NCPD 2.0 ANCC Contact Hours

The Impact of Nursing on Trauma Patient Satisfaction: An Analysis of HCAHPS From 112,283 Patients

Dorraine D. Watts, PhD, RN ■ Andrea Slivinski, DNP, RN ■ Jeneva M. Garland, PharmD, RPh ■ David R. Kerley, RN ■ Nina Y. Wilson, MSN, RN ■ Tabatha Cooper, MS ■ Kyle Howard, RN ■ James Dunne, MD ■ Mark J. Lieser, MD ■ Gina M. Berg, PhD ■ Ransom J. Wyse, MPH ■ Matthew M. Carrick, MD ■ Samir M. Fakhry, MD

ABSTRACT

Background: Assessment of patient satisfaction is central to understanding and improving system performance with the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) national standard survey. However, no large, multi-institutional study exists, which examines the role of nurses in trauma patient satisfaction.

Objective: To assess the impact of nurses on trauma patient satisfaction.

Methods: This retrospective, descriptive study of Level I–IV trauma centers in a multistate hospital system evaluated patients 18 years and older admitted with at least an overnight stay. Data were obtained electronically for patients discharged in 2018–2019 who returned an HCAHPS survey. Surveys were linked by an honest broker to demographic and injury data from the trauma registry, and then anonymized prior to analysis. Patients were categorized as "trauma" per the National Trauma Data Standard (NTDS) definition or as "medical" or "surgical" per the HCAHPS definition.

Results: Of 112,283 surveys from 89 trauma centers, "trauma" patients ($n = 5,126$) comprised 4.6%, "surgical" 39.0% ($n = 43,763$), and "medical" 56.5% ($n = 63,394$). Nurses had an overwhelming impact on "trauma" patient satisfaction, accounting for 63.9% ($p < .001$) of the variation (adjusted R^2) in the overall score awarded the institution—larger than for "surgery" (59.6%; $p < .001$) or "medical" (58.4%; $p < .001$) patients. The most important individual domain contributor to the overall rating of a facility was "nursing communication."

Conclusions: The magnitude of the effect of trauma nurses was noteworthy, with their communication ability being the single biggest driver of institutional ratings. These data provide insight for future performance benchmark development and emphasize the critical impact of trauma nurses on the trauma patient experience.

Key Words

HCAHPS, Nursing, Patient preference, Patient satisfaction, Surveys and questionnaires, Wounds and injuries

BACKGROUND

Measuring the success of health care delivery is a complex undertaking. Although there are multiple potential approaches, patient satisfaction is one of the most commonly used proxy metrics for assessing the prompt, effective, and appropriate delivery of care. In fact, measuring patient satisfaction is a foundational element of quality care required by multiple accreditation and reimbursement bodies. Historically, the individual survey questions and collection methods concerning the patient experience were widely variable and vendor-dependent, making interfacility analysis difficult. However, in 2002, the groundwork for the development—and ultimate standardization—of a patient perspective survey was undertaken by the Centers for Medicare & Medicaid Services (CMS) in partnership with the Agency for Healthcare Research and Quality (AHRQ). The result of their work is the widely used Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a multiquestion tool evaluating critical aspects of the patients' hospital experience that allows direct comparison between facilities with public reporting of the information (CMS, 2020a).

Author Affiliations: Center for Trauma and Acute Care Surgery Research, Clinical Operations Group, HCA Healthcare, Nashville, Tennessee (Drs Watts, Garland, and Fakhry, Ms Wilson, and Mr Wyse); Mission Hospital, Asheville, North Carolina (Dr Slivinski); Skyline Medical Center, Nashville, Tennessee (Mr Kerley); Clinical Operations Group, Patient Experience, HCA Healthcare, Nashville, Tennessee (Ms Cooper); Chippenham Hospital, Richmond, Virginia (Mr Howard); Memorial Hospital, Savannah, Georgia (Dr Dunne); Research Medical Center, Kansas City, Missouri (Dr Lieser); Wesley Medical Center, Wichita, Kansas (Dr Berg); and Medical City Plano, Plano, Texas (Dr Carrick). Author: Please check whether the affiliations and authors' social titles are okay as set.

This work has been accepted for poster presentation at the 2021 TraumaCon Meeting of the Society of Trauma Nurses to be presented virtually on March 26–27 due to the COVID-19 pandemic.

The authors declare no conflicts of interest.

Correspondence: Dorraine D. Watts, PhD, RN, Center for Trauma and Acute Care Surgery Research, Clinical Operations Group, HCA Healthcare, 2515 Park Plaza, Bldg 2-3W, Nashville, TN 37203 (dorraine.watts@hcahealthcare.com).

