

Original Article

The Impact of the COVID-19 Pandemic on IBD Care in Alberta: Patient and Provider Perspectives

Monica Dahiya, BSc, MD¹, Lily Olayinka, PhD², Gilaad G. Kaplan, MD, MPH^{3,○}, Leanne Reeb, BSW, MBA⁴, Christopher Ma, MD, MPH^{3,○}, Remo Panaccione, MD³, Karen I. Kroeker, MSc, MD, FRCPC²

¹Department of Medicine, University of Alberta, Edmonton, Alberta, Canada; ²Division of Gastroenterology, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada; ³Department of Medicine, Division of Gastroenterology and Hepatology, Department of Medicine, University of Calgary, Calgary, Alberta, Canada; ⁴Department of Medicine, Digestive Health Strategic Clinical Network, Alberta Health Services, Alberta, Canada

Correspondence: Karen I. Kroeker, MSc, MD, FRCPC, Division of Gastroenterology, University of Alberta, 2-40 Zeidler Ledcor Centre, 8540 – 112 Street, Edmonton, Alberta, T6G 2X8, Canada, e-mail: karen.kroeker@ualberta.ca

ABSTRACT

Objective: The COVID-19 pandemic necessitated changes in the delivery of ambulatory care for patients with inflammatory bowel disease (IBD), including transitioning many visits to virtual formats and delaying non-urgent assessments. We aimed to evaluate the impact of the COVID-19 pandemic on IBD patient care from health care providers' (HCP) and patients' perspectives.

Methods: We administered a 42-question HCP survey and a 44-question patient survey, which evaluated HCP and patient experience and satisfaction with care delivery and delays in access to IBD care during the first wave of the COVID-19 pandemic.

Results: Surveys were completed by 19.2% (24/125) HCPs and 25.8% (408/1581) patients. Overall, 82.7% of patients with IBD maintained their care without disruption. The majority of patients were satisfied with a transition to virtual care. All HCPs were willing to use virtual care in the future; however, 60% (14/24) of HCPs reported that virtual care was not equivalent to in-person visits. Patients reported concerns around access to health resources, the uncertainty of IBD-specific care, and fear and stress due to employment uncertainty and safety. Providers also reported concerns about patient safety, patient education, adequate remuneration and challenges with providing care for new patients on virtual platforms.

Conclusion: While some delays in health care delivery occurred during the first wave of the pandemic, both patients and HCPs were satisfied with a transition to new models of care delivery. These models may remain in place post-pandemic and allow for flexibility in care delivery that is acceptable to both patients and HCPs.

Keywords: COVID-19; Inflammatory bowel disease; Pandemic; Patient experience; Patient care; Provider satisfaction

Introduction

The coronavirus disease 2019 (COVID-19) pandemic is a global pandemic precipitated by the spread of coronavirus SARS-CoV2 (1). The first outbreak was reported in December 2019 in

Wuhan, China, but soon after rapidly spread throughout China, and subsequently worldwide (1). In Canada, the pandemic was declared in March 2020, leading to federal and provincial public health regulations aimed at limiting the spread of the virus (2).

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As of current (June 1, 2021), Canada has declared the third wave of the pandemic, with over 1 million cases across Canada and 171 million cases worldwide (2).

With the growing concerns around the COVID-19 pandemic, health care professionals (HCPs) have required adaptation to alternative avenues to deliver care to patients to protect the safety and wellness of both patients and HCPs, in addition to diverting health care resources to the management of the COVID-19 pandemic. Changes that were implemented include introducing mandatory personal protective equipment (PPE) for all health care staff and visitors, physical distancing, limitations of visitors within the hospital setting, and adopting a shift in health care provision from in-person appointments to primarily 'virtual' clinics, with direct patient communication occurring by telephone or videoconferencing. Additionally, non-urgent procedures, including surgeries, radiological imaging and endoscopies were delayed due to health care resource limitations (3).

In Alberta, patients and HCPs were mandated to implement virtual care as of March 16, 2020, during the first wave of the pandemic. This study aims to assess the perceived health care delivery experience in IBD patients and providers and better understand the overall challenges experienced by IBD patients and gastroenterologists during the first wave of the COVID-19 pandemic.

