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Patient Satisfaction in Academic Medical Centers

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This study compares patient satisfaction between academic medical centers (AMCs) and non-academic hospitals. This comparison has controlled for bed size, case mix, and adjusted length-of-stay. Results indicate that teaching status is a structural variable that affects patients' satisfaction with hospital care, albeit a very weak variable. In particular, patient evaluations of health care service quality in AMCs were significantly lower than those in non-teaching hospitals. It is incumbent upon AMCs to monitor patient satisfaction and benchmark the quality of their services against the entire health care industry, as well as within academic medicine. These patient satisfaction data can be used to improve the quality of the services AMCs provide and, ultimately, patients' experience of their care.

Key words: academic medical centers, teaching hospitals, patient satisfaction, patient experience, organization and administration, quality improvement

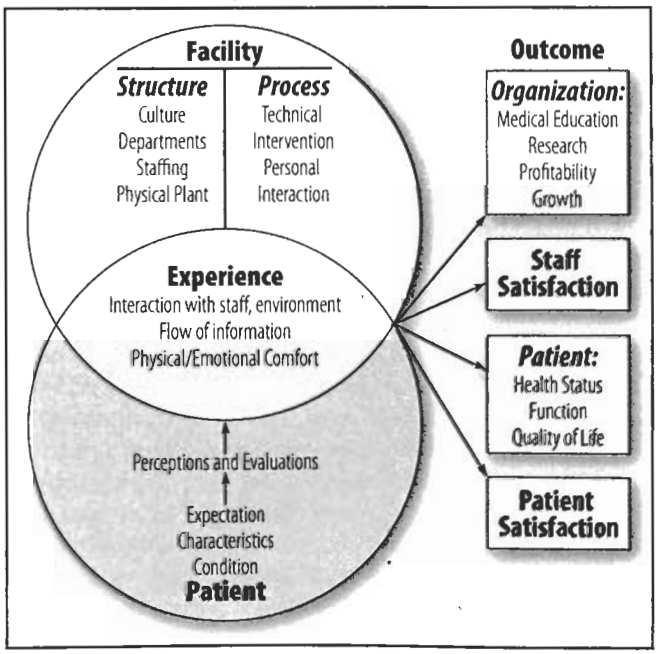
Introduction

Academic medical centers (AMCs) carry out missions of patient care, research, and teaching. Often located in large urban areas, they are expected to provide state-of-the-art care to all, including private patients from professors' practice groups and clinic patients from local underserved populations. AMCs possess a unique set of structural characteristics that differentiate them from other teaching and non-teaching hospitals. AMCs are defined by their membership in the Association of American Medical Colleges (AAMC) Council of Teaching Hospitals (CoTH). They provide clinical training for 75% of resident physicians in the U.S.[1] In addition to the distinctive social mission of medical education, research and indigent patient care remain dominant structural imperatives not typically present in non-teaching hospitals.[2]

Fusing the traditional hospital mission of patient care with the social missions of research, medical education, and serving poorer, severely ill, and clinically complex patients, academic medicine necessitates an extremely complex, multifaceted organization. This complexity manifests itself in many ways. For instance, the physician-patient interaction will often involve younger, less-experienced residents. Patients may have their case aired to a group or may be offered to students for examination. In the spirit of "see one, do one, teach one," the clinician performing an invasive treatment or diagnostic procedure may be making his or her first real-life attempt. Most disturbing to the lay patient or family member, this first attempt often means "learning by doing" wherein the patient undergoes several failed efforts before the green clinician succeeds.[3] At the macro-organizational level, factors such as culture, departments, staffing, physical plant, resources, medical staff configuration, and administration are components of structure that palpably affect the patient's experience.[4-6]

In addition to structural variables, hospital processes and the patient converge to produce clinical, financial, and quality outcomes (Figure 1).[6,7] Process variables include technical interventions, personal interaction, work flow, communication, and policies.[7-10] Measuring and improving health care processes has commanded considerable attention.[11-14] However, comparatively little is known about the effects of structure on outcomes from the patient's perspective.[15] This is particularly true for AMCs.

