Factors Associated With Family Experience in Pediatric Inpatient Care

Jeremy Y. Feng, MD,[a,b,e] Sara L. Toomey, MD, MPhil, MPH, MSc,[a,c] Marc N. Elliott, PhD,[g] Alan M. Zaslavsky, PhD,[d] Sarah E. Onorato, BA,[a,f] Mark A. Schuster, MD, PhD[a,c,h]

abstract

BACKGROUND: Hospitals are rapidly increasing efforts to improve the pediatric inpatient experience. However, hospitals often do not know what to target for improvement. To determine what matters most to families, we assessed which aspects of experience have the strongest relationships with parents' willingness to recommend a hospital.

METHODS: Cross-sectional study of 17 727 surveys completed from November 2012 to January 2014 by parents of children hospitalized at 69 hospitals in 34 states using the Child Hospital Consumer Assessment of Healthcare Providers and Systems Survey. Hierarchical logistic regressions predicted the "top box" for willingness to recommend from measures of specific care dimensions (nurse-parent communication, doctor-parent communication, communication about medicines, keeping parents informed about the child's care, privacy with providers, preparing to leave the hospital, mistakes and concerns, child comfort, cleanliness, and quietness), adjusting for parent-child characteristics. Relative importance was assessed by using partially standardized adjusted odds ratios (aORs).

RESULTS: Child comfort (aOR 1.50; 95% confidence interval 1.41–1.60) and nurse-parent communication (aOR 1.50; 95% confidence interval 1.42–1.58) showed the strongest relationships with willingness to recommend, followed by preparing to leave the hospital, doctor-parent communication, and keeping parents informed. Privacy and quietness were not significantly associated with willingness to recommend in multivariate analysis.

CONCLUSIONS: Our study uncovered highly valued dimensions that are distinct to pediatric care. Hospitals that care for children should consider using dedicated pediatric instruments to measure and track their performance. Improvement efforts should focus on creating an age-appropriate environment, improving the effectiveness of provider interactions, and engaging parents to share their values and concerns.

[a]*Division of General Pediatrics, Boston Children's Hospital, Boston, Massachusetts;* [b]*Department of Medicine, Massachusetts General Hospital, Boston, Massachusetts;* [c]*Departments of Pediatrics,* [d]*Health Care Policy, and* [e]*Medicine,* [f]*Harvard Medical School, Harvard University, Boston, Massachusetts;* [g]*Rand Corporation, Santa Monica, California; and* [h]*Office of the Dean, Kaiser Permanente Bernard J. Tyson School of Medicine, Pasadena, California*

Dr Feng conceived and designed the study, analyzed and interpreted the data, and drafted the initial manuscript; Drs Toomey and Schuster conceived and supported the design of the study, obtained funding, and acquired, analyzed, and interpreted the data; Drs Elliott and Zaslavsky contributed to the design of the study and analyzed and interpreted the data; Ms Onorato contributed to the interpretation of the data; and all authors critically reviewed and revised the manuscript, approved the final manuscript as submitted, and agree to be accountable for all aspects of the work.

DOI: https://doi.org/10.1542/peds.2019-1264

Accepted for publication Oct 8, 2019

WHAT'S KNOWN ON THIS SUBJECT: Although patient experience is a key aspect of quality, little is known about what families most value. Such information is crucial as hospitals increase efforts to improve the inpatient experience in the era of public reporting and pay for performance.

WHAT THIS STUDY ADDS: Child comfort and nurse-parent communication were the most important predictors of parents' willingness to recommend the hospital after a child's inpatient stay. Hospitals could focus their quality-improvement efforts on aspects that are most relevant to the overall patient experience.

To cite: Feng JY, Toomey SL, Elliott MN, et al. Factors Associated With Family Experience in Pediatric Inpatient Care. *Pediatrics.* 2020;145(2):e20191264

Patient-centered care is anchored in providing care that is respectful of and responsive to values of individual patients.[1] One widely adopted measure of patient-centered care is patient experience.[2] Positive performance on patient experience measures is associated with positive health care outcomes, including increased treatment adherence, improved clinical outcomes, and reduced health care use.[3] In pediatrics, family-centered care is associated with higher receipt of anticipatory guidance, reduced unmet needs, and reduced nonurgent emergency department visits.[4,5] Consequently, patient experience surveys have become increasingly prominent in public reporting, financial risk-sharing arrangements, and pay-for-performance programs.[6] Notable examples include the use of patient experience measures for public reporting and in calculating inpatient Medicare reimbursement, although the Centers for Medicare and Medicaid Services do not mandate the use of pediatric inpatient experience measures at this time.[7]

In hospitals, interventions such as nurse manager rounding, provider communication training, and postdischarge telephone follow-up have been shown to promote improvement on patient experience measures as well as other important outcomes, such as treatment adherence, patient safety, and excess use.[3,8–11] In addition to focusing on specific measures of experience, hospitals often emphasize overall measures such as willingness to recommend. These high-level measures summarize the quality dimensions that are of concern to each patient, which may differ across patient populations. Studies have examined the relative importance of specific care dimensions (eg, communication with doctors and privacy) for adult inpatient care,[12–14] helping hospitals identify correlates of high overall performance (ie, possible key drivers) of patient experience and prioritize targets for intervention.