METHODS

We administered separate HCP and patient structured online surveys by adapting the Telehealth usability questionnaire (TUQ) (4). The patient and provider satisfaction questionnaire included 18 to 20 questions, divided into six different subsections: usefulness, ease of use and learnability, interface quality, interaction quality, reliability, and satisfaction and future use.

HCP Survey

A REDCap survey was disseminated to gastroenterologists across Alberta. Distribution was achieved via en masse e-mail with a total of five reminders sent every 10 days. The provider survey consisted of 38 items, stratified into three categories: demographics, provider satisfaction and provider experience. Using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), providers were asked to rate the usefulness, interface qualities, interaction quality and reliability, overall satisfaction and future use of virtual care. As a metric evaluation for satisfaction, Alberta Health Services has created a model that evaluates the percentage of patients/providers who report a satisfaction score of 4 or higher to reflect some of the dimensions of quality (acceptability, accessibility, appropriateness, effectiveness and efficiency) based on the Alberta Quality Matrix for health. On the Likert scale used for this study, a satisfaction score

of 4 or higher would be representative of the 'agree/strongly agree' response categories. Open-ended feedback regarding virtual care experience was obtained from providers.

Patient Survey

We conducted a retrospective chart review of outpatient encounters at the University of Alberta Hospital IBD clinic from March 16, 2020 to July 30, 2020 to obtain the contact information of eligible patients. We sent survey links via the REDCap system to patients with email addresses included on their medical charts. For those who did not have email addresses available, we conducted the surveys via telephone. At the University of Calgary IBD clinic, patients were invited to participate in a public REDCap survey from August 2020 to October 2020 via e-mail. All patients aged 18 years old or older seen via telephone or video-based (Alberta Health Services approved Zoom video conferencing consultations) encounter were included.

The patient survey was also stratified into three categories: patient demographics, patient satisfaction and patient experience. The demographics portion of the survey included questions on patient age, gender, hospital site, postal code, IBD type and disease location, consultation type (first consultation, follow-up), and means of consultation (telephone, telehealth and/or video call). Like the provider survey, the patient satisfaction survey used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to rate the usefulness, interface qualities, interaction quality and reliability, overall satisfaction and future use of virtual care. The patient experience questionnaire was mainly open-ended, including questions exploring patients' perceived advantages and disadvantages around virtual clinics, general challenges experienced by patients with IBD pertaining to the COVID-19 pandemic, and delays in care. Delay in care is defined as a delay in originally scheduled appointment date for surgical or endoscopic procedures, radiological imaging and/or biologic infusion.

Statistical Analysis

Study variables were summarized using descriptive statistics (percentages and numbers for discrete variables, and when appropriate, mean or medians for continuous variables). Open-ended responses were reviewed and summarized into major thematic categories by the primary investigator (M.D.). Responses were then coded according to each major theme to allow for quantitative analysis of the responses. All tests were two-sided and the level of significance was set at $P < 0.05$. Statistical analyses were performed using SPSS v27 (SPSS Inc., Chicago, IL).

Ethical Considerations

The provider study was reviewed by the University of Alberta Institutional Review Board (IRB), while the patient study went through an additional review phase through the A project

Ethics Community Consensus Initiative (ARECCI), an Alberta Innovates-Health Solutions (AIHS) initiative. AHS is a province-wide, integrated, single-payer, public health authority responsible for delivering all medical and surgical care within the province of Alberta and servicing approximately 4.3 million residents. AHS is geographically divided into five discrete regions (South, Calgary, Central, North). Two major metropolitan centers (Calgary, Edmonton) where there are tertiary-care referral IBD centers, although 29.3% of the population lives in rural or smaller urban areas (5).

Verbal informed consent was obtained from patients surveyed over the telephone. Digital permission, embedded within the REDCap survey, was obtained from all patients and providers who completed the survey online.

RESULTS

Provider Survey

The overall response rate was 19.2% (24/125), with 46% (11/24) female respondents. Most respondents worked in an academic facility (63%, 15/24) and have been in practice for a mean duration of 12.3 years (7.6 ± 12.3 years; Table 1). Respondents were from seven facilities within the South, Calgary, Central and Edmonton Health zones. Of non-responders, majority were from Calgary or Edmonton Health zones (94%, 95/101) (Table 4).

