Adult Experiences with Hospitalization in Alberta, Canada During the COVID-19 Pandemic: A Comparative Cross-Sectional Study

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Abstract

Little is known about the experiences of those hospitalized during the COVID-19 pandemic in Canada. Our aims were to (a) report on the experiences, (b) compare with historical results, and (c) assess for potential monthly differences of patients hospitalized in the early months of the COVID-19 across Alberta. A random sample of adults was surveyed within 6 weeks of discharge from 93 hospitals, using a modified version of the Canadian Patient Experiences Survey – Inpatient Care (CPES-IC). Discharges from April to September 2020 comprised the "during COVID-19 pandemic" cohort, while April to September 2019 formed the historical one. Results were reported as percent in "top box", indicative of the most positive answer choice. Odds of reporting a "top box" response were calculated while controlling for demographic and clinical features. In total, 23,412 surveys (11,344 during COVID-19, 12,068 historical) were obtained. Those hospitalized during COVID-19 had higher odds of "top box" ratings on 17 of 39 questions examined, and lower odds on 2 questions (information about the admission process, inclusion of family/friends in care decisions). The remaining 20 questions showed no difference between the 2 cohorts. Our results indicate that respondents hospitalized during the early months of the pandemic had experiences that were largely better or comparable to pre-pandemic. This speaks to the dedication and resilience of staff who provided care during challenging circumstances. Our findings may assist in mitigating fears among those who are hesitant to seek medical care during future pandemics or public health emergencies, including subsequent waves of COVID-19.

Keywords

COVID-19, patient feedback, patient satisfaction, survey data, CPES-IC, hospitalization, Canada

Introduction

The 2019 global coronavirus disease (COVID-19) has been the most significant public health threat of the 21st century. Since the first Canadian case was detected in January 2020 (1), over 1.4 million Canadians have tested positive, and over 26,000 have died as a result of the virus (at the time of submission of this manuscript) (2). In addition to the mortality and morbidity, the pandemic has resulted in significant shifts in healthcare service delivery patterns. In the months which followed the onset of COVID-19, over half of all physician consultations were provided virtually, and approximately 25,000 fewer emergency department visits took place each day across Canada (3,4). In preparation for an influx of COVID-19 patients, many scheduled surgeries were postponed (5), leading to sharp decreases in hospital occupancy rates (3,4,6). Hospital admissions also saw large decreases (3,4,7). This raised concerns that many individuals who required care had not sought it for fear of contracting COVID-19 in hospital (8).

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The Triple Aim framework is an approach to optimize health system performance. Its aims are to (a) improve the health of populations, (b) reduce per capita costs, and (c) *improve the patient experience of care* (9). By providing patients with opportunities to assess their experiences with healthcare services (e.g., surveys), they are able to report on what is working well, and what may be improved from their perspective—a necessary step in the provision of patient-centered care. Although the health system impacts of COVID-19 are well documented, reports on the experiences of those who required hospitalization during the pandemic remain limited. A recent single-hospital study from the United Kingdom showed that the experiences of patients hospitalized at the onset of the pandemic were largely positive (10). These results were obtained in the presence of potential communication challenges associated with the need for personal protective equipment (PPE) as well as visitation restrictions for family members, caregivers, and others. To date, no studies have explored the experiences of patients who were hospitalized during COVID-19 at a provincial level in Canada. Highlighting positive patient experiences during the pandemic may serve to mitigate fears among those who are hesitant to seek necessary care. As such, we sought to; (a) examine the comprehensive experiences of adults hospitalized during the first 6 months of COVID-19, (b) compare the results with a historical period (pre-COVID-19), and (c) examine monthly variations in results from hospitals across Alberta.