DOI: 10.1097/JTN.0000000000000589

The HCAHPS survey has been used broadly in the assessment of trauma patient satisfaction, but the results previously reported have varied widely and have not focused on the roles of nurses specifically (Beaton, O'Leary, Thorburn, Campbell, & Christey, 2019; Bentley-Kumar et al., 2016; Kahn, Iannuzzi, Stassen, Bankey, & Gestring, 2015; Lieser et al., 2020; Rogers et al., 2013; Vogel et al., 2019; Wake et al., 2020). The literature that has focused on nursing has consisted mainly of nontrauma patient populations or has used local proprietary surveys rather than the HCAHPS standard (Alasad, Tabar, & AbuRuz, 2015; Berg, Spaeth, Sook, Burdsal, & Lippoldt, 2012; Findik, Unsar, & Sut, 2010; Lake, Germack, & Viscardi, 2016).

Previous nontrauma HCAHPS research has found a profound and primary impact of nurses on the patient experience (Bartlett Ellis, Bakoyannis, Haase, Boyer, & Carpenter, 2016; Jun, Stern, & Djukic, 2020; Lehrich et al., 2021). But despite the known impact nursing may have on the patient experiences, no large-scale study has been conducted specifically addressing the impact of nurses on the "trauma" patient experience.

OBJECTIVE

The purpose of this study was to assess the impact of nurses on trauma patient satisfaction by describing the relationship between patient perceptions of nursing-sensitive indicators and their overall rating of the facility—both between trauma patients and nontrauma patients—and between specific trauma patient subgroups.

METHODS

This study was a retrospective, descriptive analysis of existing trauma registry data, medical records, and HCAHPS data. To obtain data for this study, the electronic data warehouse of a multistate hospital system was queried for patients admitted to facilities with Level I, II, III, or IV trauma center status with at least an overnight stay. The search was done for patients discharged between January 1, 2018, and December 31, 2019, who were not classified as maternity and had answered an HCAHPS survey.

Per CMS guidelines, patients were eligible for the HCAHPS survey if they were 18 years or older, had at least one overnight stay in the hospital for a nonpsychiatric principal diagnosis, and had a U.S. mailing address. Patients who died prior to discharge or who were discharged to a nursing home, skilled nursing facility, jail, or hospice were not eligible for the HCAHPS survey and were therefore not included. Patients were surveyed by a third-party vendor using either the English or Spanish HCAHPS version according to standard CMS methodology. Although the CMS allows random sampling, in this health care system, all eligible patients were invited to participate. Institutional review board exemption was obtained per institutional policy before data collection was started. The HCAHPS survey responses were linked by an honest broker to demographic information from the electronic medical record and trauma patient data from the individual institution's trauma registries, and then anonymized before being sent back to the researchers for analysis.

Patients were classified by diagnosis category. They were classified as "trauma" if they met the National Trauma Data Standard (NTDS) definition as "trauma" and were included in a trauma center's registry. Nontrauma patients were categorized as "medical" or "surgical" based on CMS HCAHPS criteria using their Medicare Severity-Diagnosis Related Group (MS-DRG). This resulted in three patient groups for the overall comparison: (1) trauma, (2) surgical, and (3) medical. Additional analyses were performed on only the "trauma" patients to determine underlying drivers specific to "trauma" patient satisfaction. The "trauma" patients' groupings were based on length of stay (LOS) (0–2, 3–6, and ≥7 days), injury type (blunt vs. penetrating), Injury Severity Score (ISS) (0–8, 9–15, and 16–75), and by the presence of severe (Abbreviated Injury Scale [AIS] >2) injury of the head, chest, abdomen, or extremities.

The HCAHPS survey has 19 individual substantive questions covering the significant features of the patient experience, including nursing, physicians, and the physical facility, as well as a global rating of the facility (CMS, 2020a). For this analysis, the four domains (10 questions) directly/substantively related to nursing and the patient's overall rating of the hospital were used for the analysis. The 10 nursing questions are based on a 4-point scale of either *never—sometimes—usually—always* or *strongly disagree—disagree—agree—strongly agree*. These questions are classified by the CMS into the composite domains of "nurse communication" (three questions), "staff responsiveness" (two questions), "medication communication" (two questions), and "understanding care transition" (three questions). The global question asks the patient for an *overall rating of (the) hospital* during their stay on a 1- to 10-point scale from 1 (*worst hospital possible*) to 10 (*best hospital possible*) (CMS, 2020a).

For the overall analyses comparing trauma patients to nontrauma patients, two separate regression analyses were performed. In the first analysis, each of the 10 individual nursing-related HCAHPS survey items was used as predictors. In the second, the mean of each of the four domains was used as predictors. These were regressed on the patient's *overall rating of hospital* via multivariable linear regression, using stepwise entry of all predictors with significance set at $p = .01$. The *overall rating* was selected as the primary outcome variable for this analysis, as it is designed by the CMS as the single definitive marker of a patient's satisfaction with their hospital experience (CMS, 2020a). The regression analysis produced an overall

model for each group ("trauma," "surgical," and "medical") that detailed the HCAHPS survey items or domain that had the largest influence on the patient's overall rating. The included predictors in the model were reported for each patient group, along with the relative contribution of each predictor to the overall model (R^2 change) and the total explained variability (total R^2) for the model. For the "trauma" group analyses, the regression was repeated for only the "trauma" patients based on the grouping for LOS, age, injury type, ISS, and severe injury of the head, chest, abdomen or extremities, to determine whether there were differential drivers based on injury type, location, or severity.

