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Patient perceptions of quality in discharge instruction

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Abstract

The present study investigates patient perceptions of the quality of discharge instruction by assessing inpatients' ratings of care and service in the United States over the past 5 years (1997–2001) ($n = 4{,}901{,}178$). As expected, patients' ratings of ''instructions given about how to care for yourself at home'' showed a strong, consistent positive relationship with overall patient satisfaction from 1997 through 2001. Nevertheless, patient satisfaction with discharge instructions decreased significantly each year ($p < 0.001$). Patients gave lower ratings to the quality of discharge instruction than to the overall quality of their hospital stay which indicates a failure to match the quality delivered among other services within the hospital. Patient assessments of discharge instruction quality varied systematically among conditions. Patients with musculoskeletal diseases and disorders (MDC-8) rated discharge instruction considerably lower than all other patient groups. Patients' age, sex, self-described health status and length of stay did not predict patients' evaluations of discharge instructions. U.S. hospitals may not be meeting existing AMA and JCAHO standards for patient education and discharge.
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Keywords: Patient satisfaction; Patient discharge; Patients; Health services; Patient education

1. Introduction

1.1. What quality of service do patients want and receive?

''Patients want to be taken seriously both as patients and as real people whose family and social and economic lives have been threatened or disrupted by the medical problem and by the isolation and disorientation of hospitalization'' [1].

Discharge from the hospital represents a serious and complex transition in patients' lives. Patients and their families begin to cope with the repercussions of illness in their daily life absent the comprehensive support of nurses and physicians. The stress and anxiety involved only serve to intensify patients' needs for information, education and reassurance. This information is critical to the patient's welfare; nineteen percent of patients have adverse events after discharge [2].

Recent studies have substantially increased the body of knowledge and understanding of patients' informational and educational needs in preparation for discharge [3–11]. Patients desire information on follow-up, home care, symptom management, pain management and coping with potential health problems [5–7]. Patients want specific written information and resources on follow-up and community services [6,10], pain treatment [6,11], and life activities [6] (e.g., ''What could or could not be done'' [10]). In fact, Gustafson et al. [8] found that information and support needs of patients outweighed care delivery needs and any service concerns.

Despite the value and demand for this information, between 27 and 80% of patients do not receive the desired amount of information [7,9,12]. In addition to general informational needs, clinically related educational needs are also slipping through the cracks. Rowe et al. [13] surveyed patients following a stay of 5 days or less revealing that over 50% of these patients failed to receive information on ''side effects,'' ''recovery at home'' or ''community health services''. Jones et al. [14] found that 81% of patients

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needing assistance with basic functional needs failed to receive home care referrals and 64% of these patients reported that no one at the hospital had talked to them about ''managing at home''. A postdischarge follow-up study found that 50% of patients dependent upon others for basic functional needs failed to receive home care referrals [15]. In a recent study by Bowles et al. [16], more than 56% of patients discharged did not receive a home care referral despite being screened into the study on the basis of this need and being at risk for poor discharge outcomes—96% of these patients had unmet discharge needs. Such studies confirm observations that, as a side effect of U.S. health care consumerism, patients and families have assumed greater direct responsibility for their own care; care which is often complex and dangerous [17].

Patients' postdischarge care needs, usually undertaken by families, range from errands and household chores to basic, functional needs (e.g. bathing, getting dressed, etc.) to nontrivial medical needs (e.g. changing dressings, wound care, help with physical therapy regimens, etc.) [18]. The majority of caregivers care for patients' personal needs following hospitalization, and three-fourths assume responsibility for five or more tasks (e.g. preparing meals, administering medication, etc.) [19]. Caregivers frequently do not feel adequately prepared to assume these responsibilities [20].

Patients and families who do receive hospital discharge planning, counseling, home care referrals and other social interventions often do not find these interventions beneficial [21,22]. Posthospital needs for care, assistance and information (e.g. activity limitations) persist [23,24], discharge plans are not implemented as planned [25], and home care services deviate from discharge plans or unexpectedly terminate within a few weeks after discharge [26]. Nurses routinely underestimate patients' needs at discharge, overestimate the quality and amount of education and information provided and fail to discern the same needs that patients and caregivers find important [27–29].

In short, patients and caregivers want information on what to expect, how to manage, when and where to get help, education on their illness and recovery, counseling, continuity of care and involvement in discharge preparation and decision making.

1.2. Research questions

Previous research has explicated patients' needs for discharge instructions—we know what patients want. In addition to this knowledge, practitioners are guided by the American Medical Association and the Joint Commission on Accreditation of Healthcare Organizations which provide

Table 1
Summary of JCAHO Standards for patient education and AMA Standards for discharge

Joint Commission Standards	
No.	Standard
PF.1	An assessment of the patients' learning needs, abilities, preferences, and readiness which considers culture, religion, emotional barriers, desire, motivation, physical and cognitive limitations, language barriers and financial implications (for the patient) and includes: • medication use education; medical equipment use education; information on drug-food interaction and counseling on nutrition; techniques to help patients adapt and function independently; information on community resources; • information on when and how to obtain any further treatment potentially needed; • elucidate to patients and families responsibilities for ongoing health care needs and the knowledge and skills to carry them out; • education and help maintaining good hygiene.
PF.2	Patient education is interactive.
PF.3	Provide discharge instructions to the responsible caregiver in addition to the patient or family.
PF.4	The hospital plans, supports, and coordinates activities and resources for patient and family education—including provision of all resources required and that this education process be collaborative and interdisciplinary.
American Medical Association Standards	
No.	Standard
1	Discharge criteria should be based on data from assessments of physiological, psychological, social and functional needs.
2	An interdisciplinary team is necessary for comprehensive planning to meet the patient's needs.
3	Early assessment and planning should be organized so that necessary personnel, equipment or training can be arranged in time for discharge.
4	Postdischarge medical care requires arrangements (before discharge) for easy access to continuing physician care.
5	Patient and caregiver education in meeting postdischarge patient needs should occur prior to discharge. Patients and caregivers should be able to demonstrate their understanding and ability to meet the care needs before discharge.
6	Coordinated, timely and effective communication between all health professionals, caregivers and the patient is essential and should be well established before discharge.

