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# Understanding patient experiences before and during the COVID-19 pandemic: A quasi-experimental comparison of in-person and virtual cancer care

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## Abstract

The COVID-19 pandemic prompted the immediate widespread implementation of virtual care appointments in Cancer Care Alberta (CCA). This study aimed to compare patient experiences and satisfaction with in-person care provided prior to the pandemic and virtual care provided after the COVID-19 outbreak. Surveys were conducted to compare patient satisfaction, using the Your Voice Matters (YVM) experience survey, between patients in the pre-pandemic in-person (baseline) and post-outbreak (virtual) cohorts. Generalized Linear Models (GLMs) with an ordinal logistic link were used, adjusting for self-reported health status and other covariates, to investigate the association between cohort type and patient satisfaction. Despite having higher overall health status, the virtual cohort reported statistically significantly lower satisfaction than the baseline with emotional concerns, referrals and resources, and friend/family involvement in their care. Patients in the virtual cohort were much less likely to have completed a routinely used symptom-based Patient Reported Outcomes (PROs) questionnaire, which may help explain satisfaction differences. The additional stressors brought about by the pandemic, as well as the mode of virtual care delivery, both likely contributed to the lower satisfaction of the virtual cohort as well. Understanding the key differences in experience between the two cohorts will inform the development of a larger virtual care strategy within CCA in the future.

## Keywords

Patient experience, patient satisfaction, virtual care, cancer care, quality of life, health status, patient engagement, COVID-19, quality improvement, patient reported outcomes

## Background

COVID-19 has created unprecedented challenges for the oncology community as the virus disproportionately harms elderly persons and those with comorbid conditions, including cancer.<sup>1</sup> Given the need for social distancing and exposure mitigation, many cancer facilities quickly incorporated virtual appointments wherever possible to replace in-person appointments, which was the primary mode of care delivery prior to the pandemic. Cancer Care Alberta (CCA), a publicly funded provincial cancer program, provides care to patients through a network of 17 ambulatory cancer centres. By mid-March 2020, CCA had integrated the capacity for clinicians to convert in-person appointments to virtual appointments using telephone, telehealth or video-based platforms such as Zoom or Skype<sup>2</sup>; out of convenience, most virtual appointments were conducted over the telephone.

Although CCA had been planning to eventually increase the use of virtual care in the future, its integration was rapidly accelerated during the pandemic. With the rate of COVID-19 infections continuing to fluctuate in Alberta, the impacts and consequences of the pandemic are sure to be long-lasting, and CCA plans to continue utilizing virtual care in the future.<sup>3,4</sup> Because of this, ensuring that patients are highly satisfied with the ambulatory cancer care they receive, regardless of whether they are seen in-person or virtually, is of critical importance.

### *Historical Use of Patient Reported Outcomes to Improve Patient Experience*

Person-centred care has been a priority in CCA for many years, and the routine utilization of Patient Reported Outcomes (PROs) within clinical assessment is a key driver of this approach.<sup>5</sup> CCA uses a PROs questionnaire with two specific measures that track patients' symptoms

and concerns.<sup>6,7,8</sup> Patients complete the paper questionnaire in the waiting room prior to clinic appointments. The questionnaire is then reviewed in the clinical encounter to help focus the appointment on the symptoms and concerns that the patient considers most relevant. It is then transcribed into an electronic questionnaire template within CCA's Electronic Medical Record (EMR) by a staff member. The PROs data can be viewed via digital dashboards which allow symptoms to be tracked longitudinally, enabling staff to view patients' symptom trends prior to the appointment and then tailor the visit to a patient's individual needs.<sup>5,9,10</sup> Using PROs data in this way has been shown to improve clinical outcomes and survival<sup>11</sup> and improve patient experiences and satisfaction<sup>5,12,13</sup> After implementation of the PROs questionnaire and the associated dashboards, CCA conducted a nearly year-long Quality Improvement (QI) investigation to assess the impact of these tools on the patient experience. Randomly selected ambulatory cancer patients were surveyed between February 2019 and January 2020. The details of this survey will be discussed later in this paper.