For demographic and descriptive analyses, comparisons between groups on scale-level variables were made using analysis of variance as the Omnibus tests with Dunnett's post hoc tests for single degree of freedom comparisons, using "trauma" patients as the comparison (indicator) group. Comparisons between groups on ordinal and nominal outcome variables were made using the χ^2 test of Independence. Due to the large sample and multiple comparisons made, α was set at .01 for all analyses with two-tailed tests used when possible. All analyses were performed using SPSS Version 26 (IBM Corp, released 2019, IBM SPSS Statistics for Windows, Armonk, NY).

RESULTS

All patients who met the inclusion and exclusion criteria and returned an HCAHPS survey were included in the analysis, resulting in 112,283 surveys from 89 trauma centers. The HCAHPS response rate for this sample was 23.04%, which is consistent with the most recent reported national mean response rate for the HCAHPS of 25.0% (CMS, 2020b). "Trauma" patients were the smallest group (n = 5,126), comprising 4.6% of the respondents, whereas "surgical" patients made up 39.0% (n = 43,763) and "medical" patients were the majority at 56.5% (n = 63,394). Patients came from facilities with Level I (n = 14,391; 12.8%), II (n = 54,524; 48.6%), III (n = 24,935; 22.2%), or IV (n = 18,433; 16.4%) trauma center status. "Trauma" patients were statistically significantly different from "surgical" and "medical" patients as being younger (age, M = 57.6 vs. 61.7 vs. 63.8 years; $p < .001$), having a slightly longer LOS (days, M = 4.5 vs. 4.3 vs. 3.7; $p < .001$), consisting of a larger proportion of males (54.3% vs. 49.1% vs. 45.1%; $p < .001$), and a smaller proportion of English speakers (85.5% vs. 88.9% vs. 88.6%; $p < .01$). "Surgical" patients had the largest proportion of college graduates (29.2%) and "medical" patients consistently ranked their overall health as worse than both "trauma" and "surgical" patients (Table 1).

Nurses had an overwhelming impact on patient satisfaction. In the individual question analysis, the nursing-related HCAHPS questions accounted for 63.9% of the variation in the overall score "trauma" patients awarded the institution (adjusted R^2= .639; $p < .001$). This proportion was larger than either "surgical" at 56.6% (adjusted R^2= .596; $p < .001$) or "medical" at 58.4% (adjusted R^2= .584; $p < .001$). The models, however, were identical in structure for all three groups. The two strongest individual drivers of the patient rating of the facility were *nurses listen carefully to you* and *took preferences into account when planning discharge needs*. The next strongest drivers were *nurses treat you with courtesy and respect* and *nurses explain things in a way you could understand*. Full rankings and R^2 contributions by group are presented in Table 2.

When performing the regression using the overall domain means, the adjusted R^2 explained variability was similar to the individual model ("trauma" = 63.5%, "surgical" = 57.7%, and "medical" = 57.4%; $p < .001$). The model once more built in the same order for all three groups with "nursing communication" as the largest driver of facility rating, followed by "Understanding care transition," "staff responsiveness," and "medication communication" ($p < .001$, all models) (Table 3).

When "trauma" patients were analyzed separately, there was some subgroup variation within the overall sample. In comparing patients with blunt versus penetrating injury, essential differences were noted. Blunt injury patients were identical in response to the overall trauma model, having the same individual predictor and domain predictors as the most important drivers, with almost the same totals, as well as the overall impact of nursing on the score awarded the institution. Alternatively, patients with penetrating injury ranked nursing explanation and care transition as their most important driver of satisfaction. They had *nurses explain things in a way you could understand* as the most important individual driver (adjusted R^2= .568; $p < .001$) and "understanding care transition" as the most important domain in determining their satisfaction (adjusted R^2= .463, $p < .001$). Interestingly, nurses had a much larger overall impact on penetrating trauma patient satisfaction, accounting for 80.6% of the variation in the overall facility score patients awarded the hospital ($p < .001$). There was some demographic variation between these blunt and penetrating injury patients, with penetrating patients being younger (age, M = 42.3 vs. 58.4 years; $p < .001$), less injured (ISS, M = 6.2 vs. 8.9; $p < .001$), less educated (any college education = 38.0% vs. 55.2%; $p < .001$), having a slightly higher rating of their health (rating, M = 3.6 vs. 3.4; p = .001), and having a higher proportion of patients identifying as Hispanic (19.7% vs. 11.8%; $p < .001$). There were no significant differences in LOS or initial Glasgow Coma Scale.