Figure 1
CONCEPTUAL MODEL OF
STRUCTURE, PROCESS, AND OUTCOME



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Comparisons of clinical quality find that, for common conditions (e.g., pneumonia, acute myocardial infarction) and for elderly patients, major teaching hospitals provide better clinical quality of care outcomes; yet, in other aspects (e.g., pediatrics, nursing care quality, key process measures of quality), little or no difference exists between AMCs and non-teaching hospitals.[16,17] In the past 25 years, only one study compared the patient's perspective of quality between AMCs and non-teaching hospitals. Findings revealed greater patient dissatisfaction with the experience of care among those cared for at AMCs.[18]

Since patient care constitutes one third of the AMC mission, it would seem that patient feedback would be high on the quality improvement agenda of academic medicine as an institution. Indeed, many AMCs collect and use patient satisfaction data for quality improvement, but no recently published study addresses AMC patient satisfaction nationally. One regional study compares parents' views of pediatric care in 25 AMCs to care in three nonacademic/nonteaching hospitals. Findings in this study also revealed greater dissatisfaction with AMCs.[19] Unfortunately, this study suffers from both parochialism and reliance upon the scientifically unsound Picker patient satisfaction methodologies.[20] Other recent research in academic medicine from the patient's perspective includes reports of case studies of local improvement efforts,[21,22] descriptions of national goal-setting processes,[12] and even a narrative account of a "hospitalization from Hell."[23] The paucity of broad-based studies of patient satisfaction with care in AMCs is surprising in light of the fact that being an AMC is a major determinant of a hospital's structure.

This study seeks to determine if the status of being an AMC directly affects patient satisfaction outcomes. Do the structural variables of conducting medical education and research hinder AMCs' capacities for health care service quality as reflected in patient satisfaction ratings? Do patient evaluations of the experience of care in AMCs differ from those in non-teaching hospitals?

Methods

Data Collection

We conducted a retrospective database study, drawing upon hospitalized patients' survey responses maintained in the Press Ganey national database. Press Ganey is a research firm specializing in satisfaction measurement within the health care industry; it collects and houses data for hospitals across the U.S. for the purposes of quality improvement and benchmarking. Data on hospitals were obtained from the Medicare Provider Analysis and Review (MEDPAR) dataset.[24] MEDPAR provided data on teaching status (major teaching/CoTH, minor teaching, and non-teaching), case mix, adjusted length-of-stay (LOS), acute care beds, and bed size category. In order to obtain the clearest contrast in teaching status, data from minor teaching hospitals were not included in the analyses presented here.

Patient Satisfaction Measure

All data and measures (other than those derived from MEDPAR) come from the Press Ganey Inpatient Survey. This instrument is described in detail elsewhere.[25] The conceptual model that forms its basis is the set of major components of an inpatient visit. In brief, the instrument consists of several demographic items (e.g., patients' age and gender) and 49 items that ask the responding patient to rate specific aspects of inpatient care. For each item, the patient is asked to provide a numeric evaluative rating of an aspect of care such as "Speed of the admission process," rather than to express agreement or disagreement with a statement. The items are arranged into sections that correspond to the salient parts of an inpatient stay such as Admission, Room, Nurses, Physicians, and Discharge. Items are rated on a balanced 5-point, Likert-type scale ranging from very poor (1) to very good (5). Responses are converted to a 100-point scale by a linear transformation for analysis and reporting purposes.