### ***Rapid Virtual Care Implementation and the Disruption of Standard Care Practices***

Because virtual care was implemented rapidly as a pandemic response, the QI team questioned whether patient experiences with virtual care were equivalent to those who received standard in-person care prior to the pandemic. At the time, many cancer programs, including CCA, did not have established protocols for determining which appointments should shift to virtual care<sup>14</sup> and it is likely that this decision was often left up to the discretion of the provider. This assumption is reinforced by recent studies indicating that, without standard protocols in place, patient preference and provider judgement largely determined which patients would receive virtual care.<sup>14,15</sup> Importantly, Reddy et al. (2021) suggest that not all patients are suited to virtual appointments, particularly if they have considerable distress or would benefit from a full physical examination.<sup>16</sup> A recent survey conducted with CCA staff similarly indicated that they believed stable patients with few complications, or those on follow-up rather than active treatment, were best suited for virtual appointments.<sup>15</sup>

Just as the process for assigning patients to virtual care was rather ad hoc, so was the process for having patients complete the PROs questionnaire virtually. The workflow for this questionnaire relies on in-person appointments, and with no clear guidelines for shifting this process to virtual settings, there was an inevitable reduction in use of the PROs tools.<sup>15</sup> There was interest in understanding how this impacted the patient experience, if at all, as clinicians would have less visibility of the issues patients considered most concerning, without a completed questionnaire to review.

To better understand how patient experiences may have been impacted by the rapid virtual care implementation, a strategy to conduct a patient experience evaluation was developed, focusing on patients who received a virtual appointment in the early months of the COVID-19 pandemic. As a similar QI initiative had recently been conducted to evaluate experiences with in-person clinical appointments after implementation of the PRO tools, a unique opportunity for comparison arose.

### ***Study Purpose***

Virtual care will remain part of CCA's model of care beyond the pandemic, and with the rate of COVID-19 infections in Alberta continuously changing, the impacts of the pandemic will be long-lasting. Consequently, the purpose of this study was to compare patient satisfaction with in-person ambulatory oncology care across CCA prior to the pandemic, to patient satisfaction with virtual cancer care during the pandemic. The goal of this comparison was to gain valuable insights to inform ongoing efforts to improve virtual care and patient experiences after the pandemic and into the future.

## **Methods**

### ***Procedure***

A quasi-experimental research study was conducted to compare two cohorts: an in-person, pre-pandemic (baseline) cohort and a (virtual) cohort who received virtual care during the pandemic. All participants were cancer patients who received care from any of the 17 cancer centres in CCA. Both cohorts received similar surveys, consisting of satisfaction questions from Your Voice Matters (YVM), a validated, real-time patient experience survey.<sup>17</sup> Given the possibility that the virtual cohort was made up of generally "healthier" patients<sup>15</sup> and the potential impact of health status on satisfaction, the surveys also included the EuroQol five-Dimension – Five Level (EQ5D-5L), a validated self-rated measure of health status.<sup>18</sup> The survey for the baseline cohort also included additional questions about the use and value of the PROs questionnaire and PROs dashboards in their appointment, while the virtual survey included targeted questions about various aspects of virtual care. For the purposes of comparison, we only analyzed responses to the questions that were the same on both surveys.

***Data Collection – Baseline Cohort:*** Data collection for the baseline cohort occurred from February 2019 to January 2020. Patients who had an in-person clinic appointment in this time period, and who completed a PROs questionnaire at their appointment, were eligible for inclusion. Patients who met these criteria were randomly selected and surveyed via telephone, with the caller recording responses into an online questionnaire.

*Data Collection – Virtual Cohort:* Data collection for the virtual cohort occurred from May 2020 to July 2020 (note that the start of the pandemic in Alberta was March 2020). All patients who had a virtual appointment in this time period were eligible for inclusion. Patients who had a virtual appointment within the previous week were randomly selected and surveyed via telephone, following the same process as the baseline cohort.