comprehensive standards for a quality discharge process, patient education and continuity of care (Table 1) [30,31]. But do these standards result in discharge instruction that patients assess as high-quality relative to overall perceptions of health care service quality? What aspects of the hospital experience are linked to satisfaction with discharge instruction? Do patients with different conditions experience discharge instruction differently? Do any demographic variables (e.g. age, sex, self-described health status and length of stay) predict patient satisfaction with discharge instruction? Do patients perceive discharge instruction differently than information giving? To date, no study has investigated patients' assessments of the quality of discharge instruction currently being delivered on a national level.

The present cross-sectional study investigates patients' satisfaction with instructions on home care at discharge in the United States over the past 5 years (1997–2001) to reveal common perceptions, establish a national benchmark and to detect any trends. Establishment of benchmarks and identification of trends in health care quality will be of interest to public health officials, especially in light of the possibility of a government-mandated patient satisfaction survey [32–34]. Understanding patient perceptions will help practitioners structure discharge instruction towards optimizing the outcome of patient satisfaction.

Patient satisfaction is an outcome of quality care [35,36] and a precise measure of service quality in health care [35,37–40]. The ratings method (e.g. Likert-type scales) of measuring patient perceptions' of the hospitalization experience allows the patient to evaluate quality in relation to the patients' own needs, not an imposed standard [41]. Therefore, patient satisfaction can reflect changing consumer values, quality of care and service quality at the national and local levels.

A previous Health Care Advisory Board (HCAB) study of overall inpatient satisfaction using the identical methods and a similarly large national dataset revealed a stable equilibrium across several years [42]. Patients' expectations for service and quality likely have increased in tandem with hospitals' improvements. The overall level of patient satisfaction was expected to remain unchanged between 1997 and 2001 and for patients' evaluations of discharge instructions to remain similarly steadfast.

2. Methods

2.1. Overview

Data were obtained from the Press Ganey national databases and represent 33% of all U.S. hospitals and 44% of all U.S. hospitals over 100 beds. Press Ganey, a research firm specializing in satisfaction measurement within the healthcare industry, collects and houses data for hospitals across the U.S. for the purposes of quality improvement and benchmarking. Hospitals partner with Press Ganey to measure patients' perceptions of their health care experience. All facilities either survey all discharged patients or a random sample of patients. The methods detailed here have been applied to assess service quality and patient satisfaction on national and local levels across a variety of settings [41,43–46].

The standard survey includes 49 questions in 10 separate sections covering the complete hospitalization experience from admissions to discharge. The instrument employs a 5-point Likert-type response scale—(1) very poor, (2) poor, (3) fair, (4) good, (5) very good. Cover letters accompany the survey. The exact wording of the letter varies by hospital but all are subject to two explicit standards to ensure data quality: (a) no persuading comments, e.g. "Thank you for helping us... as we strive for 5's" and (b) no inclusion of the phrase "very good" or reference to "5" or "five" anywhere on letter.

2.2. Development of the survey instrument

The Press Ganey Inpatient Survey was originally constructed in 1987 and revised in 1997. The revision strengthened its effectiveness as a measure of patients' perspectives, experience and evaluations and improved the utility of the data for hospitals' quality improvement efforts. Focus groups and structured interviews with inpatient facilities across the country were conducted for each initiative. Patients, direct care providers, and administrators using the data for quality improvement purposes were consulted. These panels reviewed prototype questionnaires and provided feedback throughout the development, testing and revision of the instrument. Comprehensive literature reviews of existing patient surveys informed these efforts.

The conceptual model underlying the survey is well-grounded in reality. It follows the typical experiences a patient usually encounters during a hospital stay. Events that occur, (admission, meals, tests or treatments, discharge); personnel encountered (nurses, physicians and technical staff); the physical surroundings (room and hospital) and the psychosocial aspects of the stay were found to be principal contributors to the patient's experience of care.

2.3. Psychometrics

The instrument was developed using standard psychometric and scaling criteria. To insure that there was sufficient variation in responses, response patterns were evaluated for each question. Several tests of validity and reliability run on the present sample confirmed the findings reported in Kaldenberg et al. [41]. A principal components factor analysis with correlated factors was conducted to identify the underlying dimensions among the set of questions which resulted in a dimensional structure that naturally organizes questions into meaningful subscales (Table 2). Internal consistency of the scale as a whole and each subscale

Table 2
Principal components factor analysis [41]

	Dimensions								
	Nursing	Physician	Room	Tests	Admission	Discharge	Meals	Visitors	Personal
Admit speed					0.88				
Admit courtesy					0.77				
Pre-adm process					0.86				
Room décor			0.76						
Room cleanliness			0.79						
Clean courtesy			0.65						
Room temperature			0.69						
Noise level			0.70						
Working TV, etc.			0.56						
Diet information							0.68		
Food temperature							0.87		
Food quality							0.89		
Server courtesy							0.52		
Nurse friendly	0.83								
Nurse prompt	0.78								
Nurse attitude	0.87								
Nurse attn needs	0.83								
Nurse inform	0.75								
Nurse skill	0.78								
Wait time									
Comfort concern				−0.49					
Explained T&T				−0.47					
Skill of pers.				−0.79					
Courtesy of pers.				−0.76					
Skill I.V. pers.				−0.79					
Courtesy I.V. pers.				−0.76					
Help info desk								−0.83	
Comfort visitors								−0.85	
Staff attitude								−0.83	
Family/treatment								−0.70	
Physician time		0.87							
Physician concern		0.94							
Physician info		0.93							
Physician courtesy		0.91							
Physician skill		0.80							
Ready discharge						−0.71			
Discharge speed						−0.73			
Discharge instruction						−0.70			
Arrange home serv						−0.76			
Privacy									−0.43
Sensitivity to inconvenience									−0.50
Pain management									−0.45
Emotional needs									−0.57
Response to concerns									−0.51
Involved treatment dec									−0.53