Methods

Study Design and Population

This study was a retrospective review of adult patient experience surveys over a 6-month period (April 1–September 30, 2020) at the outset of the COVID-19 pandemic. Patient experiences with their hospital care were captured using the Canadian Patient Experiences Survey – Inpatient Care (CPES-IC) instrument (11). The CPES-IC was developed by the Canadian Institute for Health Information (CIHI) in conjunction with healthcare stakeholders, including patients, and has been accepted as a valid tool to measure one's hospital experiences (12,13). In Alberta, Alberta Health Services (AHS) has surveyed adult inpatients using a 56-question, modified version of the CPES-IC since April 2014. Eligible patients from 93 hospitals were randomly contacted by telephone within 6 weeks of their discharge from the hospital. All surveys were conducted by a team trained of interviewers. A quota-based sampling approach was used to obtain a minimum number of responses. Each quarter, 10% of eligible discharges were sampled from the larger hospitals across the province, while a minimum of 12 completed surveys were obtained from the smaller, rural hospitals. In a typical year, approximately 25,000 surveys are completed from 93 hospitals across the province.

The CPES-IC survey asked respondents about multiple aspects of their inpatient care. This included admission to the hospital, care in the emergency department (if applicable), care from nurses, care from doctors, the hospital environment, pain control and medications, other processes of care, hospital discharge, and concerns with care. Responses to questions were Likert-type scales (e.g., always, usually, sometimes, and never). Five questions on the survey asked respondents to provide a numerical rating ranging from 0 (worst possible) to 10 (best possible). In the final section of the CPES-IC, respondents were asked demographic questions about their age, level of educational attainment, and self-reported levels of physical and mental health. Each survey required about 12–18 min to complete. After completion, each survey was linked to the corresponding inpatient hospital record from the Discharge Abstract Database (DAD) (14).

Outcomes

The primary study outcomes were the percent of respondents reporting a "top box" response, and the adjusted odds of reporting a "top box" response for each survey question.

Analysis

We analyzed the results from 39 survey questions. The 17 items not analyzed as part of this study consisted of screener questions, questions not part of the standard CPES-IC survey, open-ended questions, and demographic questions which were used as predictor variables in the adjusted models. Results from each of the 39 survey questions were reported by time period (COVID-19 vs. historical). The COVID-19 period included discharges from April 1 to September 30, 2020, while the historical cohort included discharges from the same period during the previous year (April 1–September 30, 2019).

Demographic variables included sex, age group (18–35, 36–50, 51–65, over 65 years), education level (less than high school, high school or some college/university, undergraduate degree or higher), self-reported physical health, and self-reported mental/emotional health (both reported as excellent, very good, good, fair, or poor). Clinical variables included number of medical comorbidities, hospital type (large urban/regional, rural), admission type (urgent, elective), service line (medical, surgical, maternity), length of hospital stay (less than 3, 3–7, longer than 7 days), intensive care unit use (yes/no), and discharge disposition (discharged home, other), Comorbidities were determined using the Elixhauser Comorbidity Index (15,16). Descriptive statistics and chi-square tests were used to compare demographic and clinical characteristics between the two time periods.

Responses to each survey question were classified using "top box" methodology—an accepted method for reporting CPES-IC results, where the "top box" response corresponds to the most positive response choice for each question (17). For example, on the question pertaining to nurses treating patients with courtesy and respect, response options were

always, usually, sometimes, and never. The "top box" response for this item is "always". On questions where respondents were asked to give an overall rating (i.e., from 0 to 10), the "top box" response was either 9 or 10. For analysis of the data, raw percentages of patients reporting "top box" responses were compared between the two time periods. Then, we used logistic regression models to calculate the adjusted odds and corresponding 95% confidence intervals for reporting a "top box" response among patients discharged during COVID-19. In these regression analyses, the historical period was the comparison group, while controlling for all demographic and clinical factors which were shown to be significantly different between the two groups. Lastly, to explore for potential temporal differences in responses among those hospitalized during COVID-19, monthly results were calculated for five rating scales and the question pertaining to one's willingness to recommend the hospital to family members/friends. All analyses were performed using SAS 9.4 for Windows (Cary, NC). In all cases, a *P*-value of less than .05 was used to determine statistical significance.

