients were admitted to Catholic hospitals in 2011 (Catholic Hospital Association [CHA], 2013). In certain areas, Catholic hospitals are the primary or only hospital available. In 22 states, particularly in the Midwest and Northwest, Catholic hospitals handle greater than 20% of admissions (CHA, 2013). In many states, they provide more care in public health and specialty services than any other health care system (CHA, 2013; Nicholson, 2009; Wall, 2005, 2011). Yet, little empirical research has been done on this large segment of the hospital population. In particular, little is known about how Catholic hospitals differ empirically from their non-Catholic counterparts in the present health care climate, especially in terms of organizational and patient outcomes (White, 2000).

Catholic hospitals have experienced massive transformations in the last 40 years. The dramatic evolution of Catholic hospitals has occurred in the context of landmark events such as the passage of Medicare and Medicaid, ethical debates over hybrid Catholic/non-Catholic/for-profit organizational partnerships, and the articulation of Catholic social values with respect to workers' rights, labor laws, and abortion (Wall, 2011). Along with external changes affecting Catholic hospitals, there arose an internal challenge: the decline, in the last half of the twentieth century, in the number of sisters and brothers—the same people who founded Catholic health care (Wall, 2011). These trends have forced significant structural changes in how Catholic hospitals are run. By the 1990s, mergers, consolidations, and closures had eliminated many of the differences that existed between Catholic and non-Catholic hospitals. For example, most Catholic hospitals, like non-Catholic institutions, are no longer independent entities but rather part of regional or national systems governed by boards populated by large numbers of lay experts (Wall, 2011).

Despite these historical changes, the Catholic Church and its health care leaders continue to call for Catholic hospitals to be distinct in the areas of social justice and compassionate care, including care for the poor and vulnerable and respect for the dignity and rights of all—key tenets of the Catholic faith (John Paul II, 1985; White, Chou, & Dandi, 2010). Yet, "care for the poor" and "respect for dignity and rights" are vague terms and are not readily quantifiable or distinguishable from non-Catholic institutions with similar mission statements (O'Rourke, 2001). Still, Catholic health care leaders see themselves, more so

than any other entity, as being the "guardians and servants of human life" (Catholic Medical Association, 2007; Seay, 2007). Catholic hospitals also have an obligation to the Catholic Church and to their sponsors to preserve their faith-based institutional identity or risk losing significant financial compensation from Church sponsorship. In the competitive hospital marketplace of the 21st century, Catholic hospitals face a dilemma: They have to stress that their hospitals carry out traditional values of serving the poor and respecting the sanctity of life, while also remaining modern, efficient, and compliant with regulatory bodies—all while facing powerful pressures toward organizational conformity in an increasingly secular world (Cochran & White, 2002).

Concerns about financial liability and long-term survival of Catholic hospitals are real. In 2010, for example, a for-profit firm, Steward Health Care System, purchased debt-ridden Caritas Christi Health Care, a Catholic system in Massachusetts composed of six hospitals (Rau, 2012; Steward Health Care System, 2010), representing the loss of a key market. Indeed, the future lifespan of acute care Catholic hospitals depends on whether they can show that they are somehow different. Because of Catholic hospitals' importance in influencing access to health care as well as the quality and types of services offered to both Catholic and non-Catholic communities, more studies are needed to empirically examine the outcomes of Catholic health care and its contribution to the health of the nation.

Over a decade ago, White (2000) issued a challenge to Catholic hospital leaders to show their distinction, yet empirical evidence of the uniqueness of Catholic health care remains virtually nonexistent. Some data show that Catholic hospitals have become leaders in end-of-life care in terms of hospice provision, and while not differing from public hospitals, Catholic hospitals are more likely to care for people with HIV/AIDS than for-profit agencies (Cochran & White, 2002). However, rigorous patient outcome studies are greatly needed, particularly for acute care services, to answer the fundamental question of whether Catholic health care is "*distinct enough* from others to warrant continuation of a church-sponsored health ministry," (italics original) (Cochran & White, 2002, p. 16). Patient satisfaction, in particular, has been suggested as a promising indicator of the relevance of Catholic health care and the strengths of its contributions (White, 2000). Our study fills this gap in knowledge by examining to what extent Catholic hospitals differ empirically from their non-Catholic counterparts nationally on a set of patient outcomes, specifically patient reports of their hospital care experience. Using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey to measure patients' perceptions of care, our results provide evidence that may be used in the comparison of outcomes between Catholic and non-Catholic hospitals and have implications for hospital administrators, policymakers, and patients.