For both cohorts, patient characteristics including age, sex, tumour group, whether treatment was received in the past three months (yes/no), and which cancer centre was visited (either in-person or virtually) were retrieved from the CCA administrative database. Self-rated health status was also measured for both cohorts, using the EQ5D-5L. The first component of this validated measure is descriptive and comprised of five dimensions of health status (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). The second is a visual analogue scale (EQ-VAS) where respondents record their self-rated health from 0-100 with zero being the “Worst health you can imagine” and 100 being the “Best health you can imagine.”<sup>19</sup> There are different ways of analyzing and reporting data from EQ5D-5L, including reporting only the EQ-VAS scores; this method of reporting was utilized in the current study, as health status was included as a control variable rather than an outcome measure.<sup>20</sup> Collecting this data concurrently with the YVM allowed for an examination of the impact of self-rated health status on patient experience.<sup>21</sup>

An Alberta Research Ethics Community Consensus Initiative (ARECCI) screening tool was used to assess any ethical risk associated with this project. The work was deemed minimal risk and classified as a QI and Evaluations project which did not require additional precautions or full ethics review.<sup>22</sup>

### **Outcome Measures**

The outcome measure in this study was patient experience, as measured by the YVM survey questions. The YVM survey is a 28-item questionnaire for adult cancer outpatients undergoing treatment, developed by Cancer Care Ontario.<sup>17</sup> The YVM uses a 5-point Likert scale to assess patient satisfaction in specific areas of the care experience, with answers ranging from 1 (“Worst”) to 5 (“Best”). For our purposes, two sections from the original survey were used: “Appointment/Treatment” (11 questions) and “Overall Experience” (1 question). The questions in these sections were directly related to our goal of understanding the patient experience both in-person and virtually. The Cronbach alpha of reliability<sup>23</sup> for “Appointment/Treatment” was .952 for the baseline cohort and .910 for the virtual cohort, indicating strong internal consistency, and validated the use of these questions for the current study.

### **Statistical Analyses**

Patient characteristics and self-rated health status were presented using descriptive statistics and compared between the two cohorts using independent t-tests for continuous variables, chi-square tests for categorical variables and Mann-Whitney U tests for ordinal variables. As many of the responses were ordinal in nature, Generalized Linear Models (GLMs) with ordinal logistic link were carried out to test the differences in the 11 patient satisfaction questions and the 1 overall experience question between the two cohorts, adjusting for all confounders. Model goodness-of-fit was assessed by the value of Deviance/df. In practice, a model is found acceptable if Deviance/df < 2.5.<sup>24</sup> Data were exported into SPSS Version 25.0 for analysis and statistical significance was set a priori at  $p < .05$ .

## **Results**

### **Sample Characteristics**

The baseline cohort (n=292) was 58.6% female and the mean age was 63.6 years (SD = 13.4 and IQR: 57.00 - 72.75). The most common tumour group was hematology (24.0%), followed by gastrointestinal (19.5%) and breast (18.2%). More than two-thirds (69.5%) were on active treatment in the 3 months before the survey took place. Just over half (52.1%) of the patients in this cohort visited one of the two tertiary cancer centres in the province, and the rest (47.9%) visited either a regional or community cancer centre. The mean EQ-VAS score was 68.5 out of a maximum of 100. All patients in this cohort completed a PROs questionnaire at their appointment.

The virtual cohort included 397 cancer patients who had at least one virtual appointment after the start of the COVID-19 pandemic. This cohort was 51.6% female and the mean age was 63.8 years (SD = 13.8 and IQR: 58.00 - 73.00). The most common tumour group was hematology (25.9%), followed by breast (15.9%) and gastrointestinal (14.6%). Less than half (42.3%) of those in the virtual cohort were on active treatment in the 3 months before the survey took place. Nearly three-quarters (72.5%) had their virtual appointment with one of the two tertiary cancer centres in the province and the remaining (27.5%) had their virtual appointment with a regional or community cancer centre. The mean EQ-VAS score was 73.2 out of 100. The percentage of patients in the virtual cohort who completed the PROs questionnaire in relation to their virtual appointment was 16.9%.