However, little is known about drivers of family experience performance for inpatient care of pediatric populations. To determine which aspects of pediatric inpatient experience matter most to families, we sought to identify aspects that show the strongest relationship with parents' willingness to recommend a hospital after their children's inpatient stay. For the most important care dimensions found in our analyses, we assessed whether these associated dimensions varied by sociodemographic characteristics.

METHODS

Child Hospital Consumer Assessment of Healthcare Providers and Systems Survey and Measures

Inpatient pediatric experience was measured by using the Child Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey, which contains 62 items (including 39 patient experience items that make up 18 composite and single-item measures, 10 screening questions, 12 demographic and/or descriptive items, and 1 open-ended item). Of the 18 experience measures, we included the 10 that were applicable to care of all patients, excluding measures that were relevant only to subsets of patients, such as adolescents or patients admitted through the emergency department. Specifically, the 10 measures included in this article consist of 7 composite measures (communication about medicines, keeping parents informed, discharge preparation, nurse-parent communication, doctor-parent communication, preventing mistakes and helping report concerns, and helping the child feel comfortable) and 3 single-item measures (privacy when talking with providers, cleanliness of the hospital room, and quietness of the hospital room; Supplemental Fig 4).[15] For sensitivity analysis of the subset of children who, by parent report, were able to talk with providers about their care, 2 additional composite measures (nurse-child communication and doctor-child communication) were included. The criterion variable was overall patient experience as measured by the item "willingness to recommend the hospital to family and friends."

Study Population and Survey Administration

Surveys were administered to parents or guardians (henceforth, "parents") of patients aged <18 years who had ≥1 overnight stay at any of 69 hospitals in 34 states. The standard exclusion criteria were used: "no-publicity" patients (ie, parents who do not want to be contacted), court and/or law enforcement patients, wards of the state, observation patients, healthy newborns, obstetric patients, patients with a foreign home address, patients excluded because of state regulations, patients admitted for a psychiatric diagnosis, patients discharged to another health care facility, and deceased patients. Survey vendors already contracted by the participating hospitals administered questionnaires by mail or telephone in English or Spanish. No incentives were offered. A total of 17 727 surveys were collected during a 14-month period (December 2012 to February 2014) with a response rate of 17.7%. Of the completed surveys, 443 (2.5%) were missing responses for the willingness-to-recommend item, and 1329 (7.5%) were missing ≥1 child or parent characteristics, leaving 16 266 surveys in the analytic sample. The Boston Children's Hospital Institutional Review Board approved the study.

Child and Parent Characteristics

We adjusted individual scores for child and/or parent characteristics that were thought to be unrelated to

quality of care but predictive of response patterns.[15–17] Child characteristics include age (<1, 1–4, 5–8, 9–12, and ≥13 years) and parent-reported global health status ("excellent," "very good," "good," "fair," or "poor"). Parent characteristics include age (<25, 25–34, and ≥35 years), relationship to the child (mother, father, or other), education (≤8th grade, some high school, high school diploma or General Educational Development, some college or 2-year degree, 4-year college degree, or >4-year college degree), and preferred language (English, Spanish, or other). All characteristics were derived from the survey except for child age, which was from the hospitals' administrative data.

Statistical Analyses

We scored survey items using a top-box approach, which is standard for both the Child and Adult HCAHPS Surveys, in which each item was recoded as an indicator variable of whether respondents selected the most positive response option (ie, "always," "yes, definitely," or "definitely yes").[15,18] Composite scores were defined as the mean of the indicator variables for the component items.

For individual-level analyses, we used a hierarchical logistic regression model that predicted the top-box score for willingness to recommend from the top-box scores of 10 composite measures as fixed-effect predictors (entered individually in bivariate analysis or simultaneously in multivariate analysis), adjusting for child and/or parent characteristics and including a hospital random effect. Missing composites and covariates were imputed as the mean of each hospital. To gauge the relative importance of each experience measure, we estimated partially standardized coefficient estimates (ie, rescaled by the SD of each predictor), which were exponentiated to obtain adjusted odds ratios (aORs) per 1-SD change in the predictor.[19] Joint tests with multiple degrees of freedom were used to determine the statistical significance of each predictor.

To test differences in the strength of predictors across patient groups, we estimated top-box models, each augmented with interactions between experience measures and 1 child or parent characteristic (child age or health status; parent age, relationship to the child, education, or race and/or ethnicity [preferred language]). Joint tests were used to assess the evidence that experience measures varied by a child and/or parent characteristic.