Background and Theoretical Framework

Catholic Hospitals and Patient Outcomes

Much of the existing literature on Catholic hospitals contains only anecdotal, theological discussions of how Catholic health care may be different. Only a few studies have compared non-Catholic facilities with those that are Catholic, mainly in provision of services. These included stewardship of resources, access to vulnerable populations, compassionate care,

and outpatient services (Prince, 1994; White, Begun, & Tian, 2006; White et al., 2010; White, Roggenkamp, & LeBlanc, 2002). In addition, the CHA has published many reports describing its member hospitals and their impact on local communities (CHA, 1991a, 1991b, 1992). For example, a 2008 issue of *Health Progress*, the official journal of the CHA, featured an article that explored how to bridge the gap between religious missions and business principles (Karam, 2008). Other strategies to retain institutions' Catholic identities have been suggested, including the improvement of work environments in ways that everyday patients could experience (O'Toole, 2008) and a close examination of collective conscience by employees to discover how they have integrated tenets of the Catholic ministry (Timm, 2012).

How Catholic hospitals compete in a growing market-oriented hospital environment remains a significant challenge, and one in which there is little empirical data to provide evidence of outcomes. A recent study did examine outcomes in terms of hospital organizational affiliation but was focused on perinatal outcomes. No statistically significant differences in outcomes were seen between Catholic not-for-profit hospitals and other ownership types (Garrido, Allison, Bergeron, & Stuart, 2012). On the other hand, a 2010 study by Thomson Reuters (Foster, 2010) of 255 hospital systems in the United States found that Catholic-operated hospitals had significantly better indicators of quality performance than investor-owned systems. Other church-owned, non-Catholic, not-for-profit facilities lagged behind Catholic hospitals as well (Foster, 2010). The recent Reuters study ranked hospitals on a set of system performance indicators, including mortality, complication and readmission rates, patient safety and quality performance measures, and HCAHPS scores. The average rank of the 36 Catholic-operated health care systems was 84 out of the 255, whereas the average rank of non-Catholic-operated systems was 129 (Morrissey, 2010). Moreover, two Catholic-operated hospital systems were ranked among the top 10 in the country in terms of quality and efficient performance (Haglund, 2010). The findings of the Reuters study (Foster, 2010) suggest that Catholic hospital leaders have been successful in aligning the management of Catholic hospitals with their specific mission of serving comprehensive health care to vulnerable populations. However, the Reuters study provided very limited data for administrators to make decisions, particularly because the methodology involved a composite of several quality indicators and only one HCAHPS measure.

Recently, patient perceptions of care have garnered the attention of hospital administrators and policymakers. One reason is that these patient ratings of their hospital experience are now publicly reported. HCAHPS measures are also a part of the Hospital Value-Based Purchasing Program instituted by the Patient Protection and Affordable Care Act that went into effect in October 2012 (Centers for Medicare & Medicaid Services [CMS], 2011). Under this program, the amount of a hospital's incentive payment from CMS will be based on its performance on a set of process and outcome measures, including patient perceptions of care. The actual incentive amount is determined by a scoring system that not only measures a hospital's achievements through benchmarking with other hospitals but also quantifies a hospital's improvements from a yearly baseline evaluation. Therefore, hospital administrators are becoming increasingly interested in the specific elements of the patient experience.

The current study was guided by the Donabedian (1988) framework for assessing the quality of health care and the extant literature on Catholic hospital outcomes in the United States as well as patient satisfaction. The Donabedian model suggests a linear relationship between three key elements: structure (capital-intensive aspects of a health system, including Catholic affiliation), process (the administration of care itself), and outcomes (discrete changes in a patient's health status, including patient satisfaction). Prior research has shown that several structural aspects of a hospital are associated with patient satisfaction ratings (Jha, Orav, Zheng, & Epstein, 2008; Kutney-Lee et al., 2009). The Donabedian model suggests that these relationships are because of differences in process or the actual delivery of health care. Our study seeks to determine if another less commonly studied structural characteristic, Catholic affiliation, might also affect patient satisfaction. Catholic health care literature cites multiple reasons why patients might be more satisfied when they are admitted for a hospital stay, including the delivery of spiritually based, compassionate health care (Keehan, 2012; Timm, 2012). Because the HCAHPS survey is a standardized effort to measure "interpersonal" aspects of the patient experience, it is an appropriate metric for comparing hospitals (CMS, 2010). In addition, the ability of the HCAHPS survey to capture "interpersonal" experiences of care makes it an ideal fit for a study of how patients might perceive care differently in an institution sponsored by the Catholic Church. Therefore, our study aimed to test the following hypothesis:

- Higher percentages of patients treated in Catholic hospitals will report more favorable experiences with their care—as measured by the HCAHPS survey—compared with patients treated in non-Catholic hospitals.