The two cohorts significantly differed on three factors: treatment status, cancer centre visited, and self-reported health status (measured by the EQ-VAS). A significantly larger proportion of the baseline cohort was on active treatment as compared to the virtual cohort (69.5% compared to 42.3%). Just over half of the baseline cohort

**Table 1. Patient characteristics by cohort**

	Baseline cohort	Virtual cohort	<i>p</i>
Age in years M (SD, IQR) <sup>a</sup>	63.6 (13.4, 57.00 - 72.75)	63.8 (13.8, 58.00 - 73.00)	.844
Sex			
Female	171 (58.6%)	205 (51.6%)	.071
Male	121 (41.4%)	192 (48.4%)	
Tumour groups			.061
Breast	53 (18.2%)	63 (15.9%)	
Gastrointestinal	57 (19.5%)	58 (14.6%)	
Genitourinary	36 (12.3%)	55 (13.9%)	
Gynecology	21 (7.2%)	15 (3.8%)	
Hematology	70 (24.0%)	103 (25.9%)	
Intrathoracic	29 (9.9%)	45 (11.3%)	
Other <sup>b</sup>	26 (8.9%)	58 (14.6%)	
Treatment in last 3 months			.000
Yes	203 (69.5%)	168 (42.3%)	
No	89 (30.5%)	229 (57.7%)	
Cancer centre visited			.000
Tertiary cancer centre	152 (52.1%)	288 (72.5%)	
Regional/community cancer centre	140 (47.9%)	109 (27.5%)	
EQ-VAS score (0-100) M (SD, IQR) <sup>a</sup>	68.5 (19.9, 50.00 - 85.00)	73.2 (19.8, 60.00 - 90.00)	.003
a: M = mean, SD = standard deviation, IQR = interquartile range			
b: "Other" included central nervous system, endocrine, head & neck, melanoma, non-melanoma skin, other primary and sarcoma.			

visited a tertiary cancer centre (52.1%), compared with nearly three-quarters of the virtual cohort (72.5%). Finally, the baseline cohort reported significantly lower EQ-VAS scores ( $M = 68.5$ ,  $SD = 19.9$ ) than the virtual cohort ( $M = 73.2$ ,  $SD = 19.8$ ), ( $t = 3.00$ ,  $p < .01$ ), indicating that the baseline cohort self-rated their overall health lower. Table 1 presents the significance level of the examined demographic and clinical characteristics between the two cohorts.

#### ***Patient Satisfaction and Experience by Cohort***

All demographic and clinical variables listed in Table 1 were included in the multivariable generalized linear model as covariates, to assess the difference in patient experience between the two cohorts. The model fit value (Deviance/df) of the 12 GLMs ranged from 0.131 to 0.954, all below the threshold of 2.5, indicating the data fit the model well.<sup>24</sup>

Table 2 presents the results of GLMs outlining differences in patient experience between the two cohorts. Out of the 11 satisfaction and 1 overall experience questions, the virtual cohort significantly differed from the baseline cohort on three questions. Specifically, the virtual cohort reported significantly lower satisfaction with "Emotional Concerns Discussed", (OR: .731; 95% CI: .620-.863;  $p < .01$ ); "Friend/Family Involvement", (OR: .814; 95% CI: .734-.902;  $p < .01$ ) and "Resources & Referrals", (OR: .596;

95% CI: .494-.718;  $p < .01$ ). There were no statistically significant differences between the two cohorts on the other seven satisfaction questions or on the overall experience question. The virtual cohort did not report significantly higher satisfaction than the baseline cohort on any questions.

#### **Discussion**

The rapid integration of virtual care within CCA took place in only a few weeks, to ensure patient safety during the COVID-19 pandemic.<sup>2</sup> Virtual appointments increased considerably from the start of the pandemic, with around 40% of appointments taking place virtually on a given week.<sup>15</sup> While patient safety remains a priority, it is also important to ensure that efforts are taken wherever possible to ensure that patient equity, experience and satisfaction are maintained with both in-person and virtual appointments, as CCA plans to utilize virtual care beyond the pandemic and into the future.