The Inpatient Survey is used by acute care hospitals that employ Press Ganey to provide patient satisfaction measurement services. These include 40% of all U.S. acute care hospitals over 100 beds. Simple random sampling procedures are used to determine the sample of patients to survey from each hospital. A single wave, mail-out, mail-in method is used to reduce the tendency to acquiesce to an interviewer's presumed preferences, or to present oneself in a positive light – tendencies

Table 1
SAMPLE CHARACTERISTICS

Teaching Status	n	Percent of U.S.		
AMC	147	49%		
Non-Teaching	783	17%		
Bed Size	**n**	**Percent of U.S.**	**Sample %**	**MEDPAR %**
1-149	557	16%	42.5%	50.6%
150-299	391	37%	29.8%	30.9%
300-449	170	48%	13.0%	10.4%
450-599	61	49%	4.6%	1.3%
600+	42	46%	3.2%	0.9%
Medicaid Percentage		**MEDPAR**		
Mean %	13.75	13.75		
Case Mix Index		**MEDPAR**		
Mean	1.37	1.26		
Adjusted Length-of-stay (ALOS)		**MEDPAR**		
Mean	4.37	4.07		

that can bias the results of face-to-face or telephone surveys.[26-28] Patients receive the surveys 3 to 15 days after discharge – well within the six weeks recommended by current research on reliability of patient survey responses.[29] The average return rate is 25% to 30%, which is considered an acceptable range for patient surveys 'cold' mailed (i.e., mailed without a prior, formal agreement).[30] This approach achieves a balance between cost and a representative sample of statistical significance.

Patient satisfaction data were aggregated by facility and matched to MEDPAR data by MEDPAR provider ID.

Sample

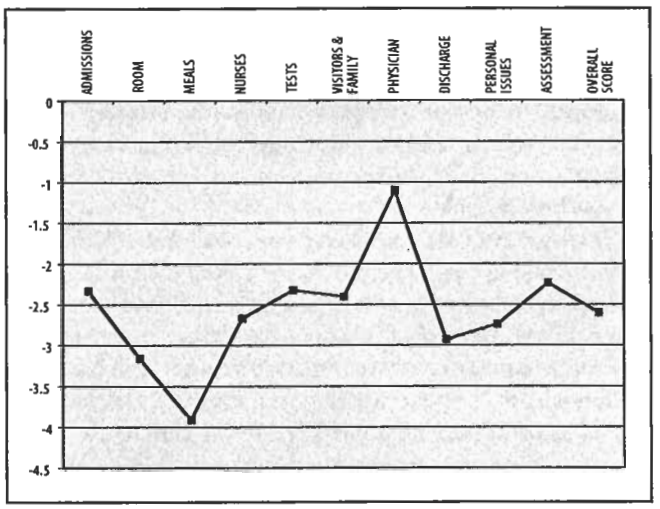
To be included in the sample, a hospital had to measure patient satisfaction using Press Ganey's Inpatient Survey in 2002. This resulted in a sample of 147 AMCs (49% of AMCs in the U.S.) and 783 non-teaching hospitals (17% of non-teaching hospitals in the U.S.). Table 1 displays the sample characteristics compared to the overall population.

Results

AMCs vs. non-teaching hospitals

Table 2 presents the patient satisfaction mean scores for AMCs and non-teaching hospitals, adjusted for bed size, LOS, and case mix. For every survey section, mean patient satisfaction with the experience of care in AMCs was significantly lower than for non-teaching hospitals. The prominent gap between patients' evaluations of hospital care in AMCs and non-teaching hospitals is illustrated in Figure 2.

Figure 2
SERVICE QUALITY GAP: MEAN DIFFERENCES BETWEEN AMCS AND NON-TEACHING HOSPITALS BY SURVEY SECTION*



**0 = score of non-teaching hospital for that section. Gap is calculated as (AMC score) – (non-teaching hospital score).*

The *t*-test was used to assess the statistical significance of mean differences. The differences in mean score ranged from –1.1 to –3.91 and were consistently significant ($p < .001$). To determine the practical significance of these differences, we estimated effect size (σ) using methods set forth by Cohen.[31,32]

Comparing AMCs and non-teaching hospitals, patients' ratings of meals showed the greatest difference in means, sig-

Table 2
DIFFERENCES IN PATIENT SATISFACTION OUTCOMES BETWEEN AMCS AND NON-TEACHING HOSPITALS, ADJUSTED FOR BED SIZE, LOS, AND CASE MIX, BY SURVEY SECTION