Methods

Study Design and Data Sources

Our cross-sectional secondary analysis used linked data from the 2008 HCAHPS survey, the 2008 American Hospital Association (AHA) Annual Survey, the 2008 Case Mix Index (CMI) file available through CMS, and the 2010 county-level file from the Religious Congregations and Membership Study, available publicly from the Association of Religion Data Archives (2010).

Using propensity score matching and ordinary least-squares regression modeling, we evaluated the association between patient perceptions of hospital care and Catholic affiliation in a sample of U.S. hospitals. We restricted our analysis to short-term community hospitals rather than psychiatric or other specialty hospitals.

The HCAHPS survey, overseen by CMS, is the first nationally standardized survey that provides data on patient perceptions of their hospital experience and facilitates comparisons between hospitals (CMS, 2010). Although participation is not mandatory for hospitals, hospitals that participate in the inpatient prospective payment system must collect and submit HCAHPS data to avoid a 2% reduction in their annual payment (CMS, 2006). Before public reporting, individual patient surveys are aggregated to the hospital-level and risk-adjusted for patient demographics, health status, and mode of administration (CMS, 2010). The 27 individual items on the survey are reported as 10 measures of patient perceptions of

hospital care, including six summary measures, two individual items, and two global ratings. The response rate for each hospital is also reported. HCAHPS data were retrieved for the 2008 calendar year from the Hospital Compare Web site (www.hospitalcompare.gov). The 2008 AHA Annual Survey provided data on hospital characteristics including Catholic affiliation, whereas the 2008 CMI file was used to account for hospital differences in the relative acuity of patient populations. Finally, the 2010 county-level religion census provided information of total rates of adherence for Catholics and all religious groups.

Study Variables

Outcomes—The outcomes for our study included the 10 publicly reported HCAHPS measures. These measures assessed communication with nurses, communication with doctors, responsiveness of hospital staff, pain control, communication of staff regarding medications, communication of staff regarding discharge information, quietness of the room, cleanliness of the room, overall rating of the hospital, and willingness to recommend the hospital. Moreover, we focused on the percentage of patients reporting the most favorable perceptions ("top-box") in each of these indices.

Catholic Affiliation—We designated a hospital as "Catholic" if the AHA data indicated that the hospital reported being owned or operated under a Catholic system. All other hospitals were deemed "non-Catholic."

Covariates—We included a set of covariates in both our estimation of the propensity score that we used for matching as well as in our regression analyses. We included covariates that could be related to both treatment assignment and outcome, that is, Catholic affiliation and patient perceptions of care (Rubin & Thomas, 1996). We used several covariates to characterize the size and location of the hospital, both in terms of its patient capacity and the surrounding region. These variables included the total number of beds in the institution; the population size of the region in which the hospital was located (measured by the core based statistical area); and the geographical region in which the hospital was located. We calculated various hospital characteristics, including registered nurse (RN) hours per patient day, medical house staff per bed, and adjusted percentage of beds occupied (adjusted occupancy rate based on adjusted admissions). We also computed measures to account for differences in the patient populations that hospitals served, including transfer-adjusted CMI (the average diagnosis-related group weight), Medicare utilization (Medicare days as a percentage of total patient days), and the ratio of emergency room visits to the average daily census. Because of the limitations of our data, we were unable to construct a measure for the amount of uncompensated care that hospitals provided. As a proxy for the percentage of a hospital's care provided to disadvantaged populations, we constructed a measure of Medicaid utilization (Medicaid days as a percentage of total patient days). We created a measure to control for the financial health of hospitals through payroll expenses per bed. We determined hospitals' high-technology status— here defined as the capability to perform one of several types of organ transplants or open-heart surgery—and ownership, defined as either not-for-profit or for-profit. We accounted for each hospital's HCAHPS survey response rate. Finally, we controlled for both the total rate of Catholic adherence per 1,000

residents and the total rate of religious adherence per 1,000 residents in the county in which the hospital was located, as matched by a unique state and county code.

Analytical Strategy

We dropped observations in the original cross-linked data set of hospitals (n = 3,529) if complete HCAHPS data were not present or if values for RN hours per patient day were below 1 or above 24. The population of hospitals remaining (n = 3,403) in the data set yielded a number of missing values for high-technology status (13%), CMI (11%), and rate of Catholic adherence (0.6%). We used the -mi-command in STATA to perform multiple imputations with these covariates (Allison, 2002; Rosenbaum, 2009). We specified 20 imputations to maximize efficiency while providing the most sensitive results possible, given the percentage of missing values (Bodner, 2008). t Tests and contingency tables were used to descriptively examine differences in the characteristics of Catholic hospitals (n = 494) and non-Catholic hospitals (n = 2,909).