Principal component analysis: oblique rotation method with Kaiser normalization. Overall items excluded from analysis; factor loadings less than 0.40 are suppressed.

identified in the factor analysis was evaluated with reliability testing. Cronbach's alpha for the whole scale was $\alpha = 0.98$ and ranged from $\alpha = 0.84$ to 0.95 for the individual subscales (Table 3). Finally, an analysis of correlations was conducted to evaluate convergent (within scale) validity and discriminant (between scales) validity. Items in each subscale correlated with the other items in that subscale, (exceeding the recommended "item to total" correlation of 0.30), confirming that the items within each scale were measuring the same dimension. To illustrate, for the discharge section, the average corrected item-scale correlation (which removes the question being analyzed to avoid artificial inflation through perfect self-correlation) was 0.73 with a range from 0.69 to 0.80. Equally important, items in each subscale also correlated more highly with their own subscale than with any other subscale, confirming that each subscale was measuring a separate dimension. To illustrate, for the discharge section, the average item-nonscale correlation was 0.45 with a range from 0.31 to 0.63. The results of these psychometric analyses establish the instrument as a reliable and valid measure of patient satisfaction in the inpatient setting.

Table 3
Item analyses and reliability estimates [41]

Scale	Alpha	Average corrected item-scale correlations	Range of corrected item-scale correlations	Average item-nonscale correlations	Range of item-nonscale correlations
Admission	0.88	0.77	0.71–0.81	0.43	0.34–0.53
Room	0.84	0.62	0.56–0.73	0.40	0.28–0.54
Meals	0.84	0.68	0.62–0.75	0.40	0.26–0.53
Nurses	0.95	0.85	0.80–0.89	0.51	0.35–0.73
Tests and treatments	0.91	0.72	0.59–0.79	0.46	0.31–0.62
Visitors and family	0.90	0.78	0.74–0.83	0.51	0.37–0.67
Physician	0.95	0.86	0.80–0.91	0.43	0.29–0.53
Discharge	0.87	0.73	0.69–0.80	0.45	0.31–0.63
Personal issues	0.94	0.81	0.72–0.85	0.56	0.76–0.38
Overall assessment	0.94	0.87	0.82–0.90	0.59	0.45–0.77

2.4. Data collection and sample characteristics

Questionnaires were mailed immediately following a patient's discharge from acute-care facilities. Patients received the surveys well within the 6-week time frame recommended by Bredart et al. [47] and typically within 15 days from discharge. Data from questionnaires returned to the research firm between January 1, 1997, and December 31, 2001 ($n = 4{,}901{,}178$) were analyzed. The sample was drawn from 1290 acute care facilities across all 50 states and the District of Columbia. Each facility sampled patients using standard random sampling procedures or conducted a census. Repeat patients within one quarter, deaths and newborns were excluded from the samples. The standard survey does not collect data on race, ethnicity or culture. All available demographics are presented in Table 4. A second sample with analogous demographics was drawn for analysis by condition ($n = 175{,}927$). To be included in this sample, the data had to include codes for Diagnosis Related Group (DRG), each DRG had to meet a minimum of 30 cases, and the survey had to be collected between January 1, 1997 and December 31, 2001.

2.5. Response rate and nonresponse bias

The response rate for the sample is estimated at 25–30%, a range considered good practice for this kind of survey research [48]. Nonresponse bias occurs when the responses from nonrespondent and respondent groups differ—nonresponse in and of itself does not indicate biased data [49]. A study of the characteristics of inpatient respondents and nonrespondents found that although certain characteristics were associated with lower response rates (men, nonmarried, very young and very old, no insurance or Medicaid, African American and Hispanic) these groups mirrored other research on response tendencies to mail surveys and did not differ in their ratings of care [50,51].

2.6. Data interpretation and measurement

The overall patient satisfaction score implicitly indexes global satisfaction and is calculated by averaging the ratings for all individual survey items by each section to determine a section mean score. Then, all section mean scores are averaged to determine the overall patient satisfaction score. To improve data interpretation and analysis of score variation, the 1–5 scale is converted using a linear transformation to a 0–100 score where (1) very poor = 0, (2) poor = 25, (3) fair = 50, (4) good = 75 and (5) very good = 100. This degree of measurement is sensitive enough to detect small changes in patient satisfaction [41]. This is important because small changes can result in large movements in national and state rankings.

2.7. Outcome measures

The previously mentioned psychometric research shows that patients perceive the discharge process as a distinct episode of care. This episode is measured with four questions, "Extent to which you felt ready to be discharged," "Speed of discharge process after you were told you could go home," "Help with arranging home care

Table 4
Sample demographics

Age distribution						
Children (0–12)	Adolescents (13–17)	Young adults (18–24)	Adults (25–39)	Middle aged (40–64)	Elderly (65–74)	Advanced elderly (>75)
3.07%	1.20%	5.14%	19.71%	29.65%	19.40%	21.83%

Self-described health status distribution				
Very poor	Poor	Fair	Good	Very good
2.2%	6.8%	22.1%	43.3%	25.7%

Male: 38.2%, female: 61.8%, first stay at this hospital: 45.9%, admission was unexpected: 52.7%, admitted through ER: 46.5%, mean age: 54.62.

services (if needed),'' and ''Instructions given about how to care for yourself at home.'' The latter measure assesses patients' perceptions of the instructions provided about caring for themselves after discharge. These instructions may focus on dietary and treatment regimens, medications and their side effects, danger signs to watch out for, when to resume normal activities, and when to return to work. Does the patient feel adequately prepared, educated and confident in caring for themselves? Or does the patient have unmet needs, unanswered questions and an absence of the requisite knowledge to care for themselves?