Satisfaction with Virtual Care

Virtual care reported was a hybrid model consisting of telephone and in-person (54%, 13/24) or telephone and video consults (42%, 10/24). Although 96% (23/24) indicated that virtual care tools improved access to health care and provides location flexibility, only 42% (10/24) agreed that it saved time (Figure 1A). Ninety-five per cent of HCPs who used video conferencing found it simple, easy to learn and quickly became productive with it. About 60% (14/24) of HCPs reported that virtual care (irrespective of the platform used) was not the same as in-person visits (Figure 1B,C). The mean overall satisfaction for health care providers who rarely or never had virtual care before the pandemic was 0.57 points (4.36 versus 3.79; 95% confidence interval [CI]: 0.26 to 0.88, $P = 0.001$) higher than those who often provided virtual care. Overall, 88% (21/24) of providers were satisfied with virtual care and all respondents were willing to use it again (Figure 1D). Access to Alberta Netcare (a provincial electronic health record containing information on laboratory, radiology and surgical procedures) was reported to be valuable for laboratory investigations during this period. In the qualitative analysis of open-ended responses, identified areas of concern included patient safety, patient education on best practices, adequate remuneration, additional administrative duties, and challenges with providing care for new patients on virtual platforms.

Experience with Virtual Care

The mean proportion for new consultations as reported by HCPs was 32.8% (± 21.9). Seventy-five per cent (18/24) of HCPs mentioned they had complete patient information for all their virtual visits. Of the 25% (7/24) that had incomplete data, the reported missing information was absence of physical examination, laboratory and radiology investigations, paper charts and referral letters. Inconclusive virtual consultations due to the lack of physical examination and missing lab values was reported by 75% (18/24) and 33% (8/24) of HCPs, respectively. Of the 24 respondents that completed the survey, only 6 (25%) had trainees involved in their clinics (Table 1). The type of clinic consultations conducted were telephone only (50%, 3/6), a combination of telephone, video and hospital-based telehealth (33.3%, 2/6) and hospital-based telehealth only (16.7%, 1/6). The observation methods used were indirect (50%, (3/6) and direct observation (50%, 3/6). Preceptors with previous experience with virtual consultation before the pandemic were more likely to include trainees in their virtual clinics (66.6% versus 33.4%; Fisher's exact test, $P = 0.033$; Figure 2A). For preceptors

Table 1. Provider characteristics ($N = 24$)

Characteristics	Percentage (N)
Age group	
25–44	50% (12)
45–54	33% (8)
55–64	17% (4)
Gender	
Female	46% (11)
Male	54% (13)
Type of facility	
Academic	63% (15)
Community	38% (9)
Mean years in practice (years) (\pm SD)	12.3 \pm 7.6
Virtual clinic with trainees	
Yes	25% (6)
No	66.7 (16)
Type of virtual care with trainees	
Telephone only	50% (3)
Telephone, Video and Hospital-based telehealth	33.3% (2)
Hospital-based telehealth only	16.7% (1)
Observation method	
Direct observation	50% (3)
Indirect observation	50% (3)
Previous remote consultations before the pandemic	
Never	16.7% (1)
Rarely	16.7% (1)
Often	66.6% (4)