For hospitals with ≥100 completed surveys, we assessed whether hospitals were above, below, or indistinguishable from the mean of all hospitals using the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Analysis Program 4.1.[20] Statistical significance was determined by using *t* tests, comparing adjusted hospital means and the overall mean. Scores of composite measures were calculated as the mean of the top-box scores of component items at the hospital level. Hospital-level scores were adjusted by the same set of child and/or parent characteristics as above.

For all analyses, robust SEs were used with a 2-sided significance threshold of $P < .05$. Data were analyzed by using SAS 9.4 (SAS Institute, Inc, Cary, NC) and R 3.4.0.

Sensitivity Analyses

Given the importance of communication measures, we performed a subanalysis of the 7813 (48.0%) children who were able to talk with providers about their care, per parent report, for whom doctor-child and nurse-child communication were assessed. Associations of the 2 measures were measured in bivariate and multivariate models with the other 10 measures, as above. We assessed differences in the relative importance of care dimensions by medical versus surgical service line, for the 58% of surveys for which administrative data were available, by interacting the service line with each variable. Because bottom-box scores (ie, probability of selecting the most negative response options) provide valuable information about hospital performance,[21] we created a model that predicted the bottom box for willingness to recommend ("definitely no" or "probably no") from bottom-box scores of the experience measures ("never or sometimes", or "no") and adjusted for the same child and/or parent characteristics as in the main top-box model.

RESULTS

The median child age was 5 years (interquartile range 1–12 years), and 46% of the children were girls (Table 1). Of the children, 65% were non-Hispanic white, 17% were Hispanic, 10% were non-Hispanic African American, and 8% were of other or multiple races and/or ethnicities. Per parental report, most children were in excellent or very good health (73%). Most survey respondents were mothers (85%), had at least some college education (75%), and preferred English (90%).

Predictors of Recommendation

Of respondents, 84% endorsed the top box for willingness to recommend the hospital. Figure 1 shows the patient-level odds ratios of the top box for willingness to recommend per 1-SD increase in top-box composite measures (Fig 2, Supplemental Fig 4) adjusted for child and/or parent characteristics. In bivariate analysis, child comfort (mean top-box score 67%), nurse-parent communication (81%), keeping the parent informed (73%), doctor-parent communication (82%), and discharge preparation (81%) had the strongest associations

TABLE 1 Parent and/or Child Characteristics

	%
Child age, y	
<1	21.1
1–4	25.8
5–8	16.0
9–12	14.6
13–17	22.5
Child sex	
Male	54.1
Female	45.9
Child health status	
Excellent	40.6
Very good	32.5
Good	18.3
Fair	7.1
Poor	1.5
Parent age, y	
<25	8.1
25–34	34.0
35–44	37.4
≥45	20.6
Parent education	
Eighth grade or less	2.8
Some high school	4.7
High school graduate	17.7
Some college	32.3
4-y college graduate	22.8
>4-y college degree	19.7
Parent relationship to the child	
Mother	85.2
Father	11.1
Other	3.7
Race and/or ethnicity[a]	
White, non-Hispanic	64.8
Hispanic	17.1
African American, non-Hispanic	10.0
Asian American and/or Pacific Islander	3.5
American Indian	0.6
Multiple races and/or ethnicities	4.0
Parent language preference	
English	90.2
Spanish	6.6
Other or missing	3.3

[a] Race and/or ethnicity was missing in 181 surveys (1.1%) and was not imputed; percentages listed are among the nonmissing values.

with recommendation. Reporting mistakes and concerns (53%), cleanliness (68%), privacy (82%), communication regarding medicines (80%), and quietness (60%) had more modest effects. In multivariate analysis, these 5 factors remained the strongest predictors when influences of all 10 experience measures were accounted for simultaneously. Child comfort (aOR 1.50 per SD; 95% confidence interval [CI] 1.41–1.60) and nurse-parent communication (aOR 1.50; 95% CI 1.42–1.58) were the strongest multivariate predictors, followed by discharge preparation (aOR 1.34; 95% CI 1.27–1.41), doctor-parent communication (aOR 1.28; 95% CI 1.21–1.35), keeping the parent informed (aOR,1.25; 95% CI 1.18–1.33), and cleanliness of hospital room (aOR 1.19; 95% CI 1.13–1.25; $P < .001$ for each). Quietness of the hospital ($P = .05$) and privacy ($P = .75$) were not significantly associated with willingness to recommend.