3. Results

3.1. Patients' assessments of quality of discharge instructions for care at home

Table 5 presents annual patient satisfaction mean scores from 1997 though 2001 for the questions ''Instructions given about how to care for yourself at home'' and ''Overall rating of care given.'' A strong, consistent positive correlation existed between ''Instructions given about how to care for yourself at home'' and the overall calculated mean score for patient satisfaction each year from 1997 through 2001. This correlation indicates that patients who view the discharge information more favorably are also likely to report higher overall patient satisfaction in general.

Patients' ratings during the final year of the sample (2001) were aggregated to produce one score for each of the acute care facilities reporting that year ($n = 1136$). The aggregated mean for all facilities ''Instructions given about how to care for yourself at home'' was 84.4 with standard deviation of 3.4. Aggregate mean scores for each facility in 2001 ranged from 60.00 to 96.43 (Fig. 1). This considerable variation indicates the existence of substantial quality improvement opportunities and demonstrates that patients' evaluations are not universally positive.

Nationally, patients were less satisfied with discharge instructions for care at home than with the overall quality of care each year and across the 5-year period ratings of discharge instruction declined more than ratings of overall quality with a total five-year score decrease of 1.34 [$t(1{,}748{,}596) = 25.5$; $p < 0.001$] compared to a decline of 0.33 [$t(1{,}748{,}596) = 6.37$; $p < 0.001$] in ''Overall rating of care given'' along the same time period (Fig. 2). Previous research leads one to expect little change in patients' evaluations within such a large dataset and national scale [42]. Using the method set forth by Cohen [52,53], we calculated the expected effect size based upon this previous study ($\gamma = 0.005$). Contrary to expectations, the observed effect size was more than ten times greater than expected ($\gamma = 0.06$). The observed effect size is small using standard psychological conventions, however Cohen [53] and Howell [54] admit these conventions to be arbitrary and recommend the adjustment of gamma based upon the expected effect size. Finally, a recalculation of effect size considering the statistical power of our observations determined $ES = 1.00$ ($\alpha = 0.0001$) indicating a robust level of sensitivity [55]. We consider the observed decrease to be of moderate significance in both the statistical and practical senses.

3.2. Patient perceptions

Beyond showing strong internal consistency, the Cronbach's alpha ($\alpha = 0.87$) for the discharge section also demonstrates the patient's view of the discharge process as a distinctive episode which would lead one to predict that the most highly correlated items will be the measures of the discharge process within the discharge section. Table 6 displays the responses most correlated with discharge instructions for care at home: ''Help arranging home care services (if needed)'' ''Staff effort to include you in decisions about your treatment,'' ''Speed of discharge process after you were told you could go home,'' ''Staff sensitivity to the inconvenience that health problems and hospitalization can cause,'' ''Extent to which you felt ready to be discharged,'' and ''Response to concerns/complaints made during your stay.'' Higher scores on these questions were associated with higher scores for the home self-care discharge instructions item.

Inclusion in decision making, staff sensitivity and response to concerns and complaints were three measures which correlated highly with discharge instructions and

Table 5
National patient satisfaction data, 1997–2001

	1997		1998		1999		2000		2001	
	Mean scores	S.D.	Mean scores	S.D.	Mean scores	S.D.	Mean scores	S.D.	Mean scores	S.D.
''Instructions given about how to care for yourself at home''	85.7	20.5	85.4	20.5	85.0	20.7	84.7	20.8	84.4	21.0
''Overall rating of care given''	87.4	18.9	88.2	18.3	87.7	18.9	87.2	19.1	87.1	19.4
N	180,542		1,035,637		1,210,044		906,902		1,568,053	
''Instructions given about how to care for yourself at home''—correlation with overall patient satisfaction score (Pearson's *r*)	0.71		0.70		0.69		0.69		0.69	

$P < 0.001$ (two-tailed test of significance).