To evaluate the association between Catholic affiliation and patient perceptions of care, we first used a propensity score approach to match Catholic hospitals to otherwise similar non-Catholic hospitals to avoid the bias associated with the collinearity of the covariates with treatment status (i.e., Catholic affiliation) and outcomes (i.e., patient reports of their hospital experience). By balancing Catholic and non-Catholic hospitals on the measured covariates, we were able to create two sets of hospitals that were extremely similar except for their Catholic affiliation. In other words, we explicitly isolated the effect of Catholic affiliation on patient perceptions of care both by using a set of hospital characteristics that could influence Catholic affiliation and patient ratings of their hospital experience and by matching Catholic and non-Catholic hospitals on these covariates. We used logistic regression to estimate a propensity score, which represented the probability that a hospital was a Catholic institution, conditional on its covariates. We tested multiple matching methods including k:1 nearest neighbor matching (with and without replacement) and optimal matching. Our matching was carried out without regard for the patient outcomes.

To select the most appropriate matching approach, we examined an array of balance diagnostics, including standardized difference in means. One-to-one nearest neighbor matching without replacement yielded the best results. All matching methods were implemented using the STATA packages -pscore- (Becker & Ichino, 2002) and -psmatch2- (Leuven & Sianesi, 2003). To combine multiple imputation with our propensity score matching approach, we followed the method suggested by Mitra and Reiter (in press) by computing a propensity score for each observation in each of the imputed data sets and then averaging for each observation across the various propensity scores. We then ran ordinary least-squares regression models for each HCAHPS outcome on this matched data set, including the independent variable of interest, Catholic affiliation, as well as all of the covariates used to produce the propensity scores.

To ensure that our findings were robust, we performed a similar set of ordinary least-squares regressions using the unmatched national sample of hospitals. We compared Catholic hospitals to non-Catholic hospitals on each of the HCAHPS measures—an “unadjusted”

regression. We then entered Catholic affiliation with all of the covariates used in our descriptive analysis and produced "fully adjusted" regression models.

Findings

Table 1 provides a summary of the hospital characteristics for the entire sample of study hospitals (n = 3,403) and the unmatched sample of Catholic (n = 494) and non-Catholic (n = 2,909) hospitals. Catholic hospitals were, on average, larger than non-Catholic hospitals (243.1 vs. 195.7 beds, $p < .001$) and were more likely to be located in metropolitan/division census tracts ($p < .001$). Over half of all Catholic hospitals (55.3%) were located in the South, whereas non-Catholic hospitals were distributed more evenly across the country. Nearly 50% of Catholic hospitals had high-technology procedure capabilities as opposed to about 30% of non-Catholic hospitals ($p < .001$). Catholic hospitals had higher payroll expenditures per bed than non-Catholic hospitals ($p < .01$). We did not observe a significant difference between Catholic and non-Catholic hospitals in terms of nurse staffing (RN hours per patient day), physician staffing (number of house staff per bed), or occupancy rate. Catholic hospitals were nearly all not-for-profit entities (99.4%) as compared with 80% of non-Catholic hospitals ($p < .001$). Catholic hospitals had slightly lower average Medicaid utilization rates (16.3% vs. 18.1%, $p < .01$) and slightly higher Medicare utilization rates as compared with non-Catholic hospitals (52.5% vs. 51%, $p < .05$). Catholic hospitals also had a significantly lower average number of emergency room visits per daily census as compared with non-Catholic hospitals ($p < .001$) and were more clinically complex as indicated by the higher average CMI ($p < .001$). Table 1 also provides the hospital characteristics for the matched sample of 494 non-Catholic hospitals. As shown by the distribution of the variables in the unmatched and matched samples, as well as the premean and postmean standardized differences, we are confident that we achieved balance on our covariates.

Table 2 shows the average scores on each of the 10 studied HCAHPS measures for Catholic and non-Catholic hospitals. Catholic hospitals differed significantly from non-Catholic hospitals on half (5 of 10) of the HCAHPS measures. The percentage of patients who reported that doctors always communicated well in Catholic hospitals was slightly lower than non-Catholic hospitals (78.7% vs. 79.3%, $p < .05$), as well as the percentage of patients who agreed that their room was quiet at night (53.5% vs. 55.3%, $p < .001$). Catholic hospitals performed significantly better on three outcomes when examining raw averages, including the percentage of patients who reported that they received discharge information from the staff, the percentage of patients who would give the hospital a "high" rating of 9 or 10, and the percentage of patients who would definitely recommend the hospital to friends and family members. The largest difference of these three measures was noted on the hospital recommendation measure where the percentage of patients who would definitely recommend the hospital was over 2% higher in Catholic hospitals compared with non-Catholic institutions (69.0% vs. 66.7%, $p < .001$). There was no significant difference between Catholic and non-Catholic affiliation on measures of nurse communication, responsiveness of hospital staff when patients wanted help, pain control, or receiving explanations about medications.

