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Patient experience in a pediatric emergency department during COVID-19

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Abstract

The COVID-19 pandemic has changed many dynamics in healthcare in the United States. This study explores an increase in patient experience (PE) scores in a pediatric emergency department. Visits were analyzed before and after March 8, 2020, corresponding with the first local case of COVID-19. Changes in the patient population and characteristics of survey responders were analyzed. Overall, the number of daily visits decreased (113 vs 36/day) and survey response rate decreased (3.7 vs 2.8%, $p = 0.03$), but PE scores increased (87.21 to 93.73, $p = 0.002$). Comparatively, an increase in patients with higher acuity levels by Emergency Severity Index (ESI), white/Caucasian race, and non-Hispanic ethnicity were observed in the population. Similarly, responders were comprised of higher ESI and a similar racial shift. No correlations, however, were identified between these factors and PE score. Overall, while the data suggest some changes in demographics and acuity, they do not adequately account for the increase in PE score. Further evaluation of the patient/provider relationship during a global pandemic is justified.

Keywords

COVID-19, patient satisfaction, emergency medicine, pediatrics

Introduction

The onset of the current worldwide pandemic marks a significant change in the experiences of people in their lives and in intersection with healthcare as well. Coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was first noted in the United States in January 2020, and has since been associated with wide scale escalation of cases and fatalities.¹ While the United States has faced previous pandemics including influenza² and human immunodeficiency virus³, the widespread impact of COVID-19 may be unique from these in many ways. The pandemic has not only been associated with significant morbidity and mortality, but also social distancing and isolation, school disruption and remarkable economic impacts.⁴ Changing life circumstances may impact mental/behavioral health, access to care or other dynamics essential to a positive healthcare experience.⁵

The issue of patient experience during these times may be of particular concern because of the increased mental and behavioral health needs during times of crisis. Experts predict an increase in acuity for patients already managing mental/behavioral health needs and the development of psychosocial consequences in patients without prior diagnoses and health providers as well.⁵⁻⁷ This has the potential to strain the provider-patient relationship at the point of care. Along with department efficiency, communication and compassion have been noted to be

the strongest driver of the emergency department patient experience.⁸

Environmental dynamics in the emergency department have been changing since the beginning of the pandemic. The number of patients seeking care in the emergency department setting have decreased drastically, up to 50% in some areas of the country.⁹ Patients and families may feel that a hospital visit introduces unnecessary risk and choose to delay care until it is unavoidable.¹⁰ This shift in acuity and change in volume, combined with the onset of new protocols for patient flow and infection prevention, have created a new reality for patients and providers alike.

Generally, little has been described about the impact of a pandemic and disaster on the experience of patients and families. Many of the available reports describe patient experience with alternative triage processes and sites of care when implemented to minimize overcrowding.¹¹⁻¹³ Even less is known about the current pandemic and its current impacts in this realm. It is not clear that the existing literature will apply, especially as prior pandemics were often associated with increased patient volumes and decreased reported patient experience.¹⁴

Since the arrival of COVID-19 in our area, we observed both a decrease in patient arrivals as well as a sharp increase in patient experience scores. The reason for this increase was unclear. The purpose of this study is to describe this increase in patient experience scores and to evaluate whether this may be related to a shift in

emergency department demographics or other measurable factors. To achieve this aim, we describe (1) shifts in treat and release patient population during the pandemic, (2) changes in survey response population characteristics and (3) relationships between demographic variables and patient experience scores.

Methods

This study was performed from January to May 2020 at a single pediatric emergency department (PED) associated with a children's hospital setting within a health system. The PED is located in an urban area in Connecticut and sees approximately 38,000 visits annually (admissions and treat and release) and is a level 1 trauma center as well as referral center. Typically, approximately 12% of patients in the PED are admitted. Staffing includes a group of fellowship-trained pediatric emergency physicians, advanced practice providers as well as nurses. Trainees including pediatric emergency medicine fellows as well as residents in pediatrics, emergency medicine and family medicine rotate through the department. No significant staffing changes occurred during this time. No formal communication training, patient experience training or other similar interventions were noted in any of these groups during this study period.