There were also slight differences in older patients and those with lengths of stay of 1 week or more. For both groups, "nursing communication" was still the primary

TABLE 1 Comparison of Demographics by Admission Service With Grouped Proportions

Measure	Trauma *n* = 5,126	Surgery *n* = 43,763	Medical *n* = 63,394	Overall *n* = 112,283
Age, *M* [99% CI] (years)	57.6 [57.3–58.1]	61.7[a] [61.5–61.8]	63.8[a] [63.7–63.9]	62.7 [62.6–62.8]
LOS, *M* [99% CI] (days)	4.5 [4.4–4.7]	4.3[a] [4.2–4.7]	3.7[a] [3.7–3.7]	3.98 [3.95-4.00]
Sex, male (%)	54.3	49.1[a]	45.1[a]	47.0
Race (%)[b]				
White	76.8	78.6[a]	73.4[a]	75.6
Black	8.4	10.7[a]	16.1[a]	13.7
Hispanic	12.2	8.3[a]	8.3[a]	8.4
Other	2.5	2.5	2.2	2.3
Primary language (%)[b]				
English	85.5	88.9[a]	88.6[a]	80.3
Spanish	12.4	9.5[a]	9.8[a]	9.5
Other	2.0	1.5[a]	1.6	1.6
Education (%)[b]				
4-year degree or more	24.3	29.2[a]	21.3[a]	22.8
High school graduate/some college	61.2	59.9	61.5	54.7
Less than high school	14.5	10.9[a]	17.1[a]	13.9
Overall health (%)[b]				
Excellent	16.1	12.0[a]	7.5[a]	9.3
Very good	29.4	30.0[a]	18.6[a]	22.4
Good	34.3	36.3[a]	32.7[a]	32.4
Fair	14.8	17.2[a]	28.5[a]	22.0
Poor	5.4	4.5[a]	12.7[a]	8.7

Note. CI = confidence interval; LOS = length of stay.

[a]*Statistically significantly different from the trauma group at $p < .01$.*

[b]*Some columns do not add to 100% due to patients choosing not to answer a specific question.*

driver, but older trauma patients (≥75 years) ranked "staff responsiveness" as having had more impact than "understanding care transition." For patients with an LOS of 1 week or more, "medication communication" was a stronger driver of the facility score than "staff responsiveness." The domain-level regression was repeated for the trauma patient injury variables with groupings based on the ISS (0–8, 9–15, and 16–75) and by the presence of severe (AIS >2) injury of the head, chest, abdomen, or extremities to determine whether there were differential drivers based on injury location or severity. None of these groups differed from the overall "trauma" group on their domain rankings (Table 4).

DISCUSSION

This large, 1-year, multicenter study of 112,283 patients' HCAHPS survey data from a nationwide network of 89 facilities with trauma centers specifically assessed the impact of nursing on the trauma patient experience. Based on previous literature (Al-Mailam, 2005; Kutney-Lee et al., 2009; Lieser et al., 2020), it is of no surprise the data revealed nurses to be the most impactful factor in the satisfaction of "trauma" patients, but the magnitude of their effect on the facility's overall score was notable, as the contribution of nurses on "trauma" patient satisfaction was proportionally larger than nurses for "surgical" or "medical" patients, and accounted for almost two-thirds of the variability in the score awarded at the facility.

Previous literature has indicated that patient-specific clinical factors and demographic characteristics impact patient satisfaction, yet a consensus on the exact effect of specific variables remains to be determined Findik et al. (2010) studied the relationship between patient satisfaction with nursing care and patient characteristics.

TABLE 2 Ranking Based on the Contribution to R^2 for Model Built on Individual Items

Individual Question *(Domain)*	Trauma *n* = 5,126		Surgery *n* = 43,763		Medical *n* = 63,394	
	Rank	R^2 Contribution	Rank	R^2 Contribution	Rank	R^2 Contribution
Nurses listen carefully to you *(nursing communication)*	1	.418	1	.401	1	.379
Took preferences into account when deciding on health care needs at discharge *(care transition)*	2	.106	2	.079	2	.101
Nurses treat you with courtesy and respect *(nursing communication)*	3	.047	3	.048	3	.034
Nurses explain things in a way you could understand *(nursing communication)*	4	.026	4	.028	4	.022
Received toileting help as soon as wanted *(responsiveness)*	5	.017	5	.016	5	.016
Had a good understanding of managing health at discharge *(care transition)*	6	.013	6	.009	6	.012
Call bell brought help as soon as wanted *(responsiveness)*	7	.006	7	.007	7	.008
Described new medication side effects in a way you could understand *(medication communication)*	8	.004	8	.005	8	.006
Understood purpose of taking medication at discharge *(care transition)*	9	.001	9	.003	9	.003
Told what new medications were for before administration *(medication communication)*	10	<.001	10	.001	10	.002
Total adjusted R^2		63.9%		59.6%		58.4%