Variation in Driver Strengths by Child and/or Parent Characteristics

Supplemental Table 2 shows the relative importance of the 5 most important experience measures in predicting the top box for willingness to recommend for specific child and/or parent characteristics. There was little evidence that the associations of composites with willingness to recommend varied across subgroups, with only 3 of 30 tests of interactions being statistically significant. In particular, the strength of associations for child comfort and nurse-parent communication varied significantly by child age ($P = .03$ and $P = .02$, respectively, for joint tests of each interaction), with child comfort being especially predictive and parent-nurse communication being less predictive for those aged 5 to 8 years versus for those of other ages. Child comfort was more strongly associated for mothers and fathers than for those related to the child in other ways ($P = .01$ for joint test of interaction).

Variation in Experience Across Hospitals

Among the 53 hospitals with ≥100 completed surveys, adjusted top-box scores for overall willingness to recommend were significantly below the mean for 13 hospitals and were above the mean for 19 hospitals (Fig 3). For the 5 most important experience measures, 9 of the 13 hospitals with significantly low recommendations scored significantly below the mean on ≥1 of the most importance measures, 6 were below the mean on ≥3 measures, and 2 underperformed on all 5 measures. Of the 19 hospitals with significantly high recommendation values, 16 were significantly above the mean on ≥1 of the most important measures, 8 were above the mean on ≥3 measures, and 1 was above the mean on all 5 measures.

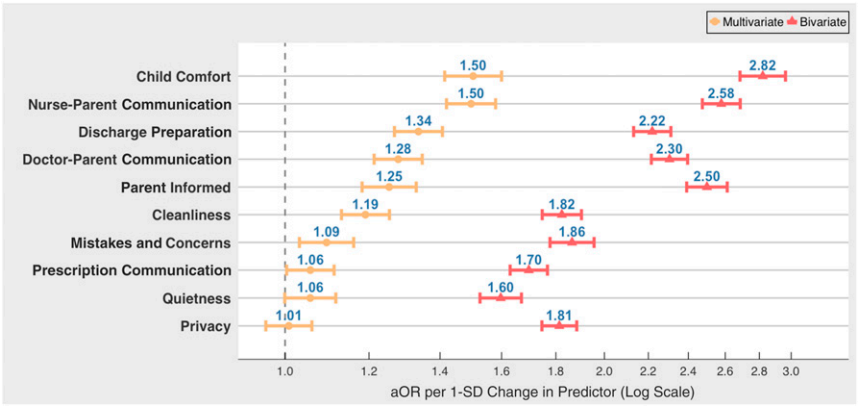

FIGURE 1

Bivariate and multivariate drivers of willingness to recommend. Bivariate and multivariate aORs per 1-SD change in predictor were used as measures of relative importance. Bivariate odds ratios were estimated by using separate hierarchical logistic regression models that predicted top-box recommendation from top-box scores of each composite experience measure, adjusting for child and/or parent characteristics (child age and health status; parent age, education, language, and relationship to the child), with hospital random effects. Multivariate odds ratios were similarly estimated with all experience measures entered simultaneously. Coefficient estimates of each composite experience measure were rescaled by SD to standardize comparisons.

Sensitivity Analyses

Because of the importance of communication measures,[21] we investigated doctor-child and nurse-child communication measures among children who were able to talk with providers about their care. In bivariate analysis, nurse-child and doctor-child communication were similarly associated with willingness to recommend as nurse-parent and doctor-parent communication, respectively (Supplemental Fig 5). In multivariate analysis, child comfort remained the strongest independent predictor, followed by doctor-parent communication, discharge preparation, keeping the parent informed, nurse-parent communication, and nurse-child communication ($P < .001$ for each). Doctor-child communication was no longer significant ($P = .59$).

For the subset of surveys for which administrative data for service line (medical versus surgical) were available, we did not find meaningful differences in the relative importance of care dimensions in predicting willingness to recommend after adjusting for service line (results not shown).

We assessed the relative importance of bottom-box experiences for endorsing bottom-box willingness to recommend because bottom-box scores may represent a distinct dimension of quality that is not captured by top-box scores and might be informative for quality improvement. The patterns are broadly similar to the top-box analysis. Supplemental Figure 6 shows the aORs of endorsing the bottom box for willingness to recommend per 1-SD increase in the bottom-box score of each experience measure. Endorsement of the bottom box for keeping parents informed (aOR 1.36; 95% CI 1.27–1.47), nurse-parent communication (aOR 1.32; 95% CI 1.24–1.40), doctor-parent communication (aOR 1.31; 95% CI 1.24–1.39), and child comfort (aOR 1.29; 95% CI 1.19–1.41) were the strongest predictors for bottom-box recommendation ($P < .001$ for each).

DISCUSSION

In a large study of hospitals from >30 states, we found that components of care vary in importance to parents' overall assessment of inpatient care for their children. Child comfort and nurse-parent communication were the most important dimensions overall. Their relative importance did not vary significantly with most child and/or parent characteristics, suggesting that these dimensions are valued across most groups in our study population. At the hospital level, most hospitals with above-average top-box scores for willingness to recommend performed above average on 1 or more of the 5 most important experience measures, whereas most hospitals with below-average overall scores tended to have performed below average on many of these measures.