Institutionally, patient experience scores are collected through Press Ganey®. The hospital system contracts with this vendor to deliver a patient experience survey based on the Clinician and Group Consumer Assessment of Healthcare Professionals Survey (CG-CAHPS).¹⁵ The PED survey is sent to all patients treated and discharged, but not patients admitted to the hospital. Admitted patients receive a survey specific to their inpatient care and do not complete the PED version. The survey is provided electronically if an email address is available and on paper for all other eligible patients. The survey asks several specific questions to assess dimensions of care and provides a summary overall score. The survey may be completed by the patient or guardian, depending on patient age. The survey generates an overall numerical value up to a total score of 100, referred to in this project as "patient experience score." This score is linked to the patient visit data in our electronic health records (EHR) database, allowing the score to be matched to visit information for follow-up and improvement use by hospital leadership.

Following institutional review board approval, we queried our electronic health records database for variables of interest. The COVID-19 pandemic time was defined as beginning March 8, 2020, the date of the first case announced in the state where the hospital is located.¹⁶ Data was available through May 18, 2020. The comparison period was January 1, 2020 to March 7, 2020, to best reflect current processes prior to pandemic. In addition to

patient visit volume, survey return rates and Press Ganey® scores, several patient demographics were evaluated. These included patient age in months, patient sex, patient length of stay (arrival to departure by time stamp in EHR), Emergency Severity Index score, race and ethnicity. Emergency Severity Index (ESI) level is a triage-assigned assessment of likelihood for resource utilization and hospitalization.¹⁷ It divides nurse-assessed patient acuity at arrival into five categories, ranging from 1 (highest acuity) to 5 (lowest acuity).

Data analysis was performed on aggregate data utilizing QI Macros (KnowWare International, Inc., Denver, Colorado) for Excel (Microsoft Corp., Redmond, Washington). For continuous variables, t test and ANOVA were utilized. For categorical variables, chi square tests were employed. Correlations were evaluated through regression testing by scatter plot.

Results

Analysis of Change in Treat and Release Population

Overall, the number of patient visits decreased significantly following the onset of COVID-19 in the state. Over the 65 days prior to the first case, 7,368 treat and release (T&R) visits occurred in the PED (113 visits per day). In the subsequent 72 days, 2,598 T&R visits (36 visits per day) were recorded. General descriptive statistics for the population are in Table 1. A slight, but statistically significant, decrease in the survey response rate from 3.7 to 2.8% ($p = 0.03$) was noted. Overall, the mean Press Ganey® scores increased from 87.21 to 93.73 ($p = 0.002$). There were no significant changes noted in the average age (93.7 vs 92.4 months, $p = 0.427$), sex distribution (50 vs 50% female sex, $p = 0.064$), or average length of stay (178.6 vs 180.9 minutes, $p = 0.832$) for T&R patients.

A significant change was noted in the ESI level for patients between the time groups. Following COVID-19, there was an increase in ESI Level 2 and 3 patients, with corresponding decreases in Level 4 and 5 patients ($p < 0.001$). Level 1 and level unspecified patients were grossly unchanged. Similarly, the general T&R patient population after COVID-19 began demonstrated a significant change in racial makeup, with an increase in white/Caucasian patients and a decrease in patients selecting "other" ($p < 0.001$). A shift in patient-reported ethnicity accompanied this, with an increase in non-Hispanic patients and a correlated decrease in Hispanic/Latino patients ($p < 0.001$).

Characteristics of Survey Responders

The makeup of the populations who returned Press Ganey® surveys, both before and after the onset of COVID-19, were compared. Characteristics of responder/non-responder groups are provided in Table 2. There were no statistically significant changes in mean

Table 1. Treat and Release Population Description

	Before COVID-19	Since COVID-19	
Patient visits, treat and release	7368	2598	
Returned Surveys	346 (3.7%)	73 (2.8%)	*p = 0.03
Press Ganey mean score (SD)	87.21 (16.9)	93.73 (11.7)	*p = 0.002
Mean patient age, months (SD)	93.7 (69.2)	92.4 (72.1)	p = 0.427
Patient Sex, female (%)	3695 (50%)	1289 (50%)	p = 0.064
Mean Length of Stay, minutes (SD)	178.6 (216.6)	180.9 (870.8)	p = 0.832
Emergency Severity Index			
Level 1	6 (0.8%)	5 (0.2%)	*p < 0.001
Level 2	846 (11.5%)	423 (16.3%)	
Level 3	2162 (29.3%)	868 (33.4%)	
Level 4	3489 (47.4%)	1035 (39.8%)	
Level 5	858 (11.6%)	259 (10%)	
Not specified	7 (0.1%)	8 (0.3%)	
Race			
American Indian/Alaskan Native	19 (0.3%)	5 (0.2%)	*p < 0.001
Asian	224 (3%)	72 (2.8%)	
Black/African American	2156 (29.3%)	755 (29.1%)	
Native Hawaiian/Pacific Islander	33 (0.4%)	7 (0.3%)	
White/Caucasian	2531 (34.4%)	1083 (41.7%)	
Other/Not Listed	2175 (29.5%)	593 (22.8%)	
Unknown/Refused	230 (3.1%)	83 (3.2%)	
Ethnicity			
Hispanic/Latino	3142 (42.6%)	876 (33.7%)	*p < 0.001
Non-Hispanic	4201 (57%)	1711 (79.5%)	
Unknown/Refused	25 (0.3%)	11 (0.4%)	