Researchers identified patients who were male, had surgical procedures, were between 40 and 59 years of age, had low levels of education or income, and had a lengthy hospitalization as being more satisfied with overall nursing care. Conversely, Alasad et al. (2015) identified that patients acutely hospitalized were highly satisfied overall with nursing care and found no differences among age groups, levels of education, or unit type, but highlighted females were typically more satisfied with nursing care Rogers et al. (2013) evaluated patient experience scores and found older patients and those requiring surgery tended to be satisfied overall with the provider and other aspects of hospital care. Patients with poorer satisfaction tended to be younger, nonoperative, lower ISS, and experienced complications during their care. A study by Kahn et al. (2015) found that trauma patients with a 4-year college degree or higher were less likely to report a top box score for the facility. Hospital LOS, intensive care unit

TABLE 3 Ranking Based on the Contribution to R^2 for Model Built on Domain Means

Domain	Trauma *n* = 5,126		Surgery *n* = 43,763		Medical *n* = 63,394	
	Rank	R^2 Contribution	Rank	R^2 Contribution	Rank	R^2 Contribution
Nursing communication	1	.552	1	.490	1	.460
Understanding care transition	2	.061	2	.059	2	.088
Staff responsiveness	3	.018	3	.021	3	.018
Medication communication	4	.004	4	.007	4	.009
Total adjusted R^2		63.5%		57.7%		57.4%

TABLE 4 Rankings of Overall Facility Score Drivers for Trauma Patients Globally and by Subgroup (Based R^2 Contribution)

Grouping	*n*(%)	Nursing Communication	Understanding Care Transition	Staff Responsiveness	Medication Communication
Overall	5,126	1	2	3	4
By mechanism					
Blunt	4,891 (95.0)	1	2	3	4
Penetrating	257 (5.0)	2[a]	1[a]	3	4
Injury severity					
ISS 0–8	2,324 (45.1)	1	2	3	4
ISS 9–15	2,189 (42.5)	1	2	3	4
ISS 15–75	635 (12.3)	1	2	3	4
Severe AIS (≤3)					
Head	684 (13.3)	1	2	3	4
Chest	686 (3.4)	1	2	3	4
Abdomen	204 (4.0)	1	2	3	4
Extremities	1,134 (22.1)	1	2	3	4
Age (years)					
18–39	1,065 (20.8)	1	2	3	4
40–59	1,416 (27.6)	1	2	3	4
60–74	2,020 (39.4)	1	2	3	4
≥75	625 (12.2)	1	3[a]	2[a]	4
LOS (days)					
0–2	2,006 (39.1)	1	3	2	4
3–6	2,196 (42.8)	1	3	2	4
≥7	924 (18.0)	1	2[a]	4[a]	3[a]

Note: AIS = Abbreviated Injury Scale; ISS = Injury Severity Score; LOS = length of stay.

[a]*Rankings differ among subgroups.*

(ICU) LOS, presence of an injury, mechanism of injury, cause of injury, and complications were not significantly associated with satisfaction. With these previously mixed reports as to whether these variables increase or decrease patient satisfaction, clarifying these concepts may assist in addressing specific patient needs and tailoring to improve patient satisfaction. Amid this uncertainty, multiple studies have determined nurse communication to be highly impactful on overall patient satisfaction scores, yet a mere handful of large studies have evaluated the variables that impact trauma patient-specific patient satisfaction scores.

Historically, there is the presumption that trauma patients reduce a facility's overall HCAHPS score (Rogers et al., 2012), as lower trauma patient satisfaction scores have been reported compared with other patient category scores. Bentley-Kumar et al. (2016) compared the patient satisfaction scores of trauma patients with nontrauma patients, attempting to dispel the notion that trauma patients negatively impact overall patient satisfaction scores. Trauma patient and nontrauma patient satisfaction scores were analyzed, and no significant difference was found. Interestingly, the authors also examined trauma patients compared with nontrauma patients with the same *International Classification of Diseases, Ninth Revision* (*ICD-9*) procedure code, which revealed lower overall satisfaction in trauma patients who required a spinal fusion secondary to trauma, prompting others to focus on opportunities surrounding provider communication, but no greater association was identified. Similarly, our data indicate when comparing "trauma" patients to "surgical" and "medical" patients, though nurses had a larger impact on trauma patients' satisfaction, the drivers themselves were identical to "surgical" and "medical patients," with the exception of those having suffered penetrating trauma. "Surgical,"

"medical," and "trauma" patients all reported "nursing communication" as the most impactful domain, followed by "understanding care transition," "staff responsiveness," and "medication communication," respectively. This finding is similar to Lieser et al. (2020), who found "nursing communication" across all patient groups admitted through the emergency department to be the greatest driver of patient satisfaction.