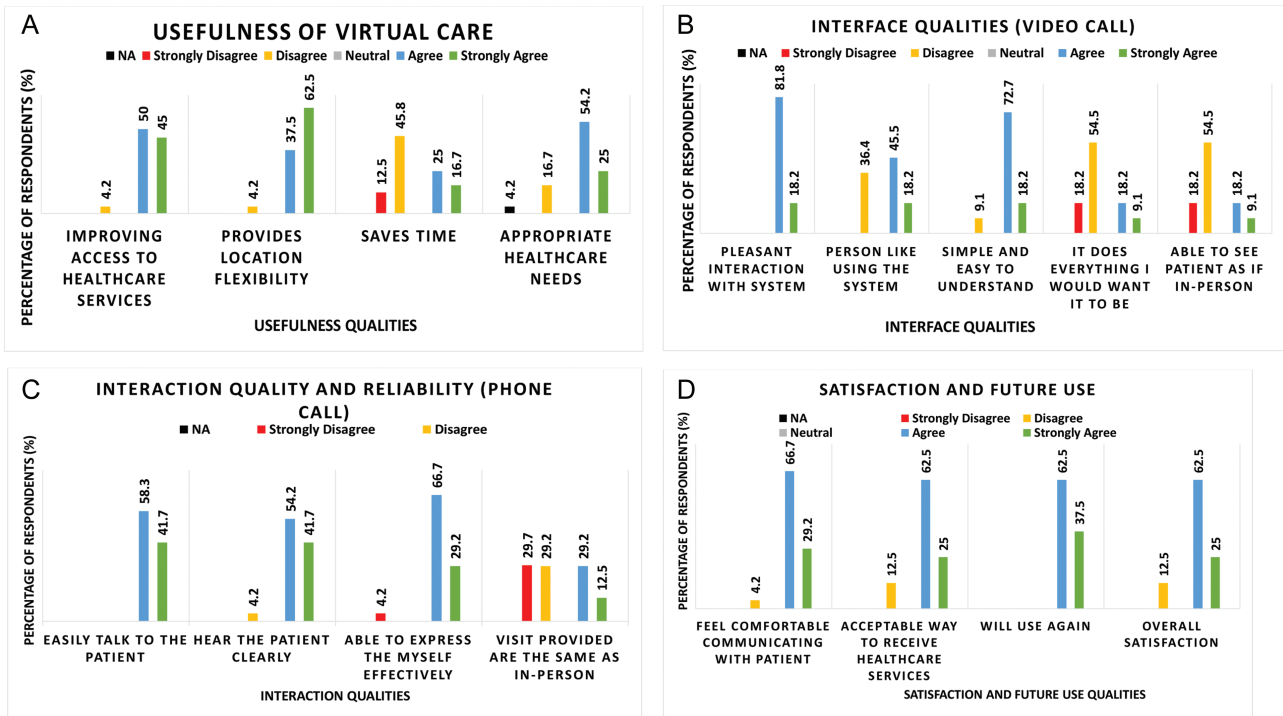


Figure 1. Health care providers' opinion on the usefulness of virtual care (A), interface qualities video call (B), interaction quality and reliability of phone call (C) and overall satisfaction with virtual care (D).

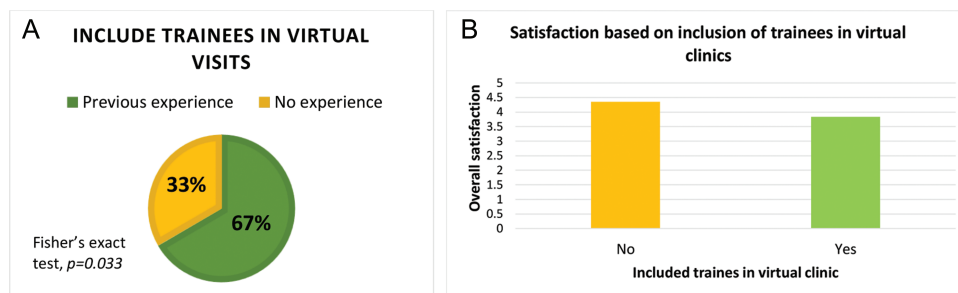


Figure 2. (A) Virtual care experience status of providers who included trainees in their virtual clinic and prior virtual care experience, (B) Provider satisfaction based on the inclusion of trainees in virtual clinics.

who included trainees in their virtual clinics, their overall satisfaction averaged 0.51 (4.34 versus 3.83; 95% CI: 0.19 to 0.84, $P = 0.004$) points lower (Figure 2B). Providers were asked to provide comments, suggestions and concerns about their virtual experience and the impact of the virtual clinic on medical education. Concerns identified were lack of trainee engagement, adequate remuneration for health care providers, and lack of training for trainee and providers on how to navigate virtual platforms, especially with new consultations.

Patient Survey

A total of 1581 patients were invited to complete the survey. The survey had a 39.7% response rate amongst patients, where 628 of the 1581 patients completed at least one component of the survey.

Demographics Questionnaire

The mean age of patients who participated in the survey was 48 years (SD = 15.19). The majority of patients who participated in the survey were female (61.5%). 71.2% (301/423) of patients received their care from the University of Alberta, 24.6% (104/423) from the IBD Clinic in Calgary, and 2.9% (18/423) did not list either hospital as their primary site of care. Of the patients involved in the study, 28.2% (121/429) of patients resided outside of the Edmonton/Calgary metropolitan area.