Ethics Approval and Patient Consent

The study was approved by the Conjoint Health Research Ethics Board (CHREB) at the University of Calgary. Given the retrospective nature of the study, a waiver of patient consent was granted. All data were obtained from AHS according to a data-sharing agreement between the health authority and our research team.

Results

A total of 23,412 completed surveys (11,344 during COVID-19 pandemic, 12,068 historical) were obtained and linked with clinical data. Demographic and clinical characteristics are shown in Table 1, according to the time period. When compared with the historical group, respondents hospitalized during COVID-19 tended to be 18–35 years, or over 65 years of age (*P* < .01), had a lower overall level of educational attainment (*P* = .03), and had poorer self-reported ratings of physical (*P* < .01) and mental health (*P* < .01). Clinically, they had higher proportions of respondents who were treated in rural hospitals (*P* < .01), admitted on an urgent basis (*P* < .01), and who were part of the surgical or maternity service line (*P* < .01). They also had a higher proportion of those who required intensive care (*P* < .01), remained longer in hospital (*P* = .03), and were discharged home less frequently (*P* < .01).

Table 2 shows the raw percentages of "top box" responses, as well as adjusted odds of reporting a "top box" response to each question for those hospitalized during COVID-19. The "top box" response to each question is also provided for readers. Those hospitalized during the COVID-19 pandemic had higher odds of reporting a "top box" rating on 17 questions. These included the overall ratings pertaining to the hospital, experience, care from nurses, care from doctors, one's willingness to recommend

Table 1. Demographic and Clinical Characteristics (n (%)).

Variable	During COVID-19	Historical	P
Sex (n = 23,408)			
Male	4,300 (37.9)	4,634 (38.4)	.44
Female	7,042 (62.1)	7,432 (61.6)	
Age group			
18–35 years	2,801 (24.7)	2,833 (23.5)	.01
36–50 years	1,806 (15.9)	1,975 (16.4)	
51–65 years	2,669 (23.5)	3,044 (25.2)	
Over 65 years	4,068 (35.9)	4,216 (34.9)	
Education level (n = 22,708)			
High school or less	4,367 (39.5)	4,755 (40.9)	.03
College or undergraduate university	5,255 (47.5)	5,480 (47.1)	
Postgraduate/professional degree	1,445 (13.1)	1,406 (12.1)	
Number of medical comorbidites			
None	7,058 (62.2)	7,650 (63.4)	.18
1	2,601 (22.9)	2,674 (22.2)	
2 or more	1,685 (14.9)	1,744 (14.5)	
Hospital type			
Large urban/regional	8,712 (76.8)	9,696 (80.3)	<.01
Rural	2,632 (23.2)	2,372 (19.7)	
Admission type			
Urgent	6,621 (58.4)	6,622 (54.9)	<.01
Elective	4,723 (41.6)	5,446 (45.1)	
Service line			
Medical	4,472 (39.4)	5,329 (44.2)	<.01
Surgical	4,540 (40.0)	4,435 (36.8)	
Maternity	2,332 (20.6)	2,304 (19.1)	
Length of hospital stay			
Less than 3 days	5,200 (45.8)	5,568 (46.1)	.03
3–7 days	4,089 (36.1)	4,470 (37.0)	
Longer than 7 days	2,055 (18.1)	2,030 (16.8)	
ICU use			
Yes	356 (3.1)	313 (2.6)	.01
No	10,988 (96.9)	11,755 (97.4)	
Discharge disposition			
Home (with or without support)	10,474 (92.3)	11,245 (93.2)	.01
Other	870 (7.7)	823 (6.8)	
Self-reported physical health (n = 23,216)			
Excellent	1,646 (14.6)	1,900 (15.9)	<.01
Very good	3,463 (30.8)	3,843 (32.1)	
Good	3,380 (30.1)	3,531 (29.5)	
Fair	1,894 (16.9)	1,785 (14.9)	
Poor	858 (7.6)	926 (7.7)	
Self-reported mental health (n = 23,288)			
Excellent	2,663 (23.6)	3,080 (25.6)	<.01
Very good	3,962 (35.2)	4,233 (35.2)	
Good	3,141 (27.9)	3,277 (27.3)	
Fair	1,188 (10.5)	1,114 (9.3)	
Poor	316 (2.8)	314 (2.6)	

the hospital, and the degree to which patients felt they were helped by the hospital stay. Twenty questions showed no statistically significant differences between time periods. Respondents who were hospitalized during the COVID-19 pandemic had lower odds of reporting a "top box" response