Table 3 shows the results of our unadjusted and adjusted regression models using the propensity score matched sample. The dataset produced by one-to-one individual nearest neighbor matching (n = 988) contained an equal number of Catholic hospitals and non-Catholic hospitals, including every Catholic hospital from the prematched data set. In the fully adjusted models, Catholic hospitals had significantly higher scores on half of the studied HCAHPS measures. On average, the percentage of patients who would definitely recommend the hospital, who gave the hospital a high rating, and who reported that their room was always quiet at night was about 1 percentage point higher in Catholic hospitals as compared with non-Catholic institutions ($p < .05$). The percentages of patients who reported that that nurses always communicated well and that staff provided discharge instructions were also significantly higher in Catholic as compared with non-Catholic hospitals, but by less than 1 percentage point on average.

Finally, we evaluated the effect of Catholic affiliation on HCAHPS outcomes using the full, unmatched national sample (n = 3,403 hospitals) in a set of unadjusted and fully adjusted ordinary least-squares regression models (Table 4). After adjustment for potential confounding variables in the fully adjusted models, Catholic affiliation was positively and significantly associated with five of the 10 HCAHPS outcomes. Higher percentages of patients in Catholic hospitals agreed that: nurses always communicated well, staff gave patients discharge information, and rooms were quiet at night. Scores on the two global measures of overall rating and definite recommendation were also significantly higher in Catholic hospitals compared with non-Catholic hospitals. On each of these five outcomes where Catholic affiliation was a significant predictor, the coefficients ranged from 0.48 percentage points (staff gave patients discharge information) to 1.18 percentage points (room was always quiet at night). Put otherwise, the scores of Catholic hospitals were higher than non-Catholic hospitals by about 1 percentage point on average. The lower percentage of patients who reported that doctors always communicated well in Catholic hospitals observed in the unadjusted models was no longer statistically significant in the fully adjusted model.

Discussion

Our findings revealed that patients treated in Catholic hospitals appear to rate their hospital experience similar to patients treated in non-Catholic hospitals. Catholic hospitals maintain a very slight advantage above their non-Catholic peers on some, but not all, HCAHPS measures—an increasingly used metric to measure patient perceptions of care. This study is one of the first to examine empirical patient outcomes of Catholic hospitals on a national scale using a propensity score matching approach. This method enabled us to examine the distinct effect of a hospital being Catholic on patient-reported experiences in a set of hospitals that were virtually alike in important structural and measurable characteristics, except for Catholic affiliation.

The findings from the regression models using the propensity score-matched sample partly support, but temper, the findings of the Thomson Reuters (Foster, 2010) report on the quality of 255 U.S. health care systems. In our propensity score-matched models, the largest effect associated with Catholic affiliation was noted on the measure of willingness to

recommend the hospital, where the percentage of patients who would definitely recommend the hospital was 1.08 percentage points higher in Catholic as opposed to non-Catholic institutions. Given the 10 percentage-point standard deviation on this individual measure, a 1% difference is not a large effect, although it is possible that a difference of this magnitude may equate to slightly higher reimbursement under the CMS Inpatient Value-Based Purchasing Program, which is based on both national and internal benchmarking (CMS, 2011). We also note that there were no significant differences between Catholic and non-Catholic hospitals on half of the measures studied, including communication with physicians, responsiveness of hospital staff, pain control, cleanliness of the room, and explanation of medications. Therefore, our findings suggest areas in which Catholic systems can make targeted efforts to improve their outcomes, especially on that of pain control—a key area on which Catholic health care prides itself (White, Cochran, & Patel, 2002). Overall, Catholic hospitals may perform better on more "global" measures of assessment, such as overall rating and recommendation to others. This may or may not be attributed to a greater emotional or sentimental response of patients as a result of being treated in an institution of faith; however, our data do not allow us to assess this directly.

We are confident in our results as our unmatched regression models produced very similar results to the models using our propensity score-matched sample. Even after accounting for regional and population differences that are known to affect HCAHPS ratings (Jha et al., 2008), we found a significant effect of being Catholic-owned/operated on several HCAHPS measures. In the fully adjusted models using the unmatched sample, Catholic hospitals had higher percentages of patients reporting satisfaction as compared with non-Catholic hospitals on the same five HCAHPS measures that were significant in the propensity score analysis and were related to nurse communication, receipt of discharge information, quietness of the room, overall high rating, and willingness to definitely recommend the hospital.