This is the first large-scale study to examine how different aspects of pediatric inpatient care contribute to parents' overall assessment of the hospital. Although adult studies have been conducted, little is known about whether those findings are applicable to pediatrics given the role that families play and aspects of care that are unique to caring for children (eg, age-appropriate environment and dependence on adults to make decisions).

Child comfort was a salient predictor of willingness to recommend. Child comfort had the lowest mean hospital score and greatest variation across hospitals in a previous study of Child HCAHPS Survey data,[22] signaling a critical performance gap and contributing to its relatively strong association with the criterion. Supporting services such as child life and approaches such as family-centered bedside rounding may help engage parents in the process of tailoring the care environment to improve child comfort.[23–26]

As in studies of adult care, we found communication measures (nurse-parent and doctor-parent communication) to be among the most valued dimensions.[10,13,14,27,28] These measures gauged whether parents felt that providers listened carefully, explained issues

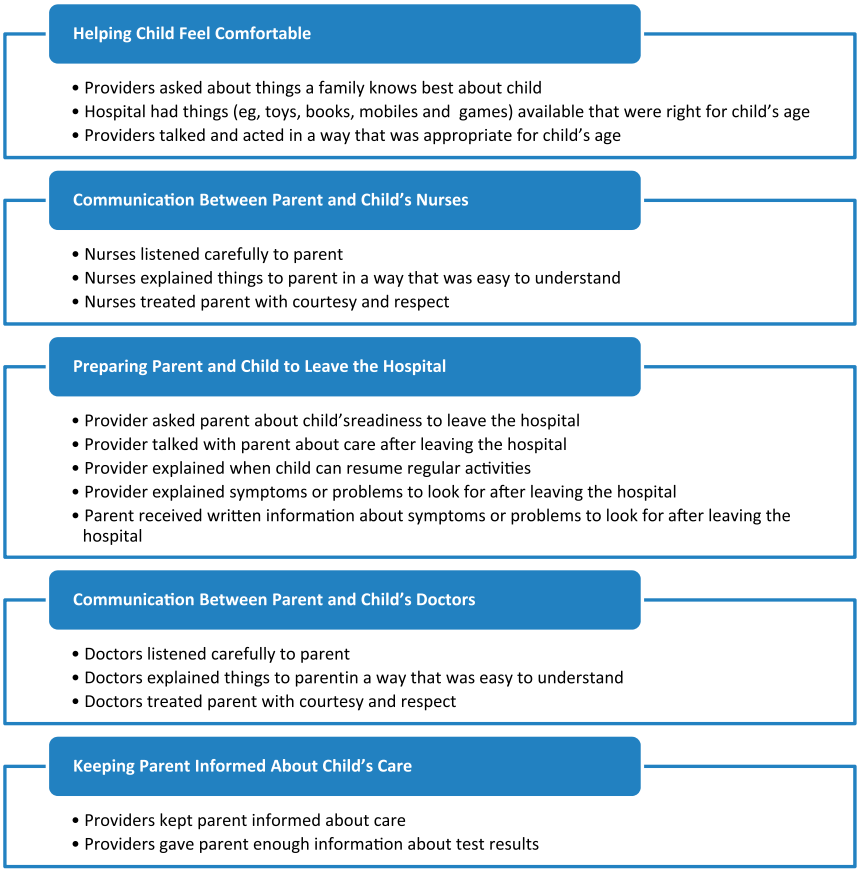

FIGURE 2
Components of the 5 most important predictors of willingness to recommend. See Supplemental Fig 4 for a full list of Child HCAHPS Survey measures.

understandably, and acted respectfully. Efforts to improve provider communication could focus on improving the effectiveness of communication (eg, provider workshops[29] and the "teach-back" method[30,31]), ensuring sufficient opportunities for engaging with families (eg, bedside rounding[23] and proactive nursing rounds[32]), and emphasizing diversity and cultural humility (eg, multicultural recruiting and translation services[33]).

Preparing families to leave the hospital and keeping parents informed were also important independent of performance on communication measures. A qualitative study found that hospitals that performed well on Adult HCAHPS Survey discharge preparedness measures tended to use multidisciplinary rounds, discharge folders, and a postdischarge phone call.[32] More generally, efforts aimed at empowering families to be more effective participants in their children's care may also be useful. Parents may be offered a list of most commonly asked questions for a given reason for admission or opportunities to meet with nurses to review the hospital course and generate questions for the broader treatment team.[34] Such efforts may facilitate shared decision-making during the hospitalization and help parents identify issues that may arise after discharge, which might be particularly helpful for families with limited health care contact or health literacy.[35]

In contrast to studies of adult inpatient experience, our study did not find quietness or privacy to be of high importance.[36,37] These findings suggest differing priorities between families of pediatric patients and