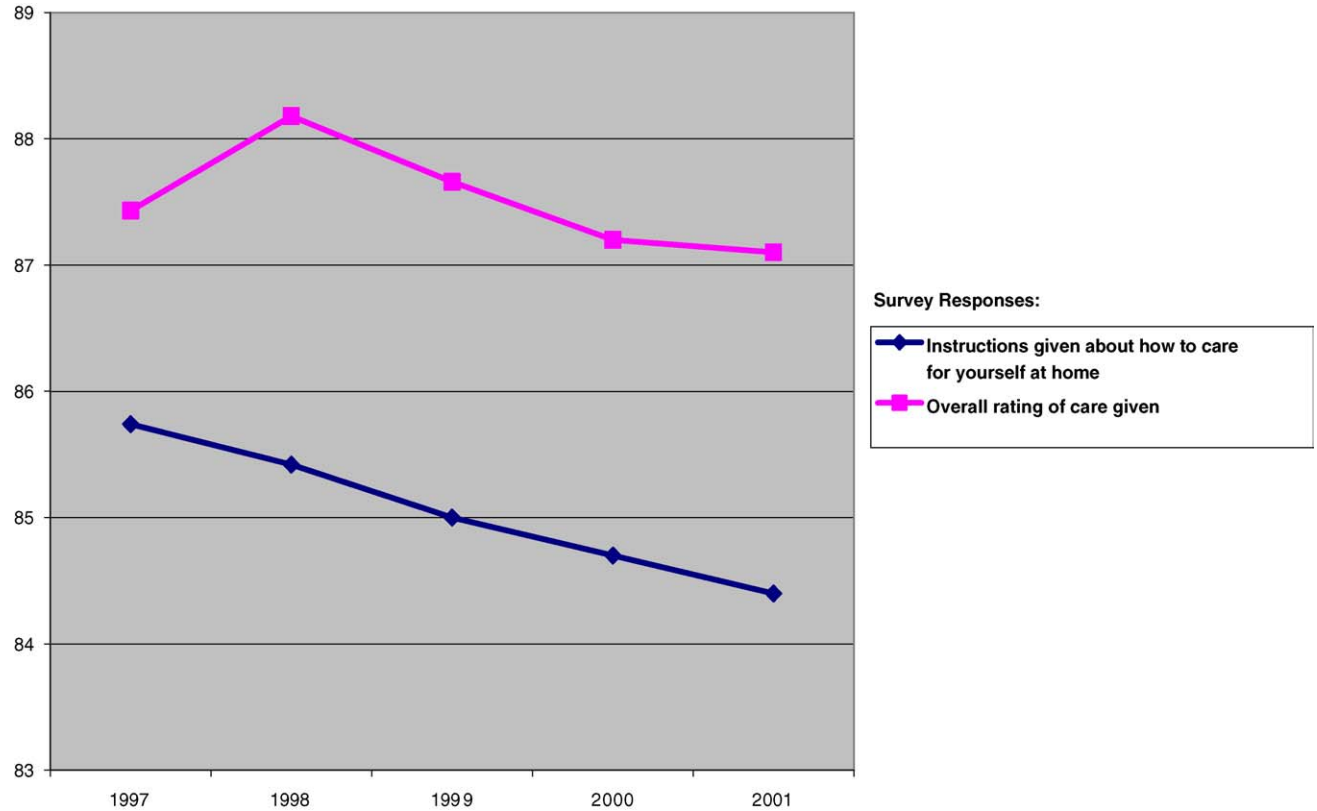

Fig. 1. National patient satisfaction mean scores, 1997–2001.

likely indicate components of discharge instructions considered important to patients (Table 6).

One might hypothesize that education provided earlier in the hospital stay would influence patients' satisfaction with discharge instructions about self-care. Yet, relatively mild correlations (i.e. correlations less than 0.55 not displayed in Table 6) were found between patients' satisfaction with discharge instructions for care at home and measures of information provision. This demonstrates that the perceived demarcation between the preparation for discharge and care at home versus general patient education, suggesting that meeting patients' information needs throughout

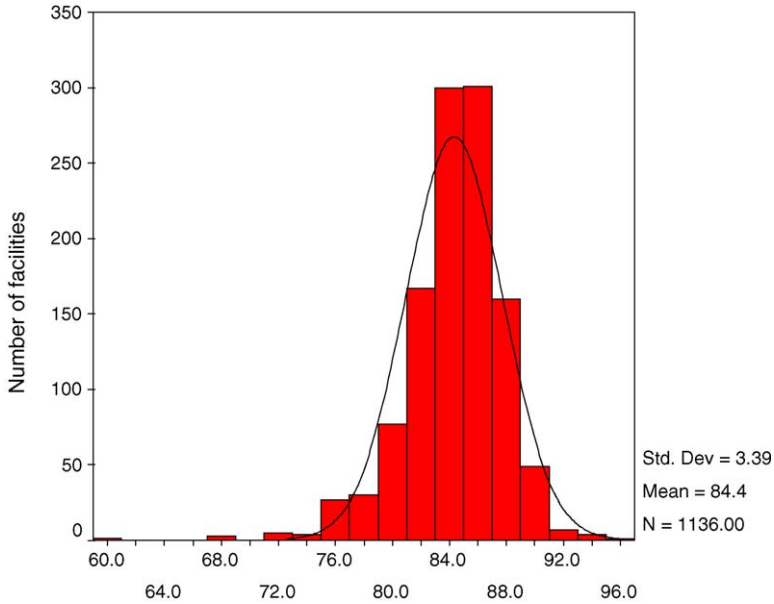

Fig. 2. Overall patient satisfaction, 2001.

Table 6
Survey responses well-correlated ($r > 0.55$) with "Instructions given about how to care for yourself at home" (2001 National Inpatient Database)

Question	Pearson's r	n
Help arranging home care services (if needed)	0.71	709,479
Staff effort to include you in decisions about your treatment	0.58	1,264,187
Speed of discharge process after you were told you could go home	0.56	1,548,330
Staff sensitivity to the inconvenience that health problems and hospitalization can cause	0.55	1,358,042
Extent to which you felt ready to be discharged	0.55	1,521,920
Response to concerns/complaints made during your stay	0.55	1,266,114

$P < 0.001$ (two-tailed test of significance).

hospitalization will not necessarily result in satisfaction with information and education provided at discharge. In comparing the relationships between individual survey items and the question regarding discharge instructions for care at home, "How well nurses kept you informed" ranked 10th (i.e. nine other responses were more highly correlated with "Instructions for care at home") ($r = 0.53$), "Information given your family about your condition and treatment" ranked 14th ($r = 0.51$), and "How well physician kept you informed" ranked 19th ($r = 0.47$). A health care team effective in providing patients and families with information throughout the hospitalization experience is unlikely to automatically satisfy patients' needs in the discharge process.