Our descriptive analysis also uncovered some intriguing results about the characteristics of Catholic hospitals that provide support for the idea that Catholic institutions are becoming more similar to non-Catholic providers (White et al., 2010). In this nationwide study of about 3,400 hospitals, we observed that Catholic hospitals had identical levels of nurse staffing in terms of RN hours per patient day compared with non-Catholic hospitals. In the context of the current nursing shortage, this should be an encouraging finding to Catholic hospital administrators given the importance of adequate nurse staffing to patient outcomes, including patient satisfaction (Kutney-Lee et al., 2009). Nearly half of Catholic hospitals reporting to AHA have the capability to perform high-technology procedures, such as open-heart surgery and organ transplants, as compared with one third of non-Catholic hospitals. It also appears that, on average, Catholic hospitals are caring for sicker patients, as the Medicare CMI is slightly higher than the average non-Catholic hospital. This may reflect the health status of the higher percentages of uninsured patients served by Catholic hospitals. However, we noted that Catholic hospitals served a lower proportion of Medicaid patients as compared with non-Catholic hospitals. This finding was somewhat surprising given the role of Catholic institutions in providing care for the poor and underserved (CHA, 2013; Wall, 2011) but may suggest that Catholic hospitals indeed are caring for the "poorest of the poor," those patients without Medicaid coverage or, otherwise, completely unable to pay.

Limitations

We acknowledge some limitations to our study. Although we recognize that propensity score matching cannot replicate the ability of a randomized design to derive conclusions on causal pathways, we observe that this method allows us to most closely approximate a nearly unbiased measure of the correlation between a hospital's Catholic affiliation and patient perceptions of care. Although we included as many variables as possible into our propensity score model, several important structural features of hospitals that are unmeasured in the AHA data could have been excluded. One of these potentially omitted variables is safety-net status. Social justice is a key element of Catholic health care (Keehan, 2012; The Just Workplace Task Force of the Catholic Health Association, 2012; White, 2000). Although we entered the percentage of Medicaid patients served and average annual payroll expenses, the amount of uncompensated care is not reported in AHA. Moreover, there are several intangible variables, such as hospital mission and values, for which our quantitative approach cannot account. Another unmeasured variable that could potentially introduce bias is patients' religious affiliation. That is, Catholic patients may be inclined to provide more positive ratings of Catholic hospitals. Although we did not have access to the religious affiliation of individual patients, we accounted for rates of religious adherence of the population in the county where the hospital was located. This limitation is somewhat tempered because many patients that receive care in Catholic hospitals are not Catholic (Wall, 2011). No Catholic hospital restricts service based on religious preference, and annual reports do not state patients' religious preferences. Thus, it is reasonable to assert that the proportion of Catholics to non-Catholics in a hospital is no different than the proportion in the general U.S. population, which is about 25% nationally (Center for Applied Research in the Apostolate, 2013; Wall, 2011). Finally, future work should account for nurse work environments that have been shown to have large and significant effects on HCAHPS scores (Kutney-Lee et al., 2009).

Practice Implications

In terms of the patient experience, Catholic hospitals do not appear to be distinct enough from non-Catholic institutions in today's competitive health care market. Catholic hospitals had slightly higher scores than non-Catholic hospitals on 5 of the 10 performance measures studied related to patient satisfaction but were not significantly different from non-Catholic hospitals on the remaining five indicators. Our findings are reflective of other research that has shown that isomorphism, or homogeneity, has occurred among hospitals and that Catholic hospital values do not necessarily determine the types of services provided (White et al., 2010) or, as shown in this study, how those services are perceived by patients. If the survival of Catholic health care services is contingent upon how its provision of care is distinct from non-Catholic health care, administrators of Catholic hospitals must show differences more clearly with empirical data. Given the great importance of Catholic hospitals to the health of millions of patients in the United States, this study provides Catholic hospitals with a set of targeted areas on which to focus improvement efforts, especially in light of current pay-for-performance initiatives.

