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Patient experiences of virtual care across specialist neuroscience and psychiatry clinics related to the second wave of the COVID-19 pandemic in Calgary, Alberta

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Abstract

Purpose The emergence of the COVID-19 (SARS-CoV-2) pandemic has led to public health restrictions and a shift towards virtual care and telehealth. The aim of this study was to explore barriers and facilitators of virtual care from the perspective of neurological and psychiatric patients.

Methods One-on-one interviews were conducted remotely using telephone and online video teleconferencing. There was a total of 57 participants, and a thematic content analysis was conducted using NVivo software.

Results The two main themes were (1) virtual health service delivery and (2) virtual physician/patient interaction, with sub-themes around how virtual care improved accessibility of care for patients and improved patient-centered care; how privacy and technical issues impact patients using virtual care; and the need for relationality and connection between health care providers and patients while using virtual care.

Conclusions This study showed that virtual care can increase accessibility and efficiency for patients and providers, indicating its potential for ongoing use in the delivery of clinical care. Virtual care was found to be an acceptable mode of healthcare delivery from the perspective of patients; however, there is a continued need for relationship-building between care providers and patients.

Keywords Neurology · psychiatry · patient experience · COVID-19 · virtual care · telehealth

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1 Introduction

COVID-19 (SARS-CoV-2) emerged as a novel coronavirus in late 2019 – leading to an ongoing pandemic lasting approximately three years to date – with various resulting public health restrictions being imposed worldwide. These restrictions have included limits on activities such as public gatherings, business conduct, accessibility to healthcare, and movement outside the home. Within Alberta, most healthcare services have been offering varying levels of virtual care to accommodate these restrictions from March 2020 to the time of press in 2023.

The implementation of restrictions has disrupted ongoing medical care for many people, including individuals living with neurological and psychiatric conditions. With physical isolation being crucial for reducing the spread of infection, many essential medical services have modified their models of care to accommodate the new and ongoing public health restrictions. This has included a move to virtual care, which refers to the delivery of health care via the use of web-based and telehealth technology, often facilitating communication between health care providers and patients [1]. Virtual care can be synchronous (real-time) or asynchronous (not real-time), internet-mediated or via telephone, or a combination of these different types of care [2]. There are a wide variety of platforms that are used for virtual care across health care jurisdictions [3]. This includes videoconferencing platforms, apps designed specifically for virtual care, and virtual care tools that are integrated in electronic health record platforms [3, 4]. Virtual care can also be informed by other types of technology, for example, by using remote patient monitoring and wearable devices that generate patient data [5]. With the pandemic ongoing, and the realization of many health authorities and healthcare providers that virtual accommodation can increase access to care for many populations, it is crucial to develop an in-depth understanding of the patient experience in order to facilitate the design and delivery of high-quality virtual healthcare.

Prior to the COVID-19 pandemic, patient surveys had already revealed that telehealth is a commonly accepted and sometimes preferred way of receiving medical care [6, 7]. Recent studies have found that up to 76% of neurology patients rated telehealth care as good or better than in-person care [8]. However, this acceptability was lower for older patients, those with neuromuscular disorders, and those who were undiagnosed [8, 9]. Chirra et al. [10] suggest that, if implemented in a cost-effective and well-adopted manner, telehealth in neurology clinical care settings has the ability to decrease follow-up times and reduce disparities regarding access to health care. Literature about the use of virtual care for people with psychiatric disorders show similar themes [11, 12]. When developing a survey to assess quality of virtual care, Serhal et al. [11] found that virtual care was a physically and psychologically safe way of delivering care for people with psychiatric disorders. In a review of the literature about telepsychiatry, Sharma and Devan [12] found that patient satisfaction with telehealth was high and suggest that the ongoing use of telepsychiatry and virtual care can maintain good quality of care. However, the authors note that internet access and privacy concerns are ongoing issues for patients that must be navigated as the use of telepsychiatry and virtual care continues.