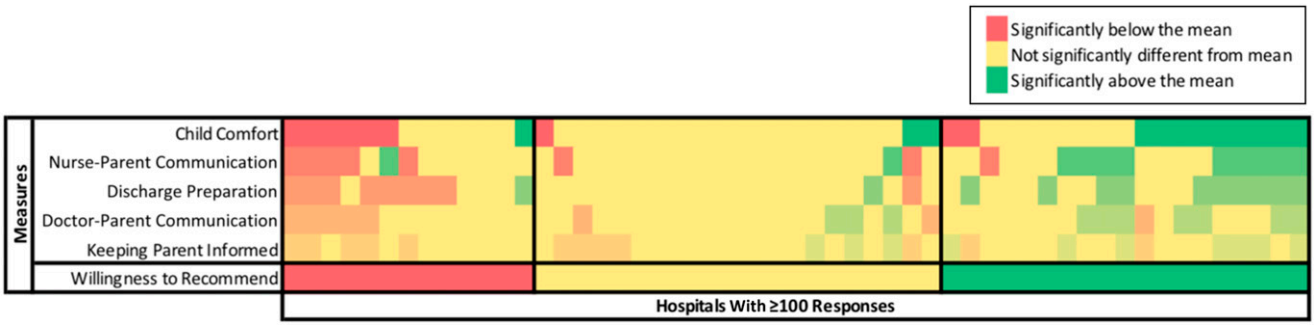

FIGURE 3
Variation of the 5 most important experience measures across hospitals. Intensity of color corresponds to the rank of each experience measure in predicting the top box for willingness to recommend at the individual level, as calculated by using the CAHPS Analysis Program 4.1. All scores were adjusted for child age, parent-reported child health status, parent age, parent relationship to the child, parent education, and parent's preferred language. A hospital's performance differs significantly from the mean if the 2-sided *P* value of *t* tests comparing the adjusted hospital mean and overall mean is <0.05.

adult patients. For example, parents might not prioritize quietness in pediatric care given that home life with children is not necessarily quiet, or perhaps parents expect or accept that hospitals are noisy places. Relatedly, we found that child comfort was less important to parents of older children, possibly because the older children are more independent in their choice of amusements and capacity for conversation with hospital staff.

Although this is 1 of the largest studies of drivers of pediatric inpatient experience to date, there are several limitations. First, there might be selection bias given that hospitals volunteered to participate, which might limit the generalizability of our findings to other hospitals that care for children, although one might not expect the associations between measures to be biased by selection. Second, the response rate of the survey is low, albeit comparable to those attained for proprietary pediatric patient experience surveys and younger adults in other patient experience surveys[38]; a recent study demonstrated the potential to increase the response rate through alternative survey administration methods.[39] Third, the Child HCAHPS Survey was administered in English and Spanish. Additional language translations may have broadened participation outreach and increased representation. Of note, the 4 additional languages used by the Adult HCAHPS Survey account for <1% of responses.[40] Fourth, clinical data (eg, diagnoses and service line) were not consistently available in this study. Previous studies in adults have found differences in driver strengths depending on the type of hospitalization.[13] Research in such differences in pediatric populations could help refine quality-improvement targets. Lastly, our study reports findings from the most recent pediatric inpatient experience data that are publicly available. Establishing a national repository of pediatric experience data could incorporate more hospitals where children receive inpatient care, allowing for larger samples and more detailed subgroup analyses.

CONCLUSIONS

Child comfort and nurse-parent communication were the most important drivers of parents' willingness to recommend the hospital after a child's inpatient stay, followed by discharge preparation, doctor-parent communication, and keeping parents informed. Interventions that target these areas may be particularly helpful for improving overall inpatient experience. Hospitals can use the Child HCAHPS Survey and other experience measures to stimulate quality-improvement activities and track their effects. Our results will be useful for local stakeholders to prioritize quality-improvement targets and compare their own results against results from a national sample. The fact that dimensions that are unique to the Child HCAHPS Survey, such as child comfort, were among those that were predictive of parents' willingness to recommend a hospital underscores the importance of CAHPS instruments using measures that are unique to a specific setting in addition to the core CAHPS measures.

ABBREVIATIONS

aOR: adjusted odds ratio
CAHPS: Consumer Assessment of Healthcare Providers and Systems
CI: confidence interval
HCAHPS: Hospital Consumer Assessment of Healthcare Providers and Systems

Address correspondence to Jeremy Y. Feng, MD, Division of General Pediatrics, Boston Children's Hospital, 300 Longwood Ave, Boston, MA 02115. E-mail: jeremy.feng@childrens.harvard.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Supported by the US Department of Health and Human Services, Agency for Healthcare Research and Quality, Centers for Medicare and Medicaid Services, Children's Health Insurance Program Reauthorization Act of 2009, and Pediatric Quality Measures Program Centers of Excellence (grants U18 HS020513 [principal investigator: Dr Schuster] and U18 HS025299 [principal investigators: Drs Schuster and Toomey]). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality. Dr Toomey was also supported by a Mentored Career Development–Catalyst Medical Research Investigator Training award (KL2 award) from Harvard Catalyst and the Harvard Clinical and Translational Science Center (the National Center for Research Resources and the National Center for Advancing Translational Sciences of the National Institutes of Health [KL2 award TR001100]). Funded by the National Institutes of Health (NIH).