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Table 1

Characteristics of Catholic and non-Catholic hospitals in unmatched and matched samples

	Unmatched sample			Matched sample	Matching statistics		
Measure[a]	**All hospitals (*n* = 3,403)**	**Non-Catholic hospitals (*n* = 2,909)**	**Catholic hospitals (*n* = 494)**	**Non-Catholic hospitals (*n* = 494)**	**Mean standardized difference: Prematching**	**Mean standardized difference: Postmatching**	**% diff**
Propensity score, mean (*SD*)	0.15 (0.12)	0.13 (0.11)	0.24 (0.12)	0.24 (0.12)	0.96	0.00	99.9
Number of beds, mean (*SD*)***	202.5 (193.2)	195.7 (195.2)	243.1 (175.9)	254.4 (238.2)	0.27	−0.06	76.2
Core based statistical area, no. (%)***							
Rural	486 (14.3)	446 (15.3)	40 (8.1)	42 (8.5)	N/A	N/A	
Micropolis	688 (20.2)	616 (21.2)	72 (14.6)	61 (12.3)	−0.19	0.06	66.3
Metropolis	1,636 (48.1)	1,350 (46.4)	286 (57.9)	292 (59.1)	0.23	−0.02	89.4
Division	593 (17.4)	497 (17.1)	96 (19.4)	99 (20.0)	0.06	−0.02	74.1
Region, no. (%)***							
Northeast	569 (16.7)	471 (16.2)	98 (19.8)	96 (19.4)	N/A	N/A	
Midwest	898 (26.4)	844 (29.0)	54 (10.9)	51 (10.3)	−0.58	0.02	96.6
South	1,254 (36.8)	981 (33.7)	273 (55.3)	285 (57.7)	0.43	−0.05	88.7
West	682 (20.0)	613 (21.1)	69 (14.0)	62 (12.5)	−0.20	0.04	80.1
HCAHPS response rate, mean (*SD*)***	32.6% (8.9)	32.3% (9.0)	34.4% (8.2)	34.4% (8.6)	0.25′	0.00	99.6
Registered nurse hours/patient day, mean (*SD*)	6.0 (2.4)	6.0 (2.4)	6.0 (2.4)	6.0 (2.2)	0.04	0.01	66.0
Medical house staff/ bed, mean (*SD*)	0.05 (0.16)	0.05 (0.17)	0.04 (0.11)	0.04 (0.11)	−0.06	0.00	97.2
Adjusted occupancy rate, mean (*SD*)	1.2 (0.45)	1.2 (0.46)	1.2 (0.41)	1.2 (0.47)	−0.02	−0.03	−41.1
Medicaid utilization, mean (*SD*)**	17.8% (12.6)	18.1% (12.8)	16.3% (11.3)	16.0% (11.6)	−0.16	0.03	83.1
Medicare utilization, mean (*SD*)*	51.2% (15.2)	51.0% (15.4)	52.5% (14.0)	52.8% (13.8)	0.11	−0.02	80.6

	Unmatched sample			Matched sample	Matching statistics		
Measure[a]	**All hospitals (*n* = 3,403)**	**Non-Catholic hospitals (*n* = 2,909)**	**Catholic hospitals (*n* = 494)**	**Non-Catholic hospitals (*n* = 494)**	**Mean standardized difference: Prematching**	**Mean standardized difference: Postmatching**	**% diff**
Emergency room visits/daily census, mean (*SD*)***	378.4 (310.1)	386.9 (313.7)	328.6 (289.1)	326.2 (304.6)	−0.20	0.01	95.9
Payroll expenses/bed, mean (*SD*)**	$271,475.34 (137,372.95)	$268,960.68 (140,297.86)	$286,269.55 (117,738.59)	$287,195.70 (133,751.09)	0.15	−0.01	94.6
High-technology status, no. (%)***	1,120 (32.9)	892 (30.6)	228 (46.2)	219 (44.3)	0.31	0.04	87.4
Unimputed	999 (34.1), *n* = 2,927	789 (31.8), *n* = 2,481	211 (47.3), *n* = 446	191 (44.0), *n* = 434			
Not-for-profit ownership, no. (%)***	2,822 (82.9)	2,331 (80.1)	491 (99.4)	489 (99)	2.48	0.05	97.9
Medicare case mix index, mean (*SD*)***	1.35 (0.27)	1.33 (0.27)	1.44 (0.24)	1.44 (0.30)	0.45	0.01	97.0
Unimputed	1.37 (0.26), *n* = 3,034	1.35 (0.26), *n* = 2,592	1.47 (0.22), *n* = 442	1.46 (0.29), *n* = 455			
Rate of Catholic adherence/1,000, mean (*SD*)***	170.7 (135.7)	163.1 (134.8)	215.2 (132.2)	224.7 (137.6)	0.39	−0.07	81.7
Unimputed	171.5 (135.3), *n* = 3,381	164.0 (134.5), *n* = 2,888	215.5(132.0), *n*=493	225.1 (137.4), *n* = 493			
Rate of total religious adherence/1,000, mean (*SD*)	503.2 (137.1)	502.4 (138.3)	507.6 (129.8)	508.2 (118.6)	0.04	0.00	92.2

[a] Significance applies to descriptives for the entire data set. Percentages may not add to 100 due to rounding.