Patients with Crohn's disease made up 63.6% (273/429) of survey participants, while 26.6% (114/429) of patients had ulcerative colitis, and 5.6% (24/429) of patients had indeterminate colitis. The remaining 4.2% (18/429) of patients did not know what type of inflammatory bowel disease they had. The disease location of patients who participated in the study was

as follows: 29.9% (162/541) had colonic involvement, 11.3% (61/541) had upper gastrointestinal (GI) involvement, 32.9% (178/541) had small bowel disease and 7.0% (38/541) had perianal disease. The remaining 18.9% (102/541) of patients were unsure of their disease location.

Follow-up visits were the most common type of virtual care visit scheduled amongst patients, where only 4.9% (21/429) patients had a first consultation scheduled via virtual care. Of the virtual care visits, 98.1% (203/207) were completed over the telephone and 1.9% (4/207) over hospital-based telehealth. Interestingly, none of the patients reported their visits to include a video component (Table 2).

Telehealth Usability Questionnaire/Satisfaction

Overall, patients were satisfied with their virtual care experience, where 84.3% (344/408) patients agree/strongly agree they were comfortable communicating to the physician using the remote system, 77.5% (316/408) of patients agree/strongly agree that virtual clinic is an acceptable way to receive health care services, 84.8% (346/408) of patients agree/strongly agree they would use virtual care services again, and 82.6% (337/407)

agree/strongly agree they were satisfied with the telehealth system (Figures 3 and 4). Similar responses to the satisfaction questionnaire were seen with patients with first consultation visits, where 80% (16/20) of survey respondents agree/strongly agree that they were comfortable communicating to the physician using the remote system, that virtual clinic is an acceptable way to receive health care services, that they would use virtual care services again, and they were overall satisfied with the telehealth system.

Experience Questionnaire

In addition to GI virtual clinics, 30.9% (123/398) of patients also experienced a non-GI virtual care appointment. When asked to provide further details around their non-GI virtual care appointment, 19.2% of patients who had a non-GI virtual clinic visit provided a response. Of the 19.2%, 60.3% described the context around their appointment (i.e., type of appointment), while 34.7% described an overall positive experience and 5% reported an overall negative experience. The main advantages of virtual care clinics described by patients included time efficiency/convenience (20.2%), cost-effectiveness (46.3%), reduced risk of COVID-19 exposure (10.6%), and they expressed that the virtual care clinics provided a good platform to meet patient care needs (16%). The main disadvantages expressed by patients include challenges with communication (25.1%), difficulty establishing a physician/patient care relationship (2.7%), absence of physical examinations, especially when symptomatic (19.5%), and overall impersonal/unfamiliar platform for patients (6.2%).

Additional challenges experienced by patients during the COVID-19 pandemic were reported by 228 patients. A challenge reported by 57.4% (131/228) patients was the fear and stress brought on by the COVID-19 pandemic (i.e., infection risk/mental health concerns/unemployment). Access to health care services, PPE and community resources was a challenge experienced by 26.3% (60/228) patients. Additionally, 16.2% (37/228) patients experienced uncertainty around IBD-specific care, including procedures, treatments, labs and medications.

Overall, 17.3% of patients reported some type of delay in care by July 2020 (Table 3). Of the patients who have experienced a delay, 11.5% (8/69) experienced a delay in two areas of care, whereas 5.8% (4/69) experienced a delay in three areas of care. For those who were scheduled for endoscopy, 13% (5/38) also experienced a delay in surgery. Between the hospital sites, delays were experienced by 16.9% (51/301) of patients who received their care from the University of Alberta, 15.4% (16/104) of patients from the University of Calgary and 11.1% (2/18) of patients who received care from another hospital site.