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

REFERENCES

1. Institute of Medicine, Committee on the Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001
2. Epstein RM, Street RL Jr.. The values and value of patient-centered care. *Ann Fam Med*. 2011;9(2):100–103
3. Anhang Price R, Elliott MN, Zaslavsky AM, et al. Examining the role of patient experience surveys in measuring health care quality. *Med Care Res Rev*. 2014; 71(5):522–554
4. Brousseau DC, Hoffmann RG, Nattinger AB, Flores G, Zhang Y, Gorelick M. Quality of primary care and subsequent pediatric emergency department utilization. *Pediatrics*. 2007;119(6): 1131–1138
5. Kuo DZ, Bird TM, Tilford JM. Associations of family-centered care with health care outcomes for children with special health care needs. *Matern Child Health J*. 2011;15(6):794–805
6. Centers for Medicare and Medicaid Services. Hospital value-based purchasing. 2019. Available at: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Hospital-Value-Based-Purchasing-.html. Accessed September 24, 2019
7. National Quality Forum. Strengthening the core set of healthcare quality measures for children enrolled in Medicaid and CHIP, 2018. Washington, DC: National Quality Forum. Available at: https://www.qualityforum.org/Publications/2018/08/Strengthening_the_Core_Set_of_Healthcare_Quality_Measures_for_Children_Enrolled_in_Medicaid_and_CHIP,_2018.aspx. Accessed September 24, 2019
8. Doyle C, Lennox L, Bell D. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*. 2013;3(1): e001570
9. Gary TL, Maiese EM, Batts-Turner M, Wang NY, Brancati FL. Patient satisfaction, preventive services, and emergency room use among African-Americans with type 2 diabetes. *Dis Manag*. 2005;8(6):361–371
10. Schmidt LA. Patients' perceptions of nurse staffing, nursing care, adverse events, and overall satisfaction with the hospital experience. *Nurs Econ*. 2004; 22(6):295–306, 291
11. Mitchell MD, Lavenberg JG, Trotta RL, Umscheid CA. Hourly rounding to improve nursing responsiveness: a systematic review. *J Nurs Adm*. 2014; 44(9):462–472
12. Centers for Medicare and Medicaid Services. HCAHPS patient-level correlations table: CAHPS Hospital Survey. 2019. Available at: www.hcahpsonline.org/en/summary-analyses/. Accessed September 24, 2019
13. Elliott MN, Kanouse DE, Edwards CA, Hilborne LH. Components of care vary in importance for overall patient-reported experience by type of hospitalization. *Med Care*. 2009;47(8): 842–849
14. Klinkenberg WD, Boslaugh S, Waterman BM, et al. Inpatients' willingness to recommend: a multilevel analysis. *Health Care Manage Rev*. 2011;36(4): 349–358
15. Toomey SL, Zaslavsky AM, Elliott MN, et al. The development of a pediatric inpatient experience of care measure: Child HCAHPS. *Pediatrics*. 2015;136(2): 360–369
16. Hargraves JL, Wilson IB, Zaslavsky A, et al. Adjusting for patient characteristics when analyzing reports from patients about hospital care. *Med Care*. 2001;39(6):635–641
17. Zaslavsky AM. Statistical issues in reporting quality data: small samples and casemix variation. *Int J Qual Health Care*. 2001;13(6):481–488
18. Giordano LA, Elliott MN, Goldstein E, Lehrman WG, Spencer PA. Development, implementation, and public reporting of the HCAHPS survey. *Med Care Res Rev*. 2010;67(1):27–37
19. Menard S. Six approaches to calculating standardized logistic regression coefficients. *Am Stat*. 2004; 58(3):218–223
20. Agency for Healthcare Research and Quality. Instructions for analyzing data from CAHPS Surveys: using the CAHPS analysis program version 4.1. Rockville, MD: Agency for Healthcare Research and Quality. 2012. Available at: https://www.ahrq.gov/sites/default/files/wysiwyg/cahps/surveys-guidance/helpful-resources/analysis/2015-instructions-for-analyzing-data.pdf. Accessed January 9, 2020
21. Quigley DD, Elliott MN, Farley DO, Burkhart Q, Skootsky SA, Hays RD. Specialties differ in which aspects of doctor communication predict overall physician ratings. *J Gen Intern Med*. 2014;29(3):447–454
22. Toomey SL, Elliott MN, Zaslavsky AM, et al. Variation in family experience of pediatric inpatient care as measured by child HCAHPS. *Pediatrics*. 2017; 139(4):e20163372
23. Muething SE, Kotagal UR, Schoettker PJ, Gonzalez del Rey J, DeWitt TG. Family-centered bedside rounds: a new approach to patient care and teaching. *Pediatrics*. 2007;119(4):829–832
24. Cohen LL. Behavioral approaches to anxiety and pain management for pediatric venous access. *Pediatrics*. 2008;122(suppl 3):S134–S139
25. Gursky B, Kestler LP, Lewis M. Psychosocial intervention on procedure-related distress in children being treated for laceration repair. *J Dev Behav Pediatr*. 2010;31(3):217–222
26. Committee on Hospital Care and Child Life Council. Child life services. *Pediatrics*. 2014;133(5). Available at: www.pediatrics.org/cgi/content/full/133/5/e1471
27. Larrabee JH, Ostrow CL, Withrow ML, Janney MA, Hobbs GR Jr., Burant C. Predictors of patient satisfaction with inpatient hospital nursing care. *Res Nurs Health*. 2004;27(4):254–268
28. Resnick AS, Disbot M, Wurster A, Mullen JL, Kaiser LR, Morris JB. Contributions of surgical residents to patient satisfaction: impact of residents beyond clinical care. *J Surg Educ*. 2008;65(3): 243–252
29. Agency for Healthcare Research and Quality. *Training to Advance Physicians' Communication Skills. Improving Patient Experience*. Rockville, MD: Agency for Healthcare Research and Quality; 2017. Available at: https://www.