The pandemic has caused a lack of social interaction which has amplified negative impacts on individuals with neurological and psychiatric conditions who require more extensive care [13, 14]. Reductions in physical activity due to lockdowns have also been seen to increase a multitude of health issues related to fall risk and decreasing mental health, exacerbating pre-existing neurological conditions [14]. Individuals with neurodegenerative diseases may be unable to participate in such activities without help from professionals, and this can lead to worsening physical health consequences as exercising has been seen to improve outcomes of individuals with Parkinson disease (PD) and multiple sclerosis (MS) [14–16]. Additionally, increased psychological stress levels have been seen throughout the pandemic, which has not only placed responsibility on healthcare systems to address existing psychiatric conditions, but also the onset of lockdown-related mental health difficulties such as increased anxiety [13, 17]. Individuals with progressive conditions like PD were also found to report significantly higher stress, depression, and anxiety levels, alongside potential worsening of their conditions due to the ongoing lockdown-related social isolation [14, 18]. These concerns relating to the pandemic have the potential to impact the health and wellbeing of people with neurological and psychiatric disorders. Given the need for continuity of care for people with neurological and psychiatric disorders, in addition to the added stressors of the pandemic, understanding the perspectives of patients on the effectiveness of virtual care in maintaining their health and wellbeing is imperative.

Although the body of evidence for the use of virtual care for neurological and psychiatric conditions is growing due to the COVID-19 pandemic, there have been few qualitative studies which explore the experience of virtual care from a neurological or psychiatric patient perspective. For the purposes of this study, virtual care includes care delivered over the phone or through internet video teleconferencing software (both are examples of what is commonly termed 'telehealth'). Given the variety of symptoms, illnesses, and experiences across the spectrum of neurological and psychiatric disorders, it is essential to understand how patients perceive and interact with the new landscape of virtual

care. The aim of this study was to examine the barriers and facilitators to virtual care from the perspective of persons with a variety of neurological and psychiatric conditions, specifically epilepsy, movement disorders, hydrocephalus, and mood disorders. A qualitative lens, which incorporated a reflexive thematic approach to content analysis, was used to collect a rich and exhaustive dataset on the lived experience of these patients utilizing virtual healthcare during the pandemic.

2 Research design

This was a cross-sectional qualitative descriptive study aiming to investigate the experiences of neuroscience and psychiatry patients using virtual and telehealth appointments during the pandemic. We completed remote, in-depth interviews using telephone and online video teleconferencing with participants who had completed an initial interview at the start of the pandemic and who consented to be contacted for a follow-up interview. In order for participants to provide detail on the changes and impacts of the pandemic on their healthcare experience it was important that these data were collected while the pandemic was occurring and while social distancing and virtual care provision were underway.

2.1 Recruitment

We recruited participants from a convenience sample of people who had participated in phase 1 of this study at participating clinics at the start of the COVID-19 pandemic from April to May of 2020 in Calgary, Alberta, Canada and had agreed to be contacted for a follow-up interview. These participants were initially recruited purposively for phase 1 from specialist neuroscience outpatient clinics (including neurology and neurosurgery clinics) and psychiatry outpatient clinics. Specifically, patients from this study were recruited from the hydrocephalus, mood disorder, epilepsy, and movement disorders outpatient clinics. At the start of the pandemic, all clinics switched from in-person to exclusively virtual care, including phone calls and video teleconferencing through a secure institutional accounts for platforms such as Zoom [19], Skype [20], and RealPresence [21, 22]. As pandemic restrictions have changed throughout the different waves, clinics continue to offer virtual care alongside some in-person appointments when it has been safe to do so.

Phase 1 results are published [23, 51, 52] or in press for individual clinics. Phase 1 results focused on the impact of public health restrictions on these populations. Based on these analyses, and subsequent waves of the COVID-19 pandemic in Canada, understanding experiences of virtual care emerged as an urgent priority for follow-up interviews.

The participating clinics form part of the Brain and Mental Health Research Clinics at the University of Calgary. This is a research collaborative of neuroscience and psychiatry clinics to embed patient registries into clinical care. Patients are generally referred to these specialty clinics by a primary care provider and assessed for specialist care, with universal publicly funded healthcare for physician visits, diagnostic care and follow-up treatment. The clinics which participated in this phase of the study currently have over 9000 patients enrolled in patient registries; participation in the registry includes consent to be contacted for future research opportunities.