Table 2. Patient characteristics (N = 429)

Characteristics	Percentage (N)
Median Age (years) (\pm SD)	48.0 (15.19)
Gender	
Female	61.5% (264)
Male	38.5% (165)
Communication Type	
Telephone	98.1% (203)
Hospital-based Telehealth	1.9% (4)
Video Call	0 (0)
Consultation Type	
First Consultation	4.9% (21)
Follow-up	95.1% (408)
IBD Type	
Crohn's Disease	63.6% (273)
Ulcerative Colitis	26.6% (114)
Indeterminate Colitis (IBD unclassified)	5.6% (24)
I do not know	4.2% (18)
Disease Location	
Colonic	29.9% (162)
Upper GI	11.3% (61)
Small Bowel	32.9% (178)
Perianal Disease	7.0% (38)
I do not know	18.9% (102)
Hospital Site	
University of Calgary	24.6% (104)
University of Alberta	71.2% (301)
Other	2.9% (18)

Discussion

The COVID-19 pandemic has required rapid adaptations on a federal, provincial and individual level to mitigate the spread of

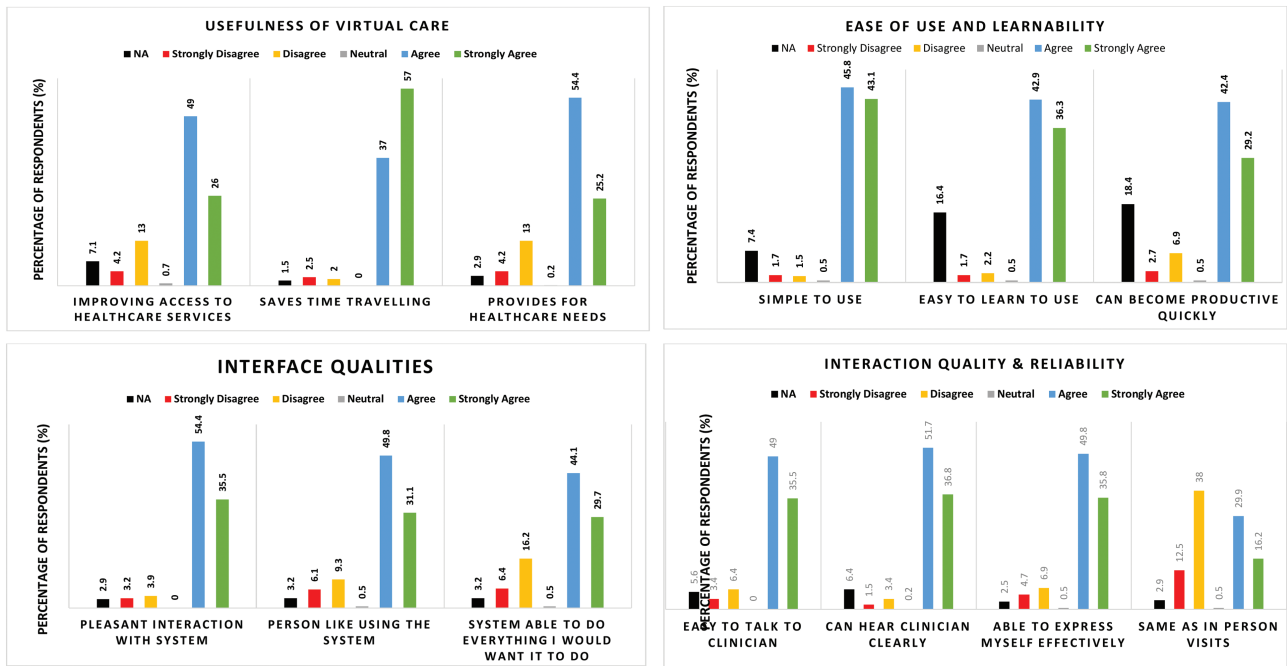


Figure 3. Patients’ opinion on the usefulness of virtual care (A), ease of use and learnability (B), interface qualities (C), and interaction quality and reliability of virtual care (D).

