




Virtual care during COVID-19: The perspectives of older adults and their healthcare providers in a cardiac rehabilitation setting

www.cambridge.org/cjg

Cecilia Flores-Sandoval¹ , Shannon L. Sibbald^{1,4,9,10}, Bridget L. Ryan³, Tracey L. Adams⁵, Neville Suskin^{4,6,8}, Robert McKelvie^{6,8}, Jacobi Elliott⁷ and Joseph B. Orange^{1,2,11}

Article

Cite this article: Flores-Sandoval, C., Sibbald, S.L., Ryan, B.L., Adams, T.L., Suskin, N., McKelvie, R., Elliott, J., & Orange, J.B. (2024). Virtual care during COVID-19: The perspectives of older adults and their healthcare providers in a cardiac rehabilitation setting. *Canadian Journal on Aging / La Revue canadienne du vieillissement*
<https://doi.org/10.1017/S0714980824000102>

Received: 25 March 2023
Accepted: 20 January 2024

Mots-clés:
personnes âgées; soins virtuels; réadaptation cardiaque; COVID-19

Keywords:
older adults; virtual care; cardiac rehabilitation; COVID-19

Corresponding author:
Shannon L. Sibbald, PhD. Associate Professor. Faculty of Health Sciences. Department of Family Medicine & Schulich Interfaculty Program in Public Health, Schulich School of Medicine and Dentistry, Western University. London, Ontario, Canada. 1151 Richmond - HSB334 - 519661-2111 x86258
(ssibbald@uwo.ca)

¹Faculty of Health Sciences, Western University, London, Ontario, Canada, ²School of Communication Sciences and Disorders, Faculty of Health Sciences, Western University, London, Ontario, Canada, ³Departments of Family Medicine and Epidemiology and Biostatistics, Centre for Studies in Family Medicine, ⁴Department of Family Medicine, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada, ⁵Department of Sociology, Western University, London, Ontario, Canada, ⁶St Joseph's Hospital Cardiac Rehabilitation & Secondary Prevention Program, London, Ontario, Canada, ⁷Lawson Health Research Institute, London, Ontario, Canada, ⁸St. Joseph's Health Care London, Ontario, Canada, ⁹School of Health Studies, Western University, London, Ontario, Canada, ¹⁰Interfaculty Program in Public Health, Western University, London, Ontario, Canada and ¹¹Canadian Centre for Activity and Aging, Western University, London, Ontario, Canada

Résumé

La présente étude visait à explorer les perceptions des personnes âgées et des professionnels de la santé sur la prestation virtuelle de soins de réadaptation cardiaque pendant la pandémie de COVID-19. La méthode d'enquête utilisée était de type qualitatif. Des entretiens semi-structurés ont été réalisés avec 15 personnes âgées et 6 professionnels de la santé. Les données ont fait ressortir cinq thèmes : 1) le manque d'intimité émotionnelle durant la consultation médicale virtuelle; 2) les plateformes virtuelles sont inadaptées; 3) la prestation de soins virtuelle fait gagner du temps; 4) les plateformes facilitent l'accès aux soins, et 5) la perte de liens avec des patients et des collègues. Étant donné que les soins virtuels continuent d'être mis en œuvre et qu'ils sont parfois présentés comme une option optimale pour la réadaptation cardiaque, il est essentiel de répondre aux besoins des personnes âgées atteintes d'une maladie cardiovasculaire et de leurs prestataires de soins de santé. Cet objectif est d'autant plus important, compte tenu des problèmes d'accès et d'utilisation de la technologie pour les personnes âgées, et de leur besoin d'établir une relation de confiance et un lien émotionnel avec leurs prestataires de soins.

Abstract

The present study aimed to explore the perspectives of older adults and health providers on cardiac rehabilitation care provided virtually during COVID-19. A qualitative exploratory methodology was used. Semi-structured interviews were conducted with 15 older adults and 6 healthcare providers. Five themes emerged from the data: (1) Lack of emotional intimacy when receiving virtual care, (2) Inadequacy of virtual platforms, (3) Saving time with virtual care, (4) Virtual care facilitated accessibility, and (5) Loss of connections with patients and colleagues. Given that virtual care continues to be implemented, and in some instances touted as an optimal option for the delivery of cardiac rehabilitation, it is critical to address the needs of older adults living with cardiovascular disease and their healthcare providers. This is particularly crucial related to issues accessing and using technology, as well as older adults' need to build trust and emotional connection with their providers.

Introduction

Cardiac rehabilitation is an essential component of the healthcare journey of individuals with cardiovascular disease. It is a comprehensive evidence-informed program that helps individuals maintain their cardiovascular health through a wide range of care options such as pharmacological management, education, risk prevention, and optimizing healthy habits such as exercise and proper nutrition (Grace et al., 2011). Attending cardiac rehabilitation has been associated with reduced mortality and lower rates of hospital readmission, with more rehabilitation sessions and adherence to recommendations leading to better outcomes, such as tobacco cessation and stress management (Grace et al., 2021).