Consent was obtained using Qualtrics survey software [24], or explicit oral consent for phase 1, which included consent to contact and take part in phase 2 follow-up interviews. Explicit oral consent provided a way to ethically include a diverse population as it allowed for the inclusion of participants who wanted to participate but may not have had access to the internet or printer to sign consent forms, who had low literacy, or who had disabilities preventing them from using electronic devices or computer screens. Process consent [25] was used throughout the project, where all participants provided verbal assent at every research encounter (including the initial call to introduce the follow-up interviews and all subsequent contact including interviews) to ensure that the participants remained comfortable with their participation. Participants were given the option of telephone or online conferencing and were given a minimum of 24 hours to consider taking part in phase 2 and to discuss the study with any relevant care providers and care partners. This study was approved by the University of Calgary Conjoint Health Research Ethics Board (REB 20–0559).

2.2 Data collection

Qualitative research is important to demonstrate the perspective of patients, who are not always included in discussions about health service delivery. One-on-one virtual qualitative interviews were used as they provide the opportunity to gain in-depth understandings of lived experience and topics of key importance to the participant. An interview guide was created, informed by analysis from phase 1 of the study and through discussions with the study team. The interview guide contained questions about the changes that participants had experienced due to COVID, how participants coped with these changes, and the impact that switching to virtual care had on them during the pandemic. Four of the six participating clinics from phase 1 participated in phase 2; two clinics declined to participate in the follow-up phase due to logistics and demands on the staff and patients during the pandemic. Although theoretical saturation was

anticipated after 20–25 interviews, interviews were offered to every participant from phase 1 for ethical considerations. In-depth interviews were audio-recorded, and field notes were taken during the interviews in a dedicated field journal, along with reflexive field notes written directly after the interviews. Demographic data was also recorded and was available through the patient registries, and details regarding infection, testing, and isolating for COVID-19 was collected by interview. This information was collected as it may have impacted participants' health needs for their neurological and/or psychiatric conditions or their experience of virtual care.

Provincial governments in Canada are responsible for implementing local public health measures during pandemics. A timeline of public health restrictions was created through review of public records of the City of Calgary and government of Alberta, communications from Alberta Health Services (the single public healthcare system in Alberta), and local media sources. A timeline of public health measures implemented by the government of Alberta is shown in Fig. 1. All data were collected during the second wave of the COVID-19 pandemic experienced in Alberta.

2.3 Analysis

Qualitative data analysis, including coding and synthesis, was completed by DP, RC, ML, and PR (including the Principal Investigator and qualitative methods expert). Interviews were transcribed verbatim using a secure professional transcribing service, anonymized, and verified by the research team. All field notes and transcribed data were managed using NVivo 12 [26]. Interviews were transcribed concurrently while data collection was ongoing so that generated themes could be discussed at subsequent interviews to achieve theoretical saturation. Data analysis started with immersion in the data through repeated listening and reading. Qualitative analysis was completed using a reflexive thematic approach [27, 28], which centers the lived experience of the participant and considers their voice within the data and the analytical process. Memos and annotations were used to capture analytical thoughts and to facilitate an iterative analytical process. Team discussion was used to resolve any disagreements in coding or analysis of the data. Themes and subthemes were brought back to the participants for member checking and to enhance qualitative rigor and establish trustworthiness of the data [29].

3 Results

3.1 Participant demographics

We contacted the initial 80 participants from phase 1 to participate in phase 2. Of these, 57 consented and completed an interview (see Table 1 for a breakdown of clinics and participants). Interviews ranged in duration from 7 m:3s to 93 m:22s (mean length = 34 m:57s) and all interviews were completed over the phone or over Zoom, as per participant