Subanalysis of our data on "trauma" patients found those with blunt injuries matched the overall model, whereas those with penetrating injury reported the "understanding care transition" domain as having the most impact on patient satisfaction. Additionally, "trauma" patients with penetrating injury found *nurses explain things in a way you could understand* as the most important individual driver, which was ranked fourth in the overall model. Furthermore, an intriguing finding is that patients with penetrating injuries reported nurses to have a significantly larger overall impact, with nurse-specific measures accounting for 80.6% of the variation in the overall facility score. These data may indicate patients with penetrating traumatic injuries need more specific communication concerning adapting to their injuries and understanding the recovery process, as has been previously suggested for burn patients (Lotfi, Zamanzadeh, Valizadeh, & Khajehgoodari, 2019). Also, the responses received in this study may be due to the different demographic characteristics of those presenting with penetrating injury. These patients tended to be younger, had a lower ISS, were less educated, had a higher rating of their health, and a larger proportion of patients who identified as Hispanic—all characteristics reported in previous studies to impact patient satisfaction in both positive and negative ways.

Trauma patients 75 years and older still ranked "nursing communication" as the primary domain driving patient satisfaction, but "staff responsiveness" was identified as the second most impactful domain as opposed to "understanding care transition." Vogel et al. (2019) conducted a study that focused on the satisfaction of older adult trauma patients and their caregivers. Although overall patient experience ratings were high, communication of information for both patients and patient caregivers was lower. However, patients were significantly less satisfied with the "availability of nurses to answer questions" than patient caregivers. Similar to the overall model, trauma patients with a hospital LOS of 7 days or more ranked "nursing communication" and "understanding care transition" as the top two domain drivers for patient satisfaction, but found "medication communication" to be more impactful than "staff responsiveness." This may indicate that discharge planning, which begins on the day of admission, may be a potential area of improvement for patient satisfaction scores, in which medication communication may be delivered in a clear and concise method, as is indicated to improve patient satisfaction scores in previous studies (Olsson, Nyström, Karlsson, & Ekman, 2007; Paterson, Kieloch, & Gmiterek, 2001; Wiman, Wikblad, & Idvall, 2007; Zakzesky, Klink, McAndrew, Schroeter, & Johnson, 2015).

A study by Wake et al. (2020) designed and implemented a questionnaire to evaluate the experiences of trauma patients and families being managed by the facility's trauma service. Overall, patients were highly satisfied with the trauma services and reported they particularly excelled at coordinating patient care and providing emotional and physical support to patients and families. Conversely, a study by Beaton et al. (2019) identified significant perceptions of communication gaps across the patient care continuum and limited access to ongoing support within their program. Although findings have been highly variable among studies, communication remains a central theme for which nurses may essentially serve as the bridge to address noted gaps in patient communication, ultimately increasing trauma patient satisfaction scores. As our large, multicenter study revealed "nursing communication" to be the main driver of patient satisfaction, this may warrant a potential shift in focus for the improvement of patient satisfaction scores.

Lake et al. (2016) studied the impact of missed nursing care activities on patient satisfaction scores. Using a combination of measures, the authors found nurses missed nearly a third of required care activities per shift related to a variety of factors, and fewer patients reported high satisfaction ratings for hospitals with an increased number of missed care events. Previous studies have demonstrated increased nurse staffing, and nurse-to-patient ratios impact patient satisfaction, indicating patients in an appropriately staffed environment are more likely to have a better experience (Clark, Leddy, Drain, & Kaldenberg, 2007; Papastavrou, Andreou, & Efstathiou, 2014). Consequently, with more staff available working in a team-based collaborative environment, communication increases, ultimately increasing patient satisfaction.

Limitations

This study has several limitations. Despite the HCAHPS being an extensively validated survey tool, some constituents of patient satisfaction may not have been captured. For instance, this study lacked data concerning potential patient complications, which was, therefore, not included in the analysis of survey participants. A study by Armstrong, Weigel, Cromwell, and Byrn (2016) evaluated postoperative complications and their effect on patient satisfaction. Satisfaction scores were generally higher for patients without complications compared with the median scores for patients with complications. Although our study does not address specific complications, lower satisfaction scores may have been captured, as those with increased

hospital LOS, which is often due to the presence of complications, reported lower patient satisfaction. HCAHPS survey participants are limited to those 18 years and older, with at least one overnight inpatient stay, a nonpsychiatric principal diagnosis, and a U.S. mailing address.

Patients who died prior to discharge or who were discharged to a nursing home, skilled nursing facility, or to hospice were not eligible for the HCAHPS, which might alter the results of the sample. It is also possible a larger proportion of "trauma" patients with penetrating injury were discharged to jail or prison, thus making them ineligible for the HCAHPS, which may have also impacted the results. The trauma nurse staffing ratios of 2:1 required in trauma ICU's by the American College of Surgeons (ACS) in ACS verified centers may have potentially influenced patient satisfaction scores due to improved attention to patient needs. Finally, this study also has all of the biases inherent with survey methodology, including a relatively low response rate that may have created a response bias that cannot be fully assessed.