Older adults who need cardiac rehabilitation often present with challenges given the additional complexities associated with cardiovascular disease, including the presence of physical

frailty (Flint *et al.*, 2020), and sensory impairments (Cahill *et al.*, 2021), as well as social isolation and decreased stress tolerance (Pedretti *et al.*, 2020). In addition, frailty and cardiovascular disease in older adults also can lead to comorbid mood disorders and worsening physical function (Lutz *et al.*, 2020). As an increasing number of older adults with complex needs enter cardiac rehabilitation, new approaches to cardiac rehabilitation are required to optimize health outcomes relevant to the older population, including quality of life, independence and physical function (Norekval & Allore, 2020).

Before the pandemic, the use of remote telephone-based options in cardiac rehabilitation had been implemented to increase program attendance and accessibility for individuals living in remote areas (Wakefield *et al.*, 2014). For instance, exercise-based programs monitored remotely were found to be comparatively effective to centre-based exercise programs, resulting in savings in program delivery costs and increased patient accessibility (Maddison *et al.*, 2019). During the COVID-19 pandemic, the use of virtual care needed to be upscaled to adapt to the new directives on social distancing and sheltering in place (Babu *et al.*, 2020). To deliver cardiac rehabilitation during the pandemic, a variety of resources were used, such as emails, videos, websites, online resources, phone calls, and videoconferencing (Charman *et al.*, 2021).

The term ‘telemedicine’ refers to the delivery of health care services using information and communication technologies for the exchange of information for diagnosis, research, evaluation and the continuing education of healthcare providers (Garg *et al.*, 2020). This means that the use of telemedicine enables healthcare providers to treat their patients remotely. ‘Virtual Care’ is related to any remote interaction between patients and providers that uses technology to facilitate the delivery of care, including the use of telephone, videoconferencing, email, text, and other online platforms and wearable devices (Moulson *et al.*, 2020). Telemedicine and virtual care belong to the broader concept of ‘digital health’, which also encompasses e-health, mobile health and remote patient monitoring (Krishnaswami *et al.*, 2020).

Recent studies showed that older adults are impacted significantly by the use of virtual care. Abdallah *et al.* (2022) conducted a qualitative study on the experiences of older adults with virtual care during the pandemic. The authors found that although many older adults perceive that virtual care is beneficial and are open to continue using it after the pandemic, others reported barriers when adapting to this model of care delivery (Abdallah *et al.*, 2022). While virtual care has been reported to facilitate access for individuals, including the removal of barriers such as childcare, driving and parking; virtual care has also impacted the relationship between older patients and healthcare providers, affecting the quality of the therapeutic alliance (Senderovich & Wignarajah, 2022).

In a survey study on patient and provider experiences with virtual care in Ontario, the authors found that patients overall had positive feedback for virtual visits, with a preference for video instead of a telephone call given the opportunity to observe the facial expressions and body language of their providers; however, a small proportion of patients expressed discomfort related to technical issues, lack of privacy at home and the preference for in-person care to build a relationship with their providers (Chu *et al.*, 2022). In a qualitative study in Canada on the experiences of those in rural and remote communities, the authors found that while virtual care is a convenient service that can improve accessibility, there were several concerns related to lack of technological

equipment, unreliable infrastructure and lack of health literacy (Rahimipour Anaraki *et al.*, 2022).

Older adults from some socioeconomic and ethnic backgrounds may be more likely to experience barriers to the use of virtual care and digital tools, resulting in lower rates of adoption; in addition, older adults from equity-seeking groups, who do not have a caregiver, who are frail or who do not have access to or know how to use a computer or a digital device may also experience increased difficulties adapting to the virtual care model (Pang *et al.*, 2022).

Studies addressing virtual care in cardiac rehabilitation settings have highlighted the potential for new technologies to increase patient adherence and engagement in these programs (Lee *et al.*, 2023); however, barriers related to internet access and low health literacy levels persist (Banner *et al.*, 2015). When implementing virtual cardiac rehabilitation, it is critical to consider the complexity of technology and the level of satisfaction and acceptability of the interventions among diverse groups of patients (Arian *et al.*, 2022). Given that older adults have unique, sometimes heterogeneous needs regarding access to and the use of virtual care (e.g., hearing and vision accessibility, knowledge of technology), the present study sought to explore the perceptions of older adults and their healthcare providers on virtual care during the COVID-19 pandemic in the context of a cardiac rehabilitation setting. Additional aims were to identify the effects of virtual care delivery on cardiac care rehabilitation from the perspective of patients and providers, and to ascertain possible improvements or impediments to the delivery of care on virtual platforms.