3.3. Analysis by condition

Analysis of patients' assessments by DRG differed significantly from the overall mean, ranging from 73.90 to 97.22 (minimum $n = 30$). Table 7 presents the forty conditions with the lowest means with each condition highlighted in different colors by Major Diagnositic Category (MDC). Whether considering the lowest mean scores (five of six) or greatest statistical difference (six of eight) from the mean, "Diseases and Disorders of the Musculoskeletal System" (MDC-8) appears more frequently than patients with the most severe, traumatic or complicated conditions. The eight conditions of greatest statistically significant difference from the mean, ordered by statistical significance, were "Hip and femur procedures except major joint reattachment" (DRG-210, MDC-8) [$t(176{,}302) = -4.03$, $p < 0.001$], "Psychoses" (DRG-430, MDC-19) [$t(176{,}230) = -3.85$, $p < 0.001$], "Signs & symptoms of musculoskeletal system & conn tissue" (DRG-247, MDC-8) [$t(176{,}244) = -3.40$, $p < 0.001$], "Seizure & headache age > 17 w/cc" (DRG-24, MDC-1) [$t(176{,}230) = -3.39$, $p < 0.01$], "Hip & femur procedures except major joint age 0–17" (DRG-212, MDC-8) [$t(175{,}998) = -3.22$, $p < 0.01$], "Fx, sprn, strn, & disl of eparm, lowleg ex foot age > 17 w/cc" (DRG-253, MDC-8) [$t(176{,}005) = -3.11$, $p < 0.01$], "Other musculoskeletal sys & conn tiss o.r. proc w/o cc" (DRG-234, MDC-8) [$t(176{,}010) = -3.09$, $p < 0.01$], and "Fx, sprn, strn & dsl of uparm, lowleg ex foot age > 17 w/o cc" (DRG-254, MDC-8) [$t(176{,}093) = -2.85$, $p < 0.01$]. Systemically lower patient satisfaction with discharge instruction among patients with musculoskeletal diseases or disorders presents an opportunity for quality improvement.

3.4. Predictive value of demographic variables

A linear regression analysis found that age, sex, length of stay and self-described health status were not predictors of patients' satisfaction with discharge instructions for care at home (Table 8).

3.5. Satisfaction and severity

Although patient satisfaction with discharge instruction was not predicted by self-described health status, perhaps an objective measure of illness severity might reveal a relationship. Surgical hierarchy indicates the relative resource requirements of each surgical procedure as determined by "variables such as principal diagnosis, surgical class, age, complications and comorbidities." [56]. Patient satisfaction aggregated by surgical DRG was compared to surgical hierarchies within each MDC. To test the hypothesis that highest complexity/severity would equate to lowest satisfaction, the surgical hierarchies were ranked-ordered starting with "1" for the most complex/severe. A positive correlation means that as surgical complexity/severity decreases, patient satisfaction increases. A negative correlation means that as surgical complexity/severity increases, patient satisfaction increases. Spearman's rho correlations between surgical hierarchy rank and patient satisfaction within each MDC did not exhibit a consistent pattern (Table 9). In the only other study, to date, to examine patient satisfaction and severity of illness, Woodbury et al. [57] compared satisfaction with sub-DRG severity of illness ratings and found that illness severity did not influence patients' satisfaction. The data presented here can neither confirm nor refute these findings.

4. Discussion

4.1. Opportunities for improvement

The results present several opportunities for quality improvement. A nontrivial number of acute care facilities

Table 7
Analysis of patient satisfaction with discharge instruction by condition

DRG	DRG Description	Mean	N	SD	Std. Error of Mean	T-Test
212	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17	73.9	70	28.4	3.39	-3.22**
230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR	74.3	36	29.0	4.83	-2.18*
242	SEPTIC ARTHRITIS	75.0	30	28.6	5.22	-1.88
253	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE >17 W CC	75.0	77	27.8	3.17	-3.11**
268	SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROCEDURES	75.7	38	30.5	4.94	-1.85
234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC	75.9	82	26.2	2.89	-3.09**
41	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE 0-17	77.0	37	26.6	4.37	-1.79
23	NONTRAUMATIC STUPOR & COMA	77.2	57	30.4	4.02	-1.90
365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES	77.7	66	27.4	3.38	-2.11*
46	OTHER DISORDERS OF THE EYE AGE >17 W CC	77.8	36	20.5	3.42	-2.06*
444	TRAUMATIC INJURY AGE >17 W CC	77.9	51	24.8	3.48	-2.00*
32	CONCUSSION AGE >17 W/O CC	78.1	65	21.9	2.71	-2.48*
483	TRACHEOSTOMY EXCEPT FOR FACE,MOUTH & NECK DIAGNOSES	78.3	106	25.6	2.49	-2.63*
83	MAJOR CHEST TRAUMA W CC	78.5	57	23.4	3.09	-2.05*
489	HIV W MAJOR RELATED CONDITION	78.6	105	24.6	2.40	-2.60*
308	MINOR BLADDER PROCEDURES W CC	78.6	77	24.2	2.76	-2.26*
57	RHINOPLASTY	78.8	46	23.0	3.38	-1.78
434	ALC/DRUG ABUSE OR DEPEND, DETOX OR OTH SYMPT TREAT W CC	78.9	116	26.7	2.48	-2.40*
95	PNEUMOTHORAX W/O CC	78.9	133	25.2	2.18	-2.72*
435	ALC/DRUG ABUSE OR DEPEND, DETOX OR OTH SYMPT TREAT W/O CC	79.0	82	27.6	3.05	-1.92
238	OSTEOMYELITIS	79.0	50	23.9	3.38	-1.73
425	ACUTE ADJUST REACT & DISTURBANCES OF PSYCHOSOCIAL DYSFUNCTION	79.1	123	25.5	2.30	-2.50*
430	PSYCHOSES	79.1	302	25.9	1.49	-3.85***
496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	79.2	78	28.3	3.21	-1.76
466	AFTERCARE W/O HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS	79.2	77	21.2	2.42	-2.33*
254	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE >17 W/O CC	79.4	165	24.5	1.91	-2.85**
222	KNEE PROCEDURES W/O CC	79.4	62	24.2	3.07	-1.77
368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	79.5	83	23.8	2.61	-2.04*
305	KIDNEY,URETER & MAJOR BLADDER PROC FOR NON-NEOPL W/O CC	79.6	153	23.4	1.89	-2.77*
401	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC	79.6	65	27.2	3.37	-1.55
487	OTHER MULTIPLE SIGNIFICANT TRAUMA	79.7	95	24.0	2.46	-2.09*
176	COMPLICATED PEPTIC ULCER	79.8	115	24.5	2.29	-2.21*
210	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE >17 W CC	79.9	374	23.7	1.22	-4.03***
24	SEIZURE & HEADACHE AGE >17 W CC	79.9	302	25.3	1.45	-3.39**
280	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE >17 W CC	80.0	101	22.1	2.20	-2.20*
171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC	80.0	90	24.1	2.54	-1.91
249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	80.0	115	23.5	2.19	-2.21*
485	LIMB REATTACHMENT, HIP AND FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUM	80.0	40	28.4	4.49	-1.08
247	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE	80.1	316	24.8	1.39	-3.40***
463	SIGNS & SYMPTOMS W CC	80.1	113	23.7	2.23	-2.13*