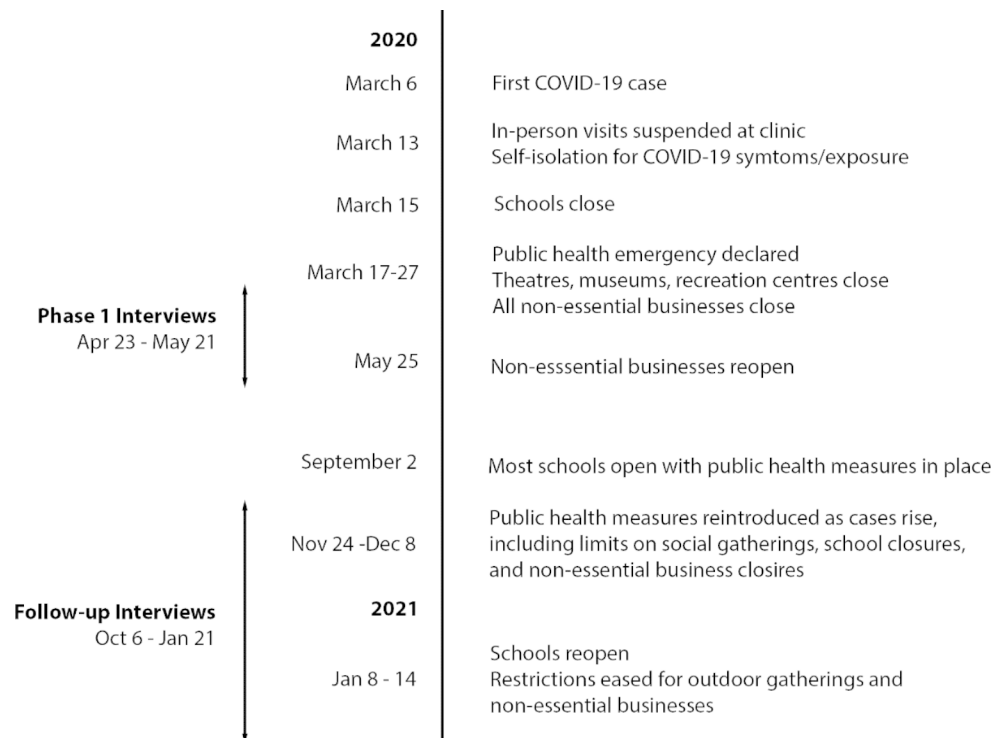**Fig. 1** Timeline of COVID-19 Public Health Response in Alberta, Canada

Table 1 Demographics of participants

Demographic		Value
Age, mean (range)		57 (23–87)
Female sex (n)		28 (49%)
Specialty clinic	Epilepsy	13 (23%)
	Hydrocephalus	18 (36%)
	Mood Disorders	11 (19%)
	Movement Disorders	15 (26%)

Table 2 Themes and their associated sub-themes based on the analysis

Theme	Subtheme
Virtual Health Service Delivery	Efficiency
	Privacy & Technical Limitations
	Physical Assessment
Virtual Physician/Patient Interaction	Relationality & Communication

request. Interviews were conducted during the second wave of the COVID-19 pandemic in Calgary, AB, between November 2, 2020 and February 1, 2021. Recruitment and data collection were completed by research assistants working on the study, including DP, BA, EC, and PR. No participants reported having received a diagnosis of COVID-19, and one participant reported a confirmed COVID-19 diagnosis for a person living in their household; 22 participants reported being tested for COVID-19 at least once and 18 reported having experienced COVID-19 symptoms.

Themes: Experiences of the COVID-19 Pandemic.

Two overarching themes emerged: virtual health service delivery and virtual physician/patient interaction. Each of these broad themes incorporated sub-themes (Table 2). Participant quotes have edited only for general grammar and spelling to enhance readability and include the mode of appointment (phone and/or video) that they had switched to during the pandemic.

3.2 Virtual health service delivery

3.2.1 Efficiency

Virtual appointments were perceived to increase efficiency for both healthcare providers and participants. Virtual care was mainly seen to lessen the workload for healthcare providers as many participants highlighted the virtual aspect to be better suited for follow-up sessions or questions that did not require in-person visits:

[…] there are times when you would rather just, if you could make a quick phone call and get an opinion, I think that would be really valuable. - Participant 401, Movement Disorder, phone appointments

Participants emphasized increased accessibility with the implementation of virtual care appointments and suggested that physicians can still get an overall sense of how they are doing from online meetings. Many individuals reported virtual care as an easily accessible process for both the participant and the healthcare provider:

Especially if it's just a follow-up where they're looking at especially test results, or something like that where they don't need to see you in-person, I think it's fantastic. It's gotta be cheaper and more efficient on the system for a doctor to sit at a desk and make a quick phone call than having, to have a patient come in and have to go through all that. - Participant 240, Epilepsy, phone appointments