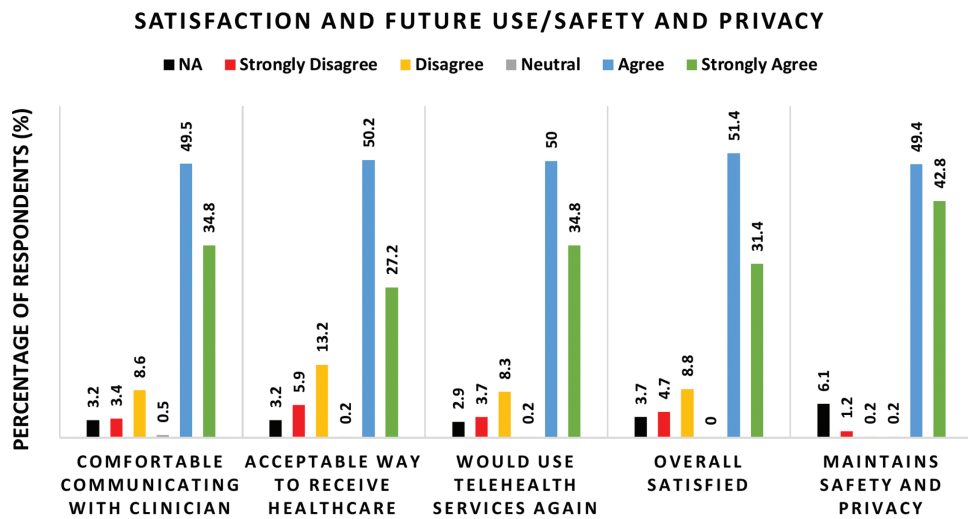


Figure 4. Overall satisfaction of patients and opinion on the future use, safety and privacy of virtual care.

the virus. Specifically, within health care settings, the COVID-19 pandemic has necessitated the rapid implementation of telehealth to provide continuity of care to patients. During the COVID-19 pandemic, several studies have assessed patient satisfaction with telehealth. In an integrative review of studies evaluating patient and physician satisfaction of telehealth services during the COVID-19 pandemic, Andrews et al. concluded that the majority of telehealth services were well received by both physicians and patients, demonstrating a high level of

satisfaction and willingness to continue to use telehealth, even beyond the pandemic (6). These studies were conducted across different general and subspecialized medicine and surgical services, including gastroenterology (6–8). However, fewer studies have focused specifically on patients with IBD.

In this study, we found that patient perception of care was overall positive despite the rapid transition to telehealth. The majority of IBD patients felt comfortable with the telehealth system, found the telehealth system easy to use, and most

importantly, felt as if their health care needs were still being met. The overall positive response to telehealth has been reported in other studies that assessed IBD patient satisfaction with virtual care services, where patients expressed a high level of satisfaction, perceived quality of care, and quality of communication, similarly compared to in-person visits (9–11). These findings support the feasibility of telehealth as an acceptable alternative to health care delivery for IBD patients during a pandemic.

From this study, we were also able to assess delays in access to care for patients with IBD during the COVID-19 pandemic. Individuals living with IBD require continuous patient-specific monitoring by specialist gastroenterologists to reduce relapse and minimize disease complications (12,13). Considering the changes resulting from government stipulated social distancing and policies centered around movement restrictions, one would expect that the delivery of IBD care will be disrupted, as access to in-person facilities and resources were often limited. Despite these limitations in access, we found that most IBD patients in the study did not experience a significant delay in access to care.

Despite a rapid uptake of virtual care services during the COVID-19 pandemic, substantial barriers may affect the implementation of telehealth services as a modality for standard health care delivery (14). Significant concerns were highlighted by this survey, including challenges with effective communication, difficulty establishing and maintaining the provider/patient relationship and the inability to perform physical examinations. Effective communication can be limited by hearing impairment, poor hearing quality of virtual service, limitations in non-verbal cues and language barriers (14,15). In other patient populations, such as older patients, those with cognitive impairment, and/or those with socioeconomic constraints, navigating and accessing technology can be a barrier and deter patients from accessing virtual care services, especially outside a pandemic setting (14,15). Due to these barriers, telehealth may serve better as an adjunct to in-person visits. Still, it should not replace in-person visits entirely, especially in settings where a lack of in-person services impacts patient care. In this study, health care providers also expressed concerns about the negative impact of virtual clinic on medical education. Although virtual care seemed efficient for health care

providers, they reported a lack of trainee engagement, learning limitations for more experienced trainees, and the challenge of navigating new consultations on virtual platforms. Canadian gastroenterology trainees have also expressed concerns about achieving and maintaining clinical competence as well as prolonged clinical training due to the pandemic (16).