Survey Section	AMCs		Non-Teaching		Differences, AMCs vs. Non-Teaching		
	Mean	(SD)	Mean	(SD)	Mean diff.	t-Test*	Effect Size**
Admissions	82.15	(3.65)	84.48	(3.31)	-2.33	-43.38	0.64
Room	77.02	(3.44)	80.18	(3.47)	-3.16	-64.03	0.92
Meals	73.60	(3.69)	77.51	(3.53)	-3.91	-70.24	1.06
Nurses	84.30	(3.70)	86.97	(3.12)	-2.67	-49.36	0.72
Tests	81.98	(2.87)	84.30	(2.52)	-2.32	-70.43	0.81
Visitors & Family	82.14	(3.16)	84.54	(3.39)	-2.40	-56.75	0.76
Physician	85.69	(2.87)	86.78	(2.74)	-1.10	-32.60	0.38
Discharge	80.90	(3.05)	83.83	(2.62)	-2.93	-78.95	0.96
Personal Issues	80.56	(3.61)	83.30	(3.16)	-2.74	-52.54	0.76
Assessment	84.69	(3.79)	86.92	(3.38)	-2.23	-38.78	0.59
Overall Score	81.20	(3.10)	83.80	(2.72)	-2.60	-67.73	0.84

*Adjusted for bed size, LOS, and case mix

**Effect size expresses mean differences in standard deviation units. An effect size of 0 is no difference; 0.2 is small, 0.5 medium, and 0.8 large.

nificance, and effect size (σ = 1.06.) Patients rated physicians in AMCs only slightly lower than in non-teaching hospitals, showing a statistically significant difference, but a small practical difference (σ = 0.38.) Meals, discharge, room, tests and treatment, and overall patient satisfaction among AMCs present what Cohen considers "large" differences (σ > 0.80) below the performance of non-teaching hospitals.

Multivariate regression analysis controlling statistically for bed size, case mix, and LOS revealed that teaching status accounts for a significant amount of the variance in patient satisfaction ratings (Table 3). However, the relatively small amount of variance it accounts for on overall patient satisfaction (R^2 = 0.142) and for each of the subscales (R^2 ranging from 0.074 to 0.187) indicates that teaching status, alone, does not entirely determine patients' perceptions of service quality in hospitals.

Table 3
MULTIVARIATE LINEAR REGRESSION ANALYSIS: PREDICTIVE VALUE OF TEACHING STATUS ON PATIENT SATISFACTION CONTROLLING FOR BED SIZE, ALOS, AND CASE MIX, BY SURVEY SECTION.

Survey Section	R^2	Adjusted R^2*
Admissions	0.119	0.115
Room	0.133	0.129
Meals	0.191	0.187
Nurses	0.118	0.114
Tests & Treatment	0.126	0.122
Visitors & Family	0.086	0.083
Physicians	0.078	0.074
Discharge	0.149	0.146
Personal Issues	0.113	0.110
Overall Assessment	0.094	0.090
Overall Score	0.146	0.142

* All adjusted R^2 values were significant, $p < .001$

Discussion

To summarize the findings: (1) Compared with non-teaching hospitals, patient satisfaction with care at AMCs falls short. On *every* section of the Press Ganey Inpatient Survey, ratings from patients cared for at AMCs were significantly lower than those cared for at non-teaching hospitals. Expressed in terms of effect sizes, the differences ranged from small (physicians) to medium (admissions, nurses, visitors and family, personal issues, and assessment) to large (room, meals, tests, discharge, and overall score). (2) Multiple regression analyses revealed that teaching status accounts for a relatively small portion of the total variance in patient satisfaction ratings. Clearly, some AMCs are generating positive experiences for their patients.