One participant also highlighted the mutual benefits between healthcare providers and patients in having increased access through a more efficiently run system and highlighted that its use could be continued in the future, especially for follow-up appointments where there is no change to their health care plan or for situations such as quick refills for prescriptions:

Maybe if you just need a re- a refill on a prescription, you could call your doctor and talk to them for two minutes and then they could send a fax, and I think it would save a […] lot of money to the healthcare system. Plus, I think it'd be a lot easier for the doctors, like you just said, they can see more people. - Participant 240, Epilepsy, phone appointments

For several participants that lived far from their clinics, virtual care was especially efficient in terms of less travel time for the same amount of care and proper follow-up:

Dr. [Neurologist] called me on the phone and asked me questions about how I was feeling and was determined then that I didn't, I didn't need to come, which was good. It worked out good because I have to drive, uh, for four and a half hours before I get to [clinic location] from here. - Participant 646, Hydrocephalus, phone appointments

Participants also emphasized that they did not have to find transportation or take extra time out of their days to attend their virtual health visits, making it easier to manage their appointments alongside work and other obligations. This overall efficiency extended to reductions in wait times and shorter appointments, which was stressed by many participants as a benefit of virtual care for both the participants and the providers:

It's quick to ... because I just have to say I'm, "I feel good, I just need a refill." It's better to spend 10 minutes on the phone than have to drive. – Participant 309, Mood Disorder, phone appointments

Additionally, some participants discussed the reduced financial cost and physical toll of virtual visits as they were not required to pay for services such as hospital parking:

It's such a hassle to go out anywhere like for parking and getting around in the hospitals or the areas where things are. So, that takes up a lot of energy, which I think I'm running quite low on. - Participant 416, Movement Disorder, phone appointments

3.2.2 Privacy & technical limitations

However, virtual care can also decrease accessibility for individuals, depending on privacy and technical limitations. This was mainly a concern for those who do not have internet access, the technology needed to attend virtual care appointments, or who do not have appropriate technological skills and supports to implement the required hardware and software. Participants did note that the efficiency of virtual care sometimes came with technological trade-offs. For example, some participants discussed issues such as lag and internet connectivity which disrupted their virtual care appointments: *"...because there are times when they, they, they just start getting laggy and stuff like that, mu- or they get disconnected."* (Participant 221, Epilepsy, video appointments), which decreased the efficiency of their appointments.

This is a significant barrier towards the use of virtual care as there continues to be many individuals who cannot afford internet access or the necessary technology:

FaceTime, I think, would be excellent if you needed to see your patient, but then again, your patient needs to be able to have internet access where you could do that. - Participant 239, Epilepsy, phone appointments

The trustworthiness of virtual care was also discussed by several participants, who often brought up the security issues inherent with virtual care platforms. Some participants were less willing to give out personal information over the phone or internet, indicating that an online platform felt less private:

Stuff like that that's really, really, really personal, I don't really like saying over the phone. - Participant 642, Hydrocephalus, phone appointments

Additionally, in some cases, participants felt that online privacy protections made accessing care more onerous:

Then I have to log in into this other thing, to the email, to then go back to see her [case manager]. Which like, I know it's for my safety and everyone else's safety, but it like puts another barrier in communication between me and my case manager. [...] And I'm pretty fortunate because I'm pretty tech-savvy and I'm able right now I'm doing okay. So, communication's not a big issue, but I know that if I was at a really low spot for me, that extra thing to communicate with her via email would be very daunting. - Participant 311, Mood Disorder, video and phone appointments

One participant emphasized that if privacy protections could be made simple, easy, and accessible, virtual care would be more accessible:

So, if the bank can do it [have secure privacy] with financial information, why can't the healthcare system do it with health information, so that you can exchange viewpoints and questions back and forth with your doctor by sending an email rather than waiting for nine months, 12 months to get an appointment to see them? A lot of this stuff could be solved or at least mitigated by having people get access to a confidential email service. - Participant 403, Movement Disorder, video and phone

Other than noting these issues with technical limitations of video-based care, participants did not note any meaningful differences between phone-based or video-based care.