*indicates significance at 0.05; ** indicates significance at 0.01; *** indicates significance at 0.001.

MDC 1 - Diseases and Disorders of the Nervous System
MDC 2 - Diseases and Disorders of the Eye
MDC 3 - Diseases and Disorders of the Ear, Nose Mouth and Throat
MDC 4 - Diseases and Disorders of the Respiratory System
MDC 5 - Diseases and Disorders of the Circulatory System
MDC 6 - Diseases of the Digestive System
MDC 7 - Diseases and Disorders of the Hepatobiliary System
MDC 8 - Diseases and Disorders of the Musculoskeletal System
MDC 9 - Diseases and Disorders of the Skin, Subcutaneous Tissue, and Breast
MDC 10 - Endocrine, Nutritional, and Metabolic Diseases and Disorders
MDC 11 - Diseases and Disorders of the Kidney and Urinary Tract
MDC 12 - Diseases and Disorders of the Male Reproductive System
MDC 13 - Diseases and Disorders of the Female Reproductive System
MDC 14 - Pregnancy, Childbirth and the Puerperium
MDC 15 - Newborns and other Neonates with Condition Originating in Perinatal Period
MDC 16 - Diseases and Disorders of Blood and Blood-Forming Organs, Immunolog Dx
MDC 17 - Myleoproliferative Diseases and Disorders, Poorly Differentiated
MDC 18 - Infectious and Parasitic Diseases, Systemic or Unspecified Sites
MDC 19 - Mental Diseases or Disorders
MDC 20 - Alcohol/Drug Use and Alcohol/Drug Induced Organic Mental Disorder
MDC 21 - Injuries, Poisonings, and Toxic Effects of Drugs
MDC 22 - Burns
MDC 23 - Factors Influencing Health Status and Other Contacts with Health Services
MDC 24 - Multiple Significant Trauma
MDC 25 - Human Immunodeficiency Virus Infection

perform significantly below the mean for patient assessments of discharge instruction quality. Demographic variables did not predict patients' ratings of instructions for care at home and perceptions are not likely affected by illness severity. Nevertheless, systemic variation by condition was observed. Patients with diseases or disorders of the musculoskeletal system evaluated the quality of discharge instruction lower than patients with other conditions.

Most importantly, patients find discharge instruction to be of lower quality relative to overall perceptions of health care service quality. Their satisfaction with discharge instructions is strongly correlated to overall satisfaction with their hospital care—therefore, dissatisfaction with the discharge episode is likely to negatively influence patients' overall perception of quality in the hospital. The moderate downward trend in patients' ratings of the quality of

Table 8
"Instructions given about how to care for yourself at home," relationships to demographic variables (2001 National Inpatient Database)

Linear regression analysis		
Variable	R	R^2
Days in hospital	0.001	0.000
Sex	0.003	0.000
Age	0.021	0.000
Self-described health status	0.119	0.014

$P < 0.001$ (two-tailed test of significance). "Compared to others your age, would you typically describe your health as: (rate 1–5)".

instructions for home care from 1997–2001 gives little sign of progress in meeting patients' needs at this juncture of their hospital experience.

Collectively, these findings suggest that delivered care does not reflect existing standards for patient education and discharge. Although the vast majority of hospitals are accredited and presumed to fulfill AMA and JCAHO standards (Table 1), a serious disconnect exists between the assessments of health care professionals and patients.

4.2. Patients' perceptions

Patients perceive the hospitalization experience through distinct episodes. One of the distinct episodes, for patients, is the process of being discharged from the hospital. Information on self-care may be given throughout the hospital stay by nurses, case managers, patient education professionals, physicians, etc.; all who perceive this as "discharge instruction." This information-giving would be reflected in satisfaction with information provision, but satisfaction with discharge instruction will be founded on perceptions within a discharge episode occurring from the moment when the physician tells the patient that he or she can go home, through leaving the hospital, to the patient's actual application of the discharge instruction in coping with the condition and symptoms. Therefore, accurate measure of the patient's perspective necessitates surveying patients *after* this discharge episode, when the patient has been home for several days—not in the lobby while the patient leaves the hospital.