Table 2. Percent of Respondents in "top box" With Adjusted Odds of Reporting in "top box" During COVID-19.

Item description	Top box response	During COVID-19	Historical	aOR[a] (95% CI)
Global ratings of care				
Overall hospital rating	9 or 10	65.3	62.5	*1.16 (1.10–1.23)*
Recommendation of hospital	Definitely yes	74.4	71.8	*1.17 (1.10–1.24)*
Helped by hospital stay	9 or 10	74.1	72.9	*1.10 (1.04–1.17)*
Overall hospital experience	9 or 10	67.5	65.7	*1.12 (1.05–1.18)*
Care from nurses				
Nurse courtesy and respect	Always	85.4	84.8	1.08 (1.00–1.16)
Nurse listening	Always	74.8	74.3	1.05 (0.99–1.12)
Nurse explanations	Always	75.4	76.1	0.98 (0.92–1.04)
Call button assistance	Always	59.9	60.3	1.02 (0.96–1.09)
Timely bathroom assistance	Always	67.1	67.1	1.05 (0.97–1.14)
Overall rating of nursing care	9 or 10	69.4	68.0	*1.10 (1.03–1.16)*
Care from doctors				
Doctor courtesy and respect	Always	84.1	83.6	1.07 (1.00–1.15)
Doctor listening	Always	76.7	76.7	1.04 (0.97–1.11)
Doctor explanations	Always	74.5	75.4	0.99 (0.93–1.05)
Overall rating of doctor care	9 or 10	75.9	75.2	*1.08 (1.01–1.15)*
Hospital environment				
Room cleanliness	Always	63.7	62.2	*1.07 (1.01–1.13)*
Room quietness	Always	50.7	48.3	*1.11 (1.05–1.17)*
Pain control and medications				
Pain well controlled	Always	61.7	61.2	*1.07 (1.01–1.14)*
Staff helped with pain	Always	76.8	76.8	1.05 (0.98–1.13)
Purpose of new medications	Always	76.8	76.3	1.04 (0.96–1.13)
Side effects of new medications	Always	50.3	50.0	1.03 (0.95–1.10)
Admission to hospital				
Information about admit process	Completely	58.3	65.7	*0.77 (0.70–0.83)*
Admission was organized	Completely	76.8	79.1	0.92 (0.84–1.02)
Care in emergency department				
Information about condition	Completely	49.2	51.4	0.93 (0.86–1.00)
Information about admit process	Completely	50.8	52.6	0.96 (0.89–1.03)
Wait for admission to hospital	No	80.3	75.2	*1.35 (1.23–1.48)*
Transfer to bed was organized	Completely	75.3	72.0	*1.21 (1.11–1.31)*
Processes of care				
Communication between staff	Always	63.2	61.9	*1.10 (1.04–1.17)*
Staff informed/up to date	Always	60.6	59.6	*1.08 (1.03–1.14)*
Tests/procedures done on time	Always	71.8	70.3	*1.11 (1.04–1.19)*
Info about condition/treatment	Always	69.7	69.9	1.04 (0.98–1.10)
Support for anxieties/worries/fears	Always	63.2	62.6	1.07 (1.00–1.15)
Patient involvement in care	Always	67.4	67.2	1.06 (1.00–1.12)
Family/friend involvement in care	Always	60.0	73.7	*0.54 (0.50–0.58)*
Discharge from hospital				
Help needed after discharge	Yes	83.8	84.4	0.98 (0.91–1.06)
Received written discharge info	Yes	78.7	80.2	0.94 (0.88–1.01)
Understanding of medications	Completely	77.5	77.9	1.01 (0.94–1.08)
Info about post-discharge worries	Completely	70.1	71.5	0.98 (0.92–1.04)
Better understanding of condition	Completely	64.1	65.0	1.00 (0.94–1.06)
Patient concerns				
Had a concern about care	No	80.7	79.1	*1.12 (1.05–1.19)*