Although we attempted to provide a comprehensive understanding of the patient-perceived impact of the COVID-19 pandemic on IBD patient care, there are limitations to the study that should be acknowledged. First, we recognize that the response rate of the survey was low in both the patient and provider surveys; the low response rate subjects our findings to possible non-responder bias and may influence the generalizability of our results as it may result in overestimation of patient and provider satisfaction, which may not be truly representative of the patient and provider experience as a whole. Additionally, although we found a high satisfaction rate for patients as a whole, it is important to note that our survey was completed virtually and may encompass those that are more technologically inclined; this may correlate to higher perceived satisfaction and openness to the implementation of technology in health care versus those with challenges or barriers with online platforms. Another limitation is that there is a potential for selection bias as stable patients were mainly scheduled as virtual visits during the first wave of the COVID-19 pandemic. Secondly, there is a large discrepancy noted between the number of new consultations and consultation type by providers versus patients, which may be skewed by the overall response rate. For patients, most participants attended the clinics for follow-up visits, who have previously had encounters with their gastroenterologist in person, so results may not be generalizable to patient experience for new consultations. Third, although video calls was an option for virtual care delivery, none of the patients who responded to the survey completed a video call, which ultimately could influence reported patient experience. Finally, this study focused only on two tertiary hospital sites within a single province and may not be generalizable to patients of smaller hospital sites and/or different provinces. Furthermore, it is

Table 3. Proportion of IBD patients with delays in care ($N = 398$)

Type of Care	% Patients (n)	Median delay in weeks (25–75th percentile)
Surgery	5.7 (23)	10 (8–16)
Endoscopy	9.5 (38)	12 (8–17)
Radiology	3.7 (15)	8 (3–13)
Biologic infusions	2.2 (9)	2 (2–5)
Overall	17.3 (69)	9 (3.5–11.5)

Table 4. Percentage of non-responders by health zones and facility type

Health zone	% ($N = 101$)
North Zone	2
Edmonton Zone	45
Central Zone	2
Calgary Zone	50
South Zone	1
Facility type	
Academic	57
Community	44

important to note that although patients were recruited from two tertiary hospital sites, gastroenterologists were recruited throughout the province, which could result in potential bias when trying to compare the HCP and patient survey responses.

As our study focused on the experiences of HCP and patients during the first wave of the pandemic, future studies are needed to further assess patient perceptions as we enter the different phases and waves of the COVID-19 pandemic and post-pandemic, in addition to determining provider and patient acceptance of virtual clinic consultation post pandemic, when the need for virtual clinics may not be as pressing. When creating future studies, researchers should attempt to recruit IBD patients from multiple hospital sites, including community and tertiary hospital sites. Additionally, as our study did not have any patients with video calls and very few patients with new consultations, to help determine if there is a significant difference in patient experiences, future studies should attempt to include different consultation types (i.e., video call) and patients with new consultation visits. With the transition to virtual services, evaluation of patient literacy of IBD-related health knowledge among those who are cared for virtually versus in-person would be beneficial in assessing patient understanding of disease.

Overall, this study has provided a good insight into the patient and HCP experience with the rapid transition toward virtual care during the first wave of the COVID-19 pandemic. The knowledge obtained highlights the overall positive satisfaction with the virtual care platforms for both HCP and patients; however, telehealth is not without its own limitations and challenges. In the future clinical application of telehealth services, it is important to recognize that telehealth may be used as an adjunct to health care delivery, especially in the setting of stable patients with well established patient-provider relationships, but should not replace in-person modalities entirely. As demonstrated from this study, patients reported challenges with establishing an effective patient-provider relationship, challenges with communication, and not being able to have physical examinations performed in the setting of active symptoms; for the potential new patient or those with active symptoms, having the option of in-person delivery, either as an initial visit or a subsequent follow-up visit, may be beneficial.

Conclusions

In order to sustain the delivery of health care to patients during the COVID-19 pandemic, it has required health care professionals to adapt to virtual care. Despite an initially rapid transition toward virtual care, this study demonstrates the overall satisfaction of patients and providers with telehealth services during the first wave of the COVID-19 pandemic. In addition, this study demonstrates that despite the presence of a

global pandemic and limitations of in-person services, the majority of patients with IBD were still able to maintain their care without disruption. Going forward, the continued use of virtual IBD care shows a promising future in evolving the way health care is delivered.

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AUTHOR CONTRIBUTIONS

Concept: L.O., K.K., G.K., L.R., C.M., R.P.; Writing: all authors; Data Collection/Analysis: M.D., L.O., K.K.; Revision: all authors.

CONFLICT OF INTEREST

Relevant Disclosures: None. Writing assistance: None.

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