#### ***Emotional Concerns***

Based on results from a nationally validated province-wide patient experience survey regularly distributed within CCA, discussing patients' emotional worries and concerns has often been flagged as an area for improvement.<sup>25,26</sup> The integration of the routine use of a PROs questionnaire, and the associated clinical dashboards within CCA, was

**Table 2. Summary of the GLM results (patient satisfaction)**

YVM questions	OR (95% CI)		Wald $\chi^2$	SE <sup>b</sup>	p
	Baseline cohort <sup>a</sup>	Virtual cohort			
Listened to you	1	.992 (.916 - 1.07)	.036	.040	.850
Physical discussion	1	.972 (.890 - 1.06)	.390	.045	.532
Emotional concerns discussed*	1	.731 (.620 - .863)	13.66	.085	<.01
Treated with respect	1	.978 (.922 - 1.04)	.546	.030	.460
Spent enough time	1	.980 (.906 - 1.06)	.241	.040	.623
Explained things well	1	.990 (.919 - 1.07)	.079	.038	.779
Involved you	1	1.01 (.919 - 1.10)	.023	.047	.879
Let you ask questions	1	.970 (.910 - 1.03)	.861	.033	.354
Friend/family involvement*	1	.814 (.734 - .902)	15.39	.053	<.01
Resources & referrals*	1	.596 (.494 - .718)	29.38	.096	<.01
Ensured contacts	1	.960 (.850 - 1.08)	.429	.062	.512
Overall experience	1	.958 (.870 - 1.05)	.795	.049	.372

a: Reference group

b: Standard Error

\*: Results with significant differences between cohorts

driven by an organizational commitment to improve patient outcomes and satisfaction with this aspect of their care. By identifying patients' emotional concerns, appropriate discussions can take place and referrals to supportive care services can be made accordingly. However, as the use of the PROs questionnaire currently relies on an in-person workflow, virtual care had a dramatic negative impact on its use. Alternative delivery methods were explored, such as having a staff member contact the patient prior to their appointment to complete the questionnaire via telephone, however these methods were labour intensive and largely unfeasible. Only 16.9% of patients in the virtual cohort completed a PROs questionnaire in relation to their appointment, while average in-person completion rates were about 75% pre-pandemic, and 55% for in-person appointments during the pandemic.<sup>15</sup> Patients in the virtual cohort who did not complete the PROs questionnaire may not have had a targeted discussion about symptoms, particularly emotional symptoms, while the baseline cohort were much more likely to have had a targeted discussion, as the regular completion of PROs was part of the inclusion criteria for this cohort. This would help explain why the virtual cohort was less satisfied with the discussion of their emotional concerns during their visit. Providing emotional support and addressing sensitive topics can also be more difficult in virtual appointments, particularly when conducted using the telephone, rather than a video-based platform.<sup>15</sup>

The pandemic itself likely also contributed to the virtual cohort's lower satisfaction with the emotional support they were provided. COVID-19 wreaked havoc on the mental well-being of many people by introducing new stressors and fears,<sup>27,28</sup> perhaps even more so for people who were already dealing with a complicated cancer diagnosis.<sup>29,30</sup>

These patients may have had more emotional concerns than usual and in turn needed, or wanted, additional interventions to feel sufficiently supported.<sup>27</sup> The value of PROs in identifying and addressing patients' emotional needs has been clearly demonstrated; therefore, use of the PROs questionnaire may have been even more important during the pandemic, given the added stressors, but its use was disrupted by the virtual format of care delivery.