CONCLUSIONS

Data from over 112,283 patients' HCAHPS surveys not only confirmed the profound influence of nurses on all patient satisfaction scores but demonstrated the enormity of this impact within the "trauma" patient population specifically. Compared with nurses for "surgical" or "medical" patients, the contribution of nurses to "trauma" patient satisfaction was proportionally larger, having accounted for 63.5% of the variability, in a facility's overall score. Among all groups evaluated, "nursing communication" was determined to be the most influential driver of institutional patient satisfaction. These data provide guidance for areas of focus in the development of trauma-specific efforts to improve the patient experience and emphasize the vital influence of nurses on trauma patient satisfaction.

REFERENCES

Alasad, J., Tabar, N., & AbuRuz, M. (2015). Patient satisfaction with nursing care: Measuring outcomes in an international setting. *The Journal of Nursing Administration*, *45*(11), 563–568. doi:10.1097/NNA.0000000000000264

Al-Mailam, F. F. (2005). The effect of nursing care on overall patient satisfaction and its predictive value on return-to-provider behavior: A survey study. *Quality Management in Health Care*, *14*(2), 116–120. doi:10.1097/00019514-200504000-00007

Armstrong, J. G., Weigel, P. A. M., Cromwell, J. W., & Byrn, J. C. (2016). Postoperative complications and patient satisfaction: Does payer status have an impact? *The American Journal of Surgery*, *211*(6), 1099–1105.e1. doi:10.1016/j.amjsurg.2015.08.026

Bartlett Ellis, R. J., Bakoyannis, G., Haase, J. E., Boyer, K., & Carpenter, J. S. (2016). Patient perceptions of provider and hospital factors associated with new medication communication. *Western Journal of Nursing Research*, *38*(9), 1139–1154. doi:10.1177/0193945916645097

Beaton, A., O'Leary, K., Thorburn, J., Campbell, A., & Christey, G. (2019). Improving patient experience and outcomes following serious injury. *International Journal of Integrated Care*, *19*(4), 79. doi:10.5334/ijic.s3079.

Bentley-Kumar, K., Jackson, T., Holland, D., LeBlanc, B., Agrawal, V., & Truitt, M. (2016). Trauma patients: I can't get no (patient) satisfaction? *The American Journal of Surgery*, *212*(6), 1256–1260. doi:10.1016/j.amjsurg.2016.09.023

Berg, G. M., Spaeth, D., Sook, C., Burdsal, C., & Lippoldt, D. (2012). Trauma patient perceptions of nursing care: Relationships between ratings of interpersonal care, technical care, and global satisfaction. *Journal of Trauma Nursing*, *19*(2), 104–110. doi:10.1097/JTN.0b013e3182562997

Centers for Medicare & Medicaid Services. (2020a). *HCAHPS: Patients' perspectives of care survey*. Retrieved December 28, 2020, from https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS

Centers for Medicare & Medicaid Services. (2020b). *Summary of HCAHPS Survey Results: January 2019 to December 2019 Discharges*. Retrieved February 22, 2021, from https://www.hcahpsonline.org/globalassets/hcahps/summary-analyses/summary-results/october-2020-public-report-january-2019-december-2019-discharges.pdf

Clark, P. A., Leddy, K., Drain, M., & Kaldenberg, D. (2007). State nursing shortages and patient satisfaction: More RNs—better patient experiences. *Journal of Nursing Care Quality*, *22*(2), 119–127. doi:10.1097/01.NCQ.0000263100.29181.e3

Findik, U., Unsar, S., & Sut, N. (2010). Patient satisfaction with nursing care and its relationship with patient characteristics. *Research & Reviews Journal of Nursing and Health Sciences*, *12*(2), 162–169. doi:10.1111/j.1442-2018.2009.00511.x

Jun, J., Stern, K., & Djukic, M. (2020). Integrative review of the interventions for improving patients' experiences revealed in quality improvement projects. *Journal of Patient Experience*, *7*(6), 882–892. doi:10.1177/2374373520925271

Kahn, S. A., Iannuzzi, J. C., Stassen, N. A., Bankey, P. E., & Gestring, M. (2015). Measuring satisfaction: Factors that drive Hospital Consumer Assessment of Healthcare Providers and Systems survey responses in a trauma and acute care surgery population. *The American Surgeon*, *81*(5), 537–543. doi:10.1177/000313481508100540

Kutney-Lee, A., McHugh, M. D., Sloane, D. M., Cimiotti, J. P., Flynn, L., Neff, D. F., & Aiken, L. H. (2009). Nursing: A key to patient satisfaction. *Health Affairs (Millwood)*, *28*(4), w669–w677. doi:10.1377/hlthaff.28.4.w669

Lake, E., Germack, H., & Viscardi, M. (2016). Missed nursing care is linked to patient satisfaction: A cross-sectional study of US hospitals. *BMJ Quality & Safety*, *25*(7), 535–543. doi:10.1136/bmjqs-2015-003961

Lehrich, B. M., Goshtasbi, K., Brown, N. J., Shahrestani, S., Lien, B. V., Ransom, S. C., & Oh, M. Y. (2021). Predictors of patient satisfaction in spine surgery: A systematic review. *World Neurosurg*, *146*, e1160–e1170. doi:10.1016/j.wneu.2020.11.125