patient age, patient sex, or mean length of stay for the responder/non-responder groups after the pandemic began.

A statistically significant change in ESI level makeup of the groups was noted. After COVID-19, there was a decrease in the percent of returned surveys related to Level 5 visits, and a slight increase in the fraction of returned surveys related to higher ESI levels ($p < 0.001$). A larger percent of returned surveys was from white/Caucasian patients following COVID-19, while the fraction of surveys from black/African American patients decreased. The changes in racial makeup of the survey response/non-response groups were statistically significant ($p < 0.001$).

Conversely, no significant changes in ethnic makeup of the responder/non-responder groups were noted.

Correlation of Demographics with Patient Experience Score

Demographics were evaluated across the pre- and post-COVID time periods to assess for predictable relationship to patient experience score. No significant correlations of patient/visit demographics were identified by analysis of this data set. Patient age in months did not correlate with Press Ganey® score ($R^2 = 0.005$). Similarly, families of male patients scored their experience similarly to those of female patients (90.54 vs 87.52, $p = 0.221$). Length of stay

did not correlate with Press Ganey® score ($R^2 = 0.034$). There were no significant differences in average score across ESI Levels 1 to 5 (100, 84.6, 89.8, 89.2, 85.1; $p = 0.176$) Patient experience did not vary significantly by race ($p = 0.133$) or ethnicity ($p = 0.551$).

Discussion

The impact of pandemic on the patient experience is not well described, and certainly there is no precedent for a COVID-like impact in recent history. While patient visits to the study PED and others are decreasing, we describe increased patient experience scores from those families who do seek care. Despite the stress, anxiety, fear and other emotions that may couple with caring for an ill child during a pandemic and the impact of these emotions on the patient/family-provider relationship, reported patient experience in this front line setting is improved.¹⁸

Prior studies suggest some impact that patient and visit demographics may have on experience. The literature has connected increased patient acuity with increased reported patient experience.¹⁹ Even a perceived improvement in efficiency has been associated with better patient

Table 2. Survey Population Description

	Before COVID-19		Since COVID-19		
	Returned Surveys	Remainder of Population	Returned Surveys	Remainder of Population	
Mean patient age, months (SD)	87.3 (68.7)	93.9 (69.2)	83.4 (73.3)	92.7 (72.2)	p = 0.236
Patient Sex, female (%)	133 (48.7%)	3562 (50.2%)	36 (49.3%)	1253 (49.6%)	p = 0.959
Mean Length of Stay, minutes (SD)	191.8 (114.7)	178.1 (219.5)	159.3 (88.46)	181.5 (883.21)	p = 0.939
Emergency Severity Index					
Level 1	0 (0%)	6 (0.1%)	1 (1.4%)	4 (0.02%)	*p < 0.001
Level 2	35 (13%)	811 (11.4%)	10 (13.7%)	413 (16.4%)	
Level 3	110 (40.3%)	2052 (29.9%)	30 (41.1%)	838 (33.2%)	
Level 4	103 (37.7%)	3386 (47.7%)	31 (42.5%)	1004 (39.8%)	
Level 5	25 (9.2%)	833 (11.7%)	1 (1.4%)	248 (10.2%)	
Not specified	0 (0%)	7 (0.1%)	0 (0%)	8 (3.2%)	
Race					
American Indian/Alaskan Native	0 (0%)	19 (0.3%)	0 (0%)	5 (0.2%)	*p < 0.001
Asian	6 (2.2%)	218 (3.1%)	2 (2.7%)	70 (2.8%)	
Black/African American	54 (19.8%)	2102 (29.6%)	8 (11%)	747 (29.6%)	
Native Hawaiian/Pacific Islander	4 (0.1%)	29 (0.4%)	1 (1.4%)	6 (0.2%)	
White/Caucasian	156 (57.1%)	2375 (33.5%)	51 (69.9%)	1032 (40.9%)	
Other/Not Listed	49 (19.9%)	2126 (30%)	10 (13.7%)	583 (23.1%)	
Unknown/Refused	4 (0.2%)	226 (3.2%)	1 (1.4%)	82 (3.2%)	
Ethnicity					
Hispanic/Latino	72 (26.4%)	3070 (43.3%)	15 (20.5%)	861 (34.1%)	p = 1
Non-Hispanic	199 (72.9%)	4002 (56.4%)	58 (79.5%)	1653 (65.5%)	
Unknown/Refused	2 (0.7%)	25 (0.3%)	0 (0%)	11 (0.4%)	