### **Referrals and Resources**

As mentioned, patients who received virtual care also had significantly lower levels of satisfaction with their connection to referrals and resources. Another recent study conducted within CCA compared patients who received virtual care to patients who received in-person care during the first wave of COVID-19 and found that fewer referrals were made for virtual patients than in-person patients in the same time period.<sup>15</sup> Based on this, we can reasonably assume that the virtual cohort in the current study also received lower numbers of referrals. The low completion rate of PROs questionnaires may be one reason for this, as staff rely on the results and the electronic transcription of the questionnaire into the EMR to guide the referrals they make.<sup>31</sup>

Another explanation could be that the added stressors brought on by the pandemic, combined with the accompanying lack of social interaction, resulted in virtual patients feeling as though they wanted additional support. It is possible that staff did not recognize this due to the virtual cohort being in better overall health, both in terms of their self-rated EQ-VAS scores and their lower likelihood of being on active treatment (with patients on treatment often having high associated symptom burdens).<sup>32</sup> Their higher self-rated health status may have led staff to believe these patients did not need additional

referrals or resources. Had staff known then, as we do now, that the virtual cohort felt less satisfied with how their emotional needs and concerns were addressed, they may have been more likely to connect these patients to emotional and/or supportive care resources for support. This highlights the need to look beyond physical health status when deciding which patients should be referred to additional services, as patients who are technically “healthier” may still want – and benefit from – additional resources and referrals.

### **Family and Friend Involvement**

Many patients rely on family, friends, and caregivers in some capacity to help them navigate the cancer system, often during their appointments. This can be even more prevalent among older patients, which is particularly relevant as the mean age of both cohorts in this study was just over 63 years old.<sup>33,34</sup> During the pandemic, patients would likely not have had the same access to these supports as they normally would have, unless friends or family members resided within the same household, as social distancing was one of the primary strategies in place to mitigate the spread of COVID-19 in Alberta. In some situations, friends or family members may have joined virtual appointments from a different location, however this was likely not feasible for many patients. As a result, patients probably felt isolated from their usual support system, which likely contributed to their decreased satisfaction regarding the involvement of friends and family in their care. We also know from other studies that emotional support provided virtually may not fully meet patient needs.<sup>15</sup>

As COVID-19 continues to impact the health care system in Alberta, development of a comprehensive virtual care strategy is currently underway within CCA. The goal is to incorporate virtual care as an everyday part of care delivery in the future, rather than only as a supplementary or emergency care method. Understanding which aspects of the current virtual care process are in need of improvement is therefore critical to ensure that patients receive tailored person-centred care regardless of which platform of care delivery is used, while ensuring that positive experiences and a high level of patient satisfaction are maintained.

### **Limitations**

The primary limitation of this study is that it is not possible to conclude if virtual care or the pandemic itself played a larger role in influencing patient satisfaction, as the cohorts differed on more than one factor. The baseline cohort was surveyed prior to the pandemic, received in-person care, and completed a PROs questionnaire, while the virtual cohort was surveyed during the pandemic, received virtual care, and had low rates of questionnaire completion; therefore, no single factor can be isolated as the primary cause of the between-cohort differences. All

of these factors must be considered when creating a larger virtual care strategy. It will be important to repeat a similar patient survey in the near future to assess differences in patient satisfaction as virtual care increasingly becomes implemented as a routine part of care delivery, rather than as a rapid response to COVID-19. This will allow CCA to better understand which aspects of virtual care have been beneficial, and which aspects may require additional modifications.

### **Conclusion**

Person-centred care is a priority in CCA, and regularly assessing patient satisfaction and collecting feedback on the patient experience is a key strategy for ensuring that this priority is met. Whether the incidence of COVID-19 remains high in Alberta or begins to decrease, virtual care will continue to take place in the future, with an emphasis on ensuring patient needs are being met through this mode of care delivery within CCA. In particular, strategies should be explored to determine the most efficient and effective way to administer and collect PROs virtually, as the proven value of the routine questionnaire has clear impacts on patient outcomes and experience. Additionally, ensuring that supportive care resources are offered to patients both on-treatment and on follow-up, regardless of whether they are seen virtually or in-person, is essential to meeting patients’ needs and ensuring satisfaction with their care. Comparing patient satisfaction is important to understand the current gaps with virtual care and inform the design of a larger and more encompassing virtual care strategy. Identifying gaps in virtual care can also inform improvements in the delivery of in-person care, as the goal is to ensure that patient needs are met and patient satisfaction is high, regardless of how care is delivered.

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