3.2.3 Physical assessments

Participants discussed the limitations of virtual care when it came to diagnosis, assessment, and follow-up. Due to the limitations of virtual care platforms, some participants stated that their provider's ability to provide assessment was limited; physicians could get an idea of how a patient is doing over video teleconferencing but could not address specific problems or complete routine testing such as blood pressure measurements. Several participants from the movement disorders clinic specifically mentioned the limitations to physical assessment compared to in-person care:

I think it would help if the doctor saw me and she'd do better to diagnose changes in my health. They don't see how I walk and that what's they do when you're in [person]. They have you do little exercises, like with your fingers and stuff, and then they watch you walk.

And she's not getting any of that feedback, uh, on the phone. - Participant 409, Movement Disorder, phone appointments

I have something wrong with my left wrist [...] Dr. [Physician] I felt needed to see that rather than just me telling him over the phone. [...] So, I would not feel comfortable having just a phone talk, uh, and I don't know how good Zoom would be on something like that to show them. I don't know if it would pick it up even. - Participant 408, Movement Disorder, video and phone appointments

Well, there's no opportunity for the doctors to, in the case of the Parkinson's doctor, to observe, you know. Uh, they can ask, she can ask questions and I can answer the questions but it, um, I think from, from the standpoint of, of her and her diagnosis or her observation t-t-they make, it makes a whole lot more sense if she's there in person or if I'm there in person. We need to see, in comparing her m-memory with, with, um, how my condition seems to be changing if it's changing at all. - Participant 400, Movement Disorder, phone appointments

3.3 Virtual patient/physician interaction

3.3.1 Relationality & communication

The relationships between participants and their healthcare providers were impacted by the change to virtual care in several different ways. Participants spoke of the lack of relationship or connection they felt with their provider in a virtual care setting compared to in-person settings, feeling that in-person visits allowed for a more human-seeming interaction. For example, some participants expressed that phone appointments felt less comfortable, and they were less willing to speak up about their questions or needs, or had less time to do so:

I prefer face-to-face if I have some questions then I, uh, I don't feel con- I can ask somebody any question if I'm face-to-face with them, pretty much. But online, I feel a little like self-conscious, I can't ask. 'Cause I just, I don't feel it's as private online, to be honest. That's what I feel. It's not as private. - Participant 642, Hydrocephalus, phone appointments

But it all boils down to phone appointments, they weren't personal appointments. Uh, so I didn't feel served [...] I'm very disappointed. I... when I had this

problem with the vertigo [...] I had to leave a recorded message. That was four days ago. I haven't heard back from them. If it was urgent, what good would it be? - Participant 419, Movement Disorder, phone appointments

Yeah, instead of just on the phone because it's, sometimes it seems like it has to be quick. We just don't seem to have the, the time to maybe discuss anything, we just get our prescriptions and, uh, on the phone, and uh, "Are you having any troubles?" "Well, well, no," (laughing). - Participant 623, Hydrocephalus, phone appointments

Some participants also highlighted the difficulty of utilizing virtual care due to an inability to read the body language of their providers:

I'm not 100% talking like carefree with them, like normal. I don't trust it, and I like seeing people's faces and getting a read of them. I don't like just doing it online. - Participant 642, Hydrocephalus, phone appointments

Finally, participants felt that they lost out on relationships which did not transfer easily to virtual care, such as group therapy for mood disorders or group activities for movement disorders. One participant expressed the result of the experience of this increased isolation:

Well, communication is pretty important. Uh, it'd be nice if there was a mechanism for people with Parkinson's, that can deteriorate given the current circumstances, that some kind of a communication from their clinic [...] In a situation like this, the temptation is to pull back on communications, but you need to think about increasing communications, even if it means hiring extra people to do it. And I'm not so sure I see any evidence that that's happened. – Participant 403, Movement Disorder, video and phone appointments

Additionally, some participants felt that physicians were less able to assist them with their medical needs through virtual care, as physicians were less able to explain clinical situations, educate patients about medical needs, or discuss problems and treatments in detail:

Well, it's helpful when you have someone to talk to, a professional to talk to. Like my doctor's been quite good at phoning, but there's nothing other than

reassurance. There's not too much that they can do when you're at home. - Participant 416, Movement Disorder, phone appointments

4 Discussion

Our data were collected during a period of increased physical, commercial, and public health restrictions during the second wave of the COVID-19 pandemic in Canada, when the population had adapted to living with restricted public health measures over the preceding several months.