Table 9
Correlations between patient satisfaction and surgical severity within MDCs

MDC	Correlation between surgical severity rank and patient satisfaction	N (DRGs)
1	0.82	8
2	0.16	7
3	−0.22	17
4	0.91	3
5	−0.37	20
6	−0.32	24
7	−0.58	13
8	0.03	33
9	0.10	14
10	0.41	9
11	−0.21	14
12	0.25	12
13	0.22	13

4.3. Influences of patients' perceptions

Those responding to "Help arranging home care services (if needed)" likely received some case management, social work and/or comprehensive discharge planning to set up home care services. Most patients do not receive assistance arranging home care service, hence the lower number of responses ($n = 709{,}409$) to this question compared to other discharge questions ($n > 1{,}500{,}000$). The strong correlation ($r = 0.71$) between satisfaction with discharge instructions and "Help arranging home services" could be considered a function of the increased attention, education, counseling and specific needs assessments patients' commonly receive within these processes. This confirms evidence presented in a recent Cochrane's review that comprehensive discharge planning improved patient satisfaction [58]. From the caregiver's perspective, this confirms a study by Bull et al. [59] that found continuity of care and the extent to which the caregiver felt prepared to manage care to be the strongest predictors of satisfaction with the discharge process. The more education, planning, coordination of care and counseling a patient receives, the more satisfied they are with the quality of discharge instructions would be a reasonable interpretation of these results.

The second-highest correlated response to the question on discharge instructions for care at home ($r = 0.58$), "Staff effort to include you in decisions about your treatment," confirms the findings of Proctor et al. [60], which found that patient satisfaction with discharge was related to patients' degree of involvement in decision making and those of Coulton et al. [61] which found that patients and their families desired involvement in discharge planning and long-term care decision making.

The results of this study support the results of several trials testing models of patient–family participation in discharge preparation which show increased involvement to result in: (a) better self-reported health and shorter length-of-stay in future readmittances [62], (b) improved patient satisfaction, shortened length of stay and fewer readmissions [63], and (c) improved caregiver satisfaction [64].

4.4. Limitations

Although derived from the largest dataset of patient perceptions of care in the United States, the sample presents some limitations. First, hospitals that participate in benchmarking with a research firm may be different than those hospitals which do not. Second, hospitals may opt out of an analysis of patient satisfaction by DRG; these hospitals may also differ from hospitals which do not. If either of these limitations systematically skew the scores any direction, it is likely to be positive as hospitals interested in benchmarking to improve patient service may tend to provide better service

than those who do not benchmark. Third, the cohort is not stable across time and therefore represents a potential confound. Finally, we did not have any information regarding language or literacy backgrounds of the patients. Non-English speaking patients or patients with limited English proficiency may tend to rate instructions delivered in English-only lower, as the instructions will hold little perceived value. The well-documented shortfall in accommodating these needs may contribute to dissatisfaction; but the study lacks the information needed to explore this.

5. Practice implications

5.1. Measuring for quality improvement

Several quality measures can be used to benchmark against and make improvements (using various techniques such as Plan–Do–Study–Act). Evidence supports the use of patient satisfaction as an important quality measure [35,36,38]. Patient-derived data should be further analyzed by unit to search out pockets of underperformance as well as exemplary performance [1]. The systematic variations across diagnostic categories demonstrate the importance of analyzing patient satisfaction by DRG, which may highlight unknown disparities in the delivery of education, information and other services. Evidence also supports using readmission rates or emergency department visits as a measure of the efficacy of discharge instruction. Patients inadequately educated in the discharge process will be more likely to access additional health services through readmission, emergency department and/or primary care [65–68].

5.2. Practices for quality improvement

To match the patient's perceptions, practitioners can structure education and information delivery throughout the discharge episode, from the day of discharge throughout recovery at home.

Information given at discharge helps patients feel more confident in the management of their health [67]. A standard communication on the morning of discharge will ensure fulfillment of any lingering information needs: ''Is there anything you need or want to know?'' [69]. Education and information can then be provided and tailored to the patients' and families' expressed needs. However, patients' feelings of confidence may not last—patients may feel well informed at the point of discharge but this perception deteriorates over time. Henderson and Zernike [67] found that within 1–2 weeks later patients felt substantially less well informed.

Once home, written instructions serve as a continuous information resource (such as, what to do at home, when to resume life activities, symptoms to look out for, and the contact information of someone on the health care team). Patients desire clear, easily understandable instructions [70,71]. Postdischarge telephone follow-up holds substantial promise to address these ongoing information needs. Several studies have shown significant increases in patient satisfaction and improved clinical outcomes when members of the health care team phone patients 1–2 weeks following discharge [72–76].[1]

5.3. Financial implications

Finally, since organizational support for patient education programs results, in large part, from provider's perception of the program's payoffs, the benefits of patient satisfaction in this context deserve review [77]. Patient perceptions of the quality of the discharge process substantially impact a hospital's financial outcomes: ''One of the four dimensions of hospital quality, discharge, is significantly related to earnings per bed ($p < 0.003$). For earnings per bed, the dollar amount associated with a one point gain or loss in satisfaction (i.e. moving from an average rating of ''good'' = 3 points to ''very good'' = 4 points) for this dimension of quality is $4980'' [78]. Recognition of this and the powerful bond between overall patient satisfaction and patient loyalty, likelihood to recommend and measures financial performance [79–84] should provide ample justification for resource dedication to improve the quality of discharge preparation to better meet patients' changing needs.

5.4. Future research

Not included in the present study but worthy of future investigations are the issues of the patient's dominant language. Future research can examine likely interaction effects of the patient's language preference, the language the discharge instructions are provided in (verbal and written), and the language the patient satisfaction survey is printed in. It is likely that patient perceptions will be more positive if discharge instructions (and surveys) are provided in the patients' preferred language, especially if the information to be conveyed is complex.

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