ahrq.gov/cahps/quality-improvement/improvement-guide/6-strategies-for-improving/communication/strategy6gtraining.html. Accessed September 24, 2019

30. Agency for Healthcare Research and Quality. *Use the Teach-Back Method. Health Literacy Universal Precautions Toolkit*. 2nd ed. Rockville, MD: Agency for Healthcare Research and Quality; 2015. Available at: https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2-tool5.html. Accessed September 24, 2019
31. Kelly AM, Putney L. Teach back technique improves patient satisfaction in heart failure patients. *Heart Lung*. 2015;44(6):556–557
32. Aboumatar HJ, Chang BH, Al Danaf J, et al. Promising practices for achieving patient-centered hospital care: a national study of high-performing US hospitals. *Med Care*. 2015;53(9):758–767
33. Weech-Maldonado R, Elliott M, Pradhan R, Schiller C, Hall A, Hays RD. Can hospital cultural competency reduce disparities in patient experiences with care? *Med Care*. 2012;50(suppl):S48–S55
34. Agency for Healthcare Research and Quality. *Tools to Help Patients Communicate Their Needs. Improving Patient Experience*. Rockville, MD: Agency for Healthcare Research and Quality; 2017. Available at: https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/6-strategies-for-improving/communication/strategy6htools.html. Accessed September 24, 2019
35. Ashton CM, Haidet P, Paterniti DA, et al. Racial and ethnic disparities in the use of health services: bias, preferences, or poor communication? *J Gen Intern Med*. 2003;18(2):146–152
36. Carey RG, Seibert JH. A patient survey system to measure quality improvement: questionnaire reliability and validity. *Med Care*. 1993;31(9):834–845
37. Sofaer S, Crofton C, Goldstein E, Hoy E, Crabb J. What do consumers want to know about the quality of care in hospitals? *Health Serv Res*. 2005;40(6, pt 2):2018–2036
38. Elliott MN, Zaslavsky AM, Goldstein E, et al. Effects of survey mode, patient mix, and nonresponse on CAHPS hospital survey scores. *Health Serv Res*. 2009;44(2, pt 1):501–518
39. Toomey SL, Elliott MN, Zaslavsky AM, et al. Improving response rates and representation of hard-to-reach groups in family experience surveys. *Acad Pediatr*. 2019;19(4):446–453
40. Quigley DD, Elliott MN, Hambarsoomian K, et al. Inpatient care experiences differ by preferred language within racial/ethnic groups. *Health Serv Res*. 2019;54(suppl 1):263–274

Factors Associated With Family Experience in Pediatric Inpatient Care

Jeremy Y. Feng, Sara L. Toomey, Marc N. Elliott, Alan M. Zaslavsky, Sarah E. Onorato and Mark A. Schuster

Pediatrics 2020;145;
DOI: 10.1542/peds.2019-1264 originally published online February 3, 2020;

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Factors Associated With Family Experience in Pediatric Inpatient Care

Jeremy Y. Feng, Sara L. Toomey, Marc N. Elliott, Alan M. Zaslavsky, Sarah E. Onorato and Mark A. Schuster

Pediatrics 2020;145;
DOI: 10.1542/peds.2019-1264 originally published online February 3, 2020;