The findings of our study align with existing research across different medical disciplines and contexts, suggesting that virtual care is acceptable to patients, accessible, and efficient, but is limited by technology issues, difficulties building relationships, and challenges with physical assessment [30–33]. Uniquely, this study contributes specifically to knowledge about virtual care usage for neurological and psychiatric patient populations.

Access to ongoing quality medical care is important for people who have chronic neurological and psychiatric conditions in order to properly manage their health and wellbeing. As such, our findings relating to virtual health service delivery and virtual patient/provider relationships highlight both the advantages and disadvantages of the transition to virtual care during the COVID-19 pandemic, especially as the adverse impact of the COVID-19 pandemic on mental health is increasingly recognized [34, 35]. Our findings suggest that participants found virtual care to be an accessible mode of health care delivery. In support of these findings, a literature review by Di Carlo et al. [7] found that telepsychiatry improved accessibility of medical care for patients with psychiatric conditions, and it was demonstrated to be as effective as in-person care in several randomized controlled trials [36–38]. However, these studies suggest that some patients felt more comfortable sharing personal details over a digital platform rather than during an in-person appointment. This contrasts our own findings, where some participants did not feel comfortable sharing medical or personal details via virtual care platforms. This difference from previous literature may be because pre-pandemic studies included patients who specifically opted in to virtual care services, unlike the pandemic, where all participants were required to switch to virtual care. This highlights the need for flexible patient-centered care in all forms of health care delivery, ensuring that time is taken to establish relationships between patients and providers to facilitate communication and trust [39, 40]. As we move forward with easing COVID-19 restrictions, continuing to provide multiple modes of care (e.g., both in-person and virtual appointment options) that suit the unique needs of patients has the possibility to improve the delivery of patient-centered care.

Additionally, our finding of increased accessibility when virtual care was used is supported by literature about health care professionals. From a neurological healthcare provider perspective, telehealth visits allowed for increased structure to conversations, allowed patients to be more prepared for appointments, and reduced travel-related stress [41]. This underscores that virtual care can be beneficial for both patients and providers in terms of access and efficiency when the technology works well, especially if relationships between providers and patients are already established prior to the implementation of virtual care. Chen et al. [13] noticed similar benefits in terms of improved access and efficiency for telehealth for psychiatric patients and providers but noted an increased burden on administrative staff which may impact the sustainability of virtual care services. While participants in our study did not address this directly, addressing the burden on administrative staff can help providers and patients continue their virtual care relationship in a positive and efficient manner.

Despite the reported benefits of virtual care, this study demonstrates that communication for virtual medical visits can be challenging for both providers and patients. In previous research, neurologists expressed that having conversations with new patients, or sensitive medical consultations, was more difficult over a telehealth platform than during an in-person appointment [41]. Based on our findings, patients encounter similar difficulties around relationship-building and feeling comfortable with their providers. Saliba-Gustafsson et al. [42] suggest several ways to improve communication for virtual care. This includes utilizing technology such as screen sharing to explain diagnostic tests and imaging, multi-person teleconferencing to include other members of the care team and having readily available methods for addressing technological troubleshooting for patients and providers. For example, such as for those with dementia, the accompanying sudden shift to virtual care by almost all healthcare teams led to additional anxiety resulting from uncertainty about the availability of care and how to access it [23]. When patients and care partners are expected to connect with internet technology, clear guidance should be provided to explain how to set up and use technology that may be unfamiliar to many. To increase accessibility of technology, some clinics have created the position of "Digital Navigator" to educate patients and clinicians on proper use of virtual care platforms and customize digital care plans to patient needs [43]. Improving preparedness for in-person appointments and improving communication between providers and patients increases the quality of care [44, 45], and the same principles are likely applicable to a virtual care setting as well. Implementing strategies such as these could

help reduce some of the barriers to virtual care described by our own participants, such as limited understanding of the technology or communication limitations.