* $p < .05$.

** $p < .01$.

*** $p < .05$.

Table 2

Distribution of HCAHPS outcomes by Catholic affiliation

HCAHPS outcome, mean (*SD*) percent of patients who reported:	All hospitals, *n* = 3,403	Catholic hospitals, *n* = 494	Non-Catholic hospitals, *n* = 2,909
Nurses always communicated well	73.5 (6.9)	74.0 (5.3)	73.4 (7.1)
Doctors always communicated well*	79.2 (5.9)	78.7 (4.4)	79.3 (6.1)
Always received help as soon as they wanted	61.3 (9.3)	60.7 (7.9)	61.4 (9.5)
Pain was always well controlled	67.8 (6.1)	67.8 (4.4)	67.8 (6.4)
Staff always explained medications	58.1 (6.9)	58.0 (5.3)	58.2 (7.1)
Staff gave patients discharge information**	80.0 (5.1)	80.9 (4.2)	79.9 (5.2)
Patient rooms were always clean	68.6 (8.2)	68.3 (7.5)	68.7 (8.4)
Room was always quiet at night**	55.0 (10.2)	53.5 (8.8)	55.3 (10.4)
A rating of 9 or 10 (high)**	63.4 (9.1)	64.8 (7.7)	63.2 (9.3)
Definitely recommend the hospital**	67.0 (10.0)	69.0 (8.6)	66.7 (10.1)

Note. *p*s were derived from analysis of variance.

* $p < .05$.

** $p < .001$.

Table 3

Effect of Catholic affiliation on HCAHPS outcomes, propensity score-matched sample (n = 988)

HCAHPS outcome	Unadjusted parameter estimate (95% CI)	Adjusted parameter estimate (95% CI)
Nurses always communicated well	0.71* (0.01, 1.41)	0.63* (0.10, 1.17)
Doctors always communicated well	0.29 (−0.31, 0.88)	0.15 (−0.32, 0.62)
Always received help as soon as they wanted	0.37 (−0.63, 1.38)	0.20 (−0.52, 0.92)
Pain was always well controlled	0.56 (−0.05, 1.18)	0.48 (−0.04, 1.01)
Staff always explained medications	0.38 (−0.31, 1.06)	0.25 (−0.29, 0.79)
Staff gave patients discharge information	0.58* (0.01, 1.15)	0.54* (0.06, 1.02)
Patient rooms were always clean	0.06 (−0.88, 1.00)	−0.04 (−0.77, 0.69)
Room was always quiet at night	1.30* (0.20, 2.40)	1.00* (0.11, 1.89)
A rating of 9 or 10 (high)	1.21* (0.19, 2.24)	1.04* (0.23, 1.86)
Definitely recommend the hospital	1.25* (0.10, 2.40)	1.08* (0.19, 1.97)

Note. Adjusted models included controls for size, core based statistical area, region, HCAHPS response rate, RN hours/patient day, medical house staff/bed, adjusted occupancy rate, Medicaid utilization, Medicare utilization, emergency room visits/daily census, payroll expenses/bed, high-technology capability, not-for-profit ownership status, Medicare Case Mix Index, and rate of Catholic and total religious adherence per 1,000 in the county of the hospital's location.

* $p < .05$.

Table 4

Effect of Catholic affiliation on HCAHPS outcomes, unmatched sample (n = 3,403)

HCAHPS measure	Unadjusted parameter estimate	Adjusted parameter estimate
Nurses always communicated well	0.55	0.65*
Doctors always communicated well	−0.59*	0.30
Always received help as soon as they wanted	−0.66	0.10
Pain was always well controlled	0.08	0.46
Staff always explained medications	−0.22	0.29
Staff gave patients discharge information	1.01***	0.48*
Patient rooms were always clean	−0.34	−0.08
Room was always quiet at night	−1.78***	1.18**
A rating of 9 or 10 (high)	1.67***	0.94*
Definitely recommend the hospital	2.30***	1.16**

Note. Adjusted models included controls for size, core based statistical area, region, HCAHPS response rate, RN hours/patient day, medical house staff/bed, adjusted occupancy rate, Medicaid utilization, Medicare utilization, emergency room visits/daily census, payroll expenses/bed, high-technology capability, not-for-profit ownership status, Medicare Case Mix Index, and rate of Catholic and total religious adherence per 1,000 in the county of the hospital's location.

* $p < .05$.

** $p < .01$.

*** $p < .001$.