Lieser, M. J., Watts, D. D., Cooper, T., Chipko, J., Carrick, M. M., Berg, G. M., & Fakhry, S. M. (2020). Critical role of trauma and emergency surgery physicians in patient satisfaction: An analysis of HCAHPS data from 186,779 patients and 168 hospitals in a national healthcare system. *Journal of the American College of Surgeons*, *232*(4), 656–663. doi:10.1016/j.jamcollsurg.2020.12.017

Lotfi, M., Zamanzadeh, V., Valizadeh, L., & Khajehgoodari, M. (2019). Assessment of nurse–patient communication and patient satisfaction from nursing care. *Nursing Open*, *6*(3), 1189–1196. doi:10.1002/nop2.316

Olsson, L., Nyström, A. E., Karlsson, J., & Ekman, I. (2007). Admitted with a hip fracture: Patient perceptions of rehabilitation. *Journal of Clinical Nursing*, *16*(5), 853–859. doi:10.1111/j.1365-2702.2006.01635.x

Papastavrou, E., Andreou, P., & Efstathiou, G. (2014). Rationing of nursing care and nurse-patient outcomes: A systematic review of quantitative studies. *International Journal of Health Planning and Management*, *29*(1), 3–25. doi:10.1002/hpm.2160

Paterson, B., Kieloch, B., & Gmiterek, J. (2001). "They never told us anything": Postdischarge instruction for families of persons with brain injuries. *Rehabilitation Nursing*, *26*(2), 48–53. doi:10.1002/j.2048-7940.2001.tb01925.x

Rogers, F. B., Krasne, M., Bradburn, E., Rogers, A., Lee, J., Wu, D., & Osler, T. (2012). Acute care and trauma surgeons: We can't get no satisfaction—what do satisfaction surveys measure? *The American Surgeon*, *78*(7), 731–734. doi:10.1177/000313481207800708

Rogers, F., Horst, M., To, T., Rogers, A., Edavettal, M., Wu, D., & Brosey, L. (2013). Factors associated with patient satisfaction scores for physician care in trauma patients. *The Journal of Trauma and Acute Care Surgery*, *75*(1), 110–114. doi:10.1097/TA.0b013e318298484f

Vogel, R., McGraw, C., Orlando, A., Bourg, P., Draiman, C., Peck, L., & Bar-Or, D. (2019). Examining satisfaction of older adult patients and their caregivers following traumatic injury: A cross-sectional study of three level I trauma centres. *BMJ Open*, *9*(11), e032374. doi:10.1136/bmjopen-2019-032374

Wake, E., Battistella, T., Dale, K., Scott, M., Nelson, R., & Marshall, A. P. (2020). Evaluation of a trauma service: Patient and family perspectives. *Journal of Trauma Nursing*, *27*(4), 216–224. doi:10.1097/JTN.0000000000000517.

Wiman, E., Wikblad, K., & Idvall, E. (2007). Trauma patients' encounters with the team in the emergency department: A qualitative study. *International Journal of Nursing Studies*, *44*(5), 714-722. doi:10.1016/j.ijnurstu.2006.01.014

Zakzesky, D., Klink, K., McAndrew, N., Schroeter, K., & Johnson, G. (2015). Bridges and barriers: Patients' perceptions of the discharge process including multidisciplinary rounds on a trauma unit. *Journal of Trauma Nursing*, *22*(5), 232–239. doi:10.1097/JTN.0000000000000146

Lippincott® NursingCenter®

NCPD Nursing Continuing Professional Development

TEST INSTRUCTIONS

- Read the article. The test for this nursing continuing professional development (NCPD) activity is to be taken online at **www.NursingCenter.com/CE/JTN**. Tests can no longer be mailed or faxed.
- You'll need to create an account (it's free!) and log in to access My Planner before taking online tests. Your planner will keep track of all your Lippincott Professional Development online NCPD activities for you.
- There's only one correct answer for each question. A passing score for this test is 7 correct answers. If you pass, you can print your certificate of earned contact hours and access the answer key. If you fail, you have the option of taking the test again at no additional cost.
- For questions, contact Lippincott Professional Development: 1-800-787-8985.
- Registration deadline is June 7, 2024.

PROVIDER ACCREDITATION

Lippincott Professional Development will award 2.0 contact hours for this nursing continuing professional development activity.

Lippincott Professional Development is accredited as a provider of nursing continuing professional development by the American Nurses Credentialing Center's Commission on Accreditation.

This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP 11749 for 2.0 contact hours. Lippincott Professional Development is also an approved provider of continuing nursing education by the District of Columbia, Georgia, and Florida, CE Broker #50-1223. Your certificate is valid in all states.

Payment: The registration fee for this test is FREE for STN members and $21.95 for nonmembers.

STN members can take JTN CE for free using the discount code available in the members-only section of the STN website. Use the discount code when payment is requested during the check-out process.

DOI: 10.1097/JTN.0000000000000599