In our findings, participants did not express specific preferences for phone-based or video-based virtual care, other than noting technical challenges of engaging in video-based virtual care. This is supported by some literature on the different modalities of virtual care. When assessing differences in phone and video telehealth, Rodriguez et al. [46] demonstrated that patients who were older than 65 and had limited Wi-Fi access were less likely to use video-based virtual care. However, the study notes that preferences modality were driven more by health care providers more than patients, which aligns with our own finding of no strong preferences for a given modality from the perspective of patients. While patients did not demonstrate a preference in our study, Chang et al. [47] noted that providers can often make a more fulsome assessment and engage patients more using video-based care rather than phone calls. Reeves [4] implemented tools for clinicians such as form templates, triaging tools, secure messaging, analytics, and integrated telemedicine, suggesting that platforms which standardize workflow can also assist health care providers in their use of virtual care.

No matter the modality, our study findings also demonstrate the limitations of virtual care, particularly for people with neurological disorders that benefit from ongoing physical assessments. Telehealth presented challenges specifically for diagnosis and evaluation of certain patient populations, including patients with cognitive, neuromuscular, and movement disorders [41]. These groups typically require more hands-on care, such as physical assessments. Our results suggest that to improve the sustainability and usefulness of virtual care, these challenges will need to be addressed for these specific populations.

There is current work being done to address issues of assessment in virtual care. For example, implementation of remote patient monitoring systems could supplement current models of virtual care by improving assessment capabilities. Ajcevic et al. [48] used monitoring systems for patients with stroke or transient ischemic attack to detect changes in key vital signs, which notified health care providers and allowed for modification of treatment regimes. Patients indicated that the remote monitoring system was easy to use and improved quality of life. Greene et al. [49] used a smartphone app and machine learning to assess fall risk in patients, finding that fall assessments provided by the app were correlated with patients' self-reported fall history. Oagaz [50] developed and tested a virtual reality system that was able to perform eye tracking and motion analysis, suggesting it may be useful in diagnosing patients with neurocognitive disorders. Technological advances such as

these could help to address barriers to virtual care found in our study by increasing the amount of patient data available to clinicians, ameliorating difficulties with hands-on assessments and diagnosis. Alternative models of care (e.g., a hybrid of in-person and virtual care visits) could also be implemented. Implementation of virtual care should also include information about privacy issues, such that patients are aware of who has access to these virtual care platforms and how their data are being managed.

4.1 Strengths and limitations

A strength of this work is that it was embedded in a prospective clinic registry, which enabled us to quickly contact people living with neurological and psychiatric conditions during the COVID-19 pandemic. This means that we could understand people's lived experience while the pandemic was ongoing, and it allowed us to mitigate the possibility of recall bias. Another strength is the follow-up strategy of maintaining a relationship with participants so that trust and rapport was pre-established, allowing for an in-depth exploration of patient experiences. The main limitation is that the study was conducted in a single urban location providing universal healthcare. It may not be wholly transferable to persons receiving care in family practices or with limited access to care, or in healthcare systems with different funding (such as multi-payer) structures. In future work it will be important to prioritize people with accessibility challenges (e.g., rural, remote living or barriers using technology) as this will inform further development of high-quality virtual care. Additionally, we did not interview healthcare providers or care teams for this study. Including these perspectives in future research can further the development of high-quality virtual care that works synergistically for patients, providers, and support staff.

5 Conclusion

This study addresses the lack of neurology and psychiatric patient perspectives in virtual care literature, highlighting that virtual care can be an acceptable mode of healthcare delivery for these patient populations during the COVID-19 pandemic. The results of this study indicate that virtual care allows patients increased access to brain and mental health services while also improving efficiency for healthcare systems, suggesting that virtual care should be considered as an ongoing modality of clinical care. This study has also demonstrated the importance of relationship-building between providers and patients in a virtual care landscape; a factor that may have been missed in the abrupt transition of

medical care from in-person clinical appointments to virtual services resulting from COVID-19.

Future research should focus on addressing barriers for patients and providers, such as methods of relationship-building virtually and ways to improving accessibility of virtual care for patients. Additionally, research is needed to investigate and implement new technologies into current models of virtual care, allowing for improved assessment and diagnosis for neurological and psychiatric populations. Finally, further research into healthcare provider perspectives of virtual care is also important, including skills-based education on delivery of virtual care.

Declarations

Competing interests The authors have no conflicts of interest to declare.

Ethics approval This study was approved by the University of Calgary Conjoint Health Research Ethics Board (REB 20–0559).

Consent to participate All study participants provided informed consent to participate in the study.

Consent to publish All study participants consented to have their anonymized interview data published.

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