[a]Adjusted odds and 95% confidence intervals calculated for the "during COVID-19" cohort was compared with historical, with adjustment for age group, education level, hospital type, admission type, service line, length of hospital stay, ICU use, discharge disposition, self-reported physical, and mental health. Statistically significant results are shown in **bold, italics**.

on two questions; family/friend involvement in care (60.0% vs. 73.7% responding "always", aOR: 0.54, 95% CI: 0.50–0.58), and receiving information about the hospital admission process (58.3% vs. 65.7% responding "completely", aOR: 0.77, 95%CI: 0.70–0.83).

Table 3 shows the raw percentages of "top box" responses from respondents hospitalized during the COVID-19 pandemic, according to the month of hospital discharge for the six global rating questions studied. Five of the six questions saw slight decreases in "top box" percentages over the

Table 3. Percent of Respondents in "top box" During COVID-19 by Month of Discharge From the Hospital.

Item description	April 2020	May 2020	June 2020	July 2020	August 2020	September 2020	P
Global ratings of care							
Overall rating	67.0	65.9	66.5	64.0	64.7	64.4	.30
Recommendation of hospital	75.9	74.3	75.8	73.4	74.3	72.9	.21
Helped by hospital stay	75.0	73.8	75.2	73.6	73.6	73.6	.75
Overall hospital experience	69.6	68.6	68.8	65.1	66.9	66.7	.04
Overall rating of nursing care	70.7	69.7	69.9	68.7	68.7	69.3	.80
Overall rating of doctor care	74.9	75.8	78.3	76.1	75.1	75.1	.13

6-month period, while the overall rating of doctor care remained stable. Only the question pertaining to overall experience showed a significant difference ($P = .04$).

Discussion

In this paper, we examined the experiences of adults who were hospitalized across Alberta, Canada during the early months of the COVID-19 pandemic. Over the 6-month period, respondents highlighted many positive aspects about the care they received, while highlighting opportunities for improvements. When compared with historical results, those hospitalized during the COVID-19 pandemic had higher odds of reporting a "top box" score on 17 of the 39 questions which we studied. The most positive differences were observed for two aspects of care in the emergency department—the wait for transfer to an inpatient bed, and the degree to which the transfer to the inpatient unit was organized. Another notable finding was that all six global rating questions which we studied (hospital rating, recommendation of hospital, care experience, helped by hospital stay, rating of nurse care, rating of doctor care) showed a significant improvement when compared with historical results. Only two items (family/friend involvement in care decisions, receiving information about the hospital admission process) showed a decreased odds of reporting a "top box" response.

Although investigations of the experiences of those hospitalized during the COVID-19 pandemic are limited, preliminary results have been reported from those who received hospital-based care during this time. In a recent study in Quebec, Di Lalla et al. showed that cancer patients who received radiotherapy treatments had a high degree of satisfaction, and perhaps most importantly, felt that healthcare providers took appropriate precautions to make them feel safe (18). Conflicting results have been shown in the context of giving birth during the pandemic. In a sample of 237 women who gave birth at 2 hospitals in New York hospitals, Janevic et al. showed that delivery during COVID-19, positive COVID-19 status, and Black or Latina race were associated with lower birth satisfaction. More troubling was that these new mothers were also more likely to report higher postpartum anxiety, stress, depressive symptoms, and lower rates of exclusive breastfeeding (19). Recent