Nonetheless, these results validate what some critics of AMCs have been arguing for years. In AMCs, patient satisfaction with care remains secondary to research and teaching.[33,34] Current data suggest where the service gaps lie. The service gap for physicians (including trainees) is, in absolute terms, small. Working under conflicting goals and in a challenging environment,[35-37] residents and attending physicians are providing care that is rated relatively favorably. Other departments of AMCs, especially those responsible for "amenity" issues (housekeeping for rooms; dietary for meals) are rated relatively poorly compared to non-teaching hospitals. Although typically given sparse attention, amenities rank as patients' penultimate concern, after survival. Everyone – patient, family, and clinician – desires patients' full recuperation, yet overcoming pain and suffering can be challenging in an uncomfortable and disheartening enviroment. These areas present multiple opportunities for service improvement. Just as AMCs diagnose and treat the most complex illnesses, AMCs also must improve meeting complex patient needs for amenities, emotional/spiritual support, psychosocial care, and continuum of care activities.

These service quality gaps allude to the need for fundamental changes. The current competitive landscape threatens the traditional AMC mission and business model.[38] Distinctive components of AMCs' mission have become endangered as forces threaten basic operating principles. "Academic medical centers are now in the For-Profit Era."[39] Traditionally, AMCs traded on their prestigious reputations to attract patients, but in many markets, suburban community hospitals have rapidly built excellent reputations for clinical quality and patient amenities.[40] Competition has become a global affair, with patients with complex illnesses willing to travel great distances and incur significant expense to obtain care perceived as the best.[41] Financial pressures of the past decade continue unabated, resulting from reduced clinical revenue available for the academic mission,[42] the Balanced Budget Act of 1997,[43,44] and looming reductions in state and federal Medicaid budgets.[45] As a result, many AMCs have curbed resources for education to favor research productivity and reenergize clinical practice.[46] In the future, further reductions in public payer funding for AMCs' social and medical education missions will test AMCs' ability to compete and continue these functions.[43,47]

In lieu of abandoning their social, research, or educational mission, AMCs have attempted to adapt. Strategies AMCs deployed to survive and thrive in this environment include selling the AMC to larger for-profit systems,[48] horizontal integration,[49] and management and structural reforms.[50] Unfortunately, many of these adaptive strategies failed.[51] To date, a strategic focus on patient satisfaction with the experience of care has not emerged as a comparably noteworthy trend in the administration of AMCs.

Undeniable challenges face AMCs today, including financial distress, staff shortages, and infrastructure problems. To meet these challenges and maintain traditional missions,

AMCs must recommit themselves to improving patient care, especially service quality.[52] Not simply because it is the "right thing to do," but for survival. AMC patients continue to select among teaching and non-teaching hospitals using the same fundamental criteria: location, advice of family/friends, and dissatisfaction or satisfaction with prior experiences of care.[53] A commitment to high-quality health care and improving service to the patient offers a common ground for all stakeholders – clinicians, administrators, payers, and regulators.[54] Because patient satisfaction positively relates to numerous clinical and financial outcomes, this study should serve as a reality check for those responsible for the quality of patient care in AMCs.

Limitations

The study is limited by the selection of participating facilities. Although they represent a broad array of AMCs and non-teaching hospitals and, because of their participation in patient satisfaction measurement efforts, are more likely to value quality improvement as an organizational goal, the fact remains that the hospitals in the Press Ganey national inpatient database are not a random selection of all U.S. hospitals nor are the patients seen in each of these facilities equivalent. In particular, hospitals with fewer than 100 beds are underrepresented while larger hospitals are overrepresented. In addition, the sample reflects a more complex case mix and a longer ALOS. On the other hand, with 32% of all U.S. hospitals included, the Press Ganey inpatient database is the largest and most comprehensive and representative repository of patient satisfaction from inpatient settings available.

A second limitation stems from "confounding" variables. AMCs and non-teaching hospitals differ in ways not captured by bed size, ALOS, and case mix. For example, patients of AMCs are more likely to be away from home and without their usual family supports; such circumstances might diminish satisfaction regardless of the structure of the treating hospital. Additional confounders are geographical location, patient demographics, and culture. Whether the inclusion of such variables would diminish the differences found or otherwise alter the pattern of results remains an open question.

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