perceptions of the care experience.²⁰ Prior data suggest that non-Hispanic black and Hispanic patients have higher reported satisfaction in the emergency department setting.²¹ Similarly, patients presenting with higher acuity have been shown to have higher reported satisfaction.¹⁹ We evaluated the impact of each of these factors on reported patient experience in this population and failed to identify a similar impact.

These data describe statistically significant changes in race/ethnicity and acuity of patients arriving to the PED. Our emergency department experienced an increase in white/Caucasian and non-Hispanic patients, as well as a trend towards higher acuity arrivals. These acuity shifts may represent a general hesitancy to seek care during pandemic, aside from true emergencies. Similarly, there were higher fractions of white/Caucasian patients and higher acuity patients represented among families who returned surveys. Given, however, that neither of these factors correlated clearly with a change in patient experience scores, it is unlikely that this phenomenon significantly contributed to the observed increase in scores.

Of concern, data in our own state have suggested that race and ethnicity is associated with differences in infection rate and mortality from COVID.²² While these observations are important in understanding the shifting demographics, future work in describing the how race, ethnicity and social determinants of health may impact access to care and health outcomes even aside from infection in a pandemic.

Decreased dwell times and improved efficiencies have been associated with improved patient experience.^{23,24} Patients are not happy to wait for care and appreciate enhanced throughput processes. Interestingly, in this study, we did not identify any measurable improvement in patient throughput associated with the improvement in reported patient experience. The length of stay for T&R patients was unchanged, and overall length of stay likewise failed to correlate with patient experience scores. It is unclear if the expectations for families presenting with their child for emergency care were different during this time, but future qualitative work to explore this has the potential to be illuminating.

The limitations of this study include a single center study design with small sample size that may impact the ability to generalize findings to other care settings. Likewise, the decrease in patient visits created a much smaller sample size in the post-COVID group. Finally, we were unable to formally analyze the patient/family-provider relationship in this study; however, no additional training or performance support was provided to staff during this time, making any institutional shift in care practices unlikely. Direct contact with patients and families for research purposes was limited during this time, due to infection prevention and staffing needs, making the addition of qualitative interviewing to the study protocol not possible.

While these factors describe the patient, population and environment, the major factor that remains is this interpersonal relationship between the provider and those they care for. Evidence supports the impact of empathy and communication in improving the experience of patients around their emergency department care.²⁴ Likewise, it is possible that the psychosocial needs of patients either change or are met differently during times of crisis. Families with different aged children may be responding to stress, increased caretaker needs, and stress from social isolation in different ways.²⁵ While these factors were not able to be explored in this current study, evaluation of the interactions between individuals at the bedside is an important next step in understanding the emergency department experience during a pandemic.

The future directions to build upon this work are many. Understanding changing patterns of emergency department resource utilization and patient experience are essential in planning for future phases of the current pandemic or others that may arise. Further rigorous qualitative study exploring feedback from patients and families may provide context and richness that will allow biases, changing perspectives and practical applications of these findings to be more accurately applied to other populations. Similarly, exploring changes in the provider experience in the emergency department as a workplace during a pandemic will help to ensure that patient/family and provider needs and preferences are balanced.

Conclusion

The beginning of the COVID-19 pandemic in our state was associated with a significant decrease in patient visits and an increase in Press Ganey[®] scores reflecting patient experience. Although some changes in patient population were observed, these do not adequately account for the change in scores. Further work will be essential to qualitatively understand the differences in patient/family-provider dynamics that may underpin an increase in patient experience in a pandemic setting.

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