work by Zeh et al. examined the effects of visitor restrictions upon surgical patients. In their mixed-methods study which included results from the HCAHPS survey, they reported that those hospitalized during visitor restrictions reported greater levels of social isolation and were less likely to have felt that their discharge preferences were adequately considered (20). In our study, we reported that patients hospitalized during COVID-19 reported much lower odds of reporting that family members and friends were involved in care decisions. Although we did not observe similar results as Zeh et al. with respect to discharge planning, we advocate for the necessity of novel ways to involve family members and friends (who may also play active roles as caregivers) in care decisions during times of physical hospital restrictions. As an example, the feasibility of a family centered, virtual visiting strategy in the ICU was recently highlighted by Thomas et al. This strategy was successful in satisfying five essential criteria that virtual visiting needed to (1) simulate open and flexible visiting; (2) be able to accommodate differences in family size, dynamics, and cultural practices; (3) utilize a video conferencing platform that is private and secure; and (4) be easy to use and not require special teams to facilitate meetings; and (5) not increase the workload of ICU staff (21).

Future studies which explore the experiences of inpatients and their potential associations with outcomes (e.g., unplanned readmissions, mortality, and quality of life), as well as those which seek to explain the reasons for our results, are warranted. We propose there may be three primary mechanisms that contributed to our results. First, it is possible that respondents to the CPES-IC survey may have had lowered expectations of their care. Given the novel nature of COVID-19, many may have gone into the hospital not knowing what to expect. Second, there may have been structural alterations (i.e., visitor restrictions or staffing levels) to care delivery which produced differences in results. The example of visitor restrictions was highlighted above. Although we did not have access to staffing information (e.g., number of full-time equivalents, team composition), providers may have been able to spend more time with each patient, given the decreases in hospital occupancy rates observed during the early months of the COVID-19 pandemic. To this effect, Aiken et al. showed an inverse correlation between nurse staffing levels and patient experience

scores in data from 12 European countries and the United States (22). In the third potential mechanism, the demographic and clinical profile of hospitalized patients may have shifted during the COVID-19 pandemic. Even if this profile did not shift, it is possible that respondents may have framed their answers differently during our study period, when compared to pre-pandemic.

This study has limitations that warrant consideration. Although we controlled for a variety of demographic and clinical factors, it is possible that our data set did not contain any other explanatory factors (23–26). Given the nature of surveys, which ask respondents to reflect on past events, the potential for recall bias cannot be discounted (27). To mitigate this potential, the CPES-IC survey protocol used by AHS directed interviewers to remind respondents of the hospital stay in question, and the date on which they were discharged from the hospital. Additionally, during our study period, AHS included patients who were hospitalized due to COVID-19 in the survey sample. However, as COVID-19 test results were not part of our research agreement, we were not able to determine which respondents were hospitalized due to COVID. The potential differences in experiences of those hospitalized due to COVID-19 versus other reasons could be a topic for future research. The remaining study limitations pertain to the survey protocol and methodology. At the time of data collection, Alberta was the only province to administer the CPES-IC exclusively by telephone. Therefore, our results may not be generalizable to other Canadian results in the absence of a mode adjustment—a statistical correction that accounts for the differences in results that may be observed according to survey format (e.g., mail, phone, and e-mail) (28). Finally, surveys were conducted exclusively in English, and did not allow for proxy respondents. This precluded non-English-speaking patients and those unable to verbally communicate from participating.

Conclusion

In the first Canadian study to explore the experiences of hospitalized patients during the COVID-19 pandemic at a provincial level, adults hospitalized during the early months of the pandemic had experiences that were largely better or comparable to pre-pandemic. The results also highlighted patients' informational needs about the admission process and involvement of family members and friends in their care as opportunities for improvement. Overall, our positive findings may help mitigate fears among those who are hesitant to seek care during pandemics or public health emergencies, including future waves of COVID-19. Given the dynamic nature of the pandemic, future research is necessary to determine strategies that optimize information exchange during admission to the hospital and facilitate the inclusion of family members and friends in care decisions. Research is also necessary to explore whether patient experiences may have shifted in subsequent waves of the pandemic.

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