Method

Study Design

Qualitative exploratory methodology, grounded in the constructivist paradigm, was used to explore the perspectives of older adults and their healthcare providers on the use of virtual care during the first two waves of the COVID-19 pandemic in 2020 and 2021. In the constructivist paradigm, human action is considered to be situated culturally and socially, with multiple constructed realities, instead of a single reality (Carpenter & Suto, 2008). Further, reality is constructed in the mind of the participant, and interactive dialogue between the researcher and the participant lead to the unveiling of meaning (Ponterotto, 2005). The current study was approved by Western University Health Sciences Research Ethics Board (116533) and Lawson’s Health Research Institute (R-20-557).

Participant Selection

Older adults and cardiac rehabilitation healthcare provider participants were recruited from a cardiac rehabilitation unit in Southwestern Ontario. Eligible older adults included those who had been referred to the secondary prevention cardiac rehabilitation program after hospitalization due to a myocardial infarction, percutaneous coronary artery revascularization, or coronary bypass graft surgery. The inclusion criteria for older adults were: English speaking older adults 65yrs and older, with a hospitalization within the past year, who were able to give informed consent. Older adults were included if no diagnosis of cognitive impairment, dementia, or major mental illness. The inclusion criteria for healthcare providers were any provider (e.g., nurses, physicians, occupational therapists) who had previous experience working with older adults in cardiac rehabilitation or acute cardiology units.

The research coordinator of the cardiac rehabilitation program identified patients who met the inclusion criteria. Participants were recruited by the primary investigator (CFS), older adults were recruited via a phone call, while healthcare providers were recruited via a mass email. Providers who wished to participate contacted the primary investigator to receive the letter of information and consent via a web-based survey tool (Qualtrics). There were no known risks for participants or inconveniences to daily activities. For participants who did not own an electronic device or had difficulties accessing internet, hardcopy letters of information were sent via postal mail, with the option of verbal consent to the primary investigator. To ensure participants were selected based on their potential to provide relevant and rich data, purposive sampling was used (Moser & Korstjens, 2018).

Data Collection and Analysis

The principal investigator conducted in-depth, semi-structured interviews (30 to 60 min approximately) with participants via phone call or Zoom, depending on participants' preferences. Older adult participants completed a brief demographic form that included age, gender (male, female, other), level of education, marital status, presence of a formal provider at home (e.g., personal support worker), date of most recent discharge from hospital and length of hospital stay. Older adults also provided information about vision or hearing problems that would require accommodation during the interview. As part of demographic information, healthcare providers provided their age, gender, profession, their specialty (if any), and the number of years of experience they had working with older adults. Older adult participants and healthcare providers were asked to describe their experience from hospital discharge to referral to cardiac rehabilitation, as well as their experiences with virtual care delivery and telemedicine during the first two waves of the pandemic.

Document analysis, reflexive journaling and member checking were used to facilitate triangulation of findings, and to ensure rigour and trustworthiness (Denzin & Lincoln, 2018). For document analysis, patient handouts that were usually provided at the cardiac rehabilitation program were collected. Documents included a heart surgery guide for patients, a patient education guide, a lifestyle change and self-management workbook, and an exercise diary and food record document. These documents were used to confirm, and triangulate information provided during the interviews. The principal investigator took reflexive notes to keep track of her personal assumptions, thoughts and biases when collecting and analyzing the data. The reflexive note did not contain participant identifiable information.

Ongoing deductive and inductive analyses were used by the primary investigator (CFS) to conduct data analysis. Deductive analysis was used to identify codes that had a connection with the concepts included in the interview guide as a first step for the analysis; inductive analysis then was used, along with reflexivity notes and information from member checking to finalize the analysis. Data collection and analysis occurred simultaneously. All interviews were audio recorded digitally using the audio recording feature on a mac computer and transcribed verbatim. Transcripts were analyzed using NVivo12 software. Due to the public health measures in Southwestern Ontario at the time of data collection, as well as the vulnerability of the population of interest, all data were collected remotely. In addition, relevant methods such as field immersion and observations on-site were not possible. Member checking sessions were conducted with six participants

who had agreed to be re-contacted at the end of the process of data collection. Birt et al. (2016) five-step model was adapted to conduct member checking. During member checking, the principal investigator prepared a lay summary of findings and asked the participants to confirm that the interpretation of their interview was accurate, add information if necessary, and to expand on ideas.

Results

In total, the principal investigator conducted twenty-one semi-structured interviews, fifteen with older adults and six with healthcare providers.

Characteristics of Participants

Older adult participants included 5 female and 10 male older adults (Mean age = 72.7yrs; $R = 65-82$). Older adults were hospitalized an average of 4.6 days between August 2020 and January 2021. Three older adults completed secondary, while twelve held a post-secondary degree. The majority of older adults ($n = 14$) reported being married and living with their spouse at the time of the interview.

Healthcare provider participants were 4 female and 2 male providers (Mean age 39yr; $R = 30-62$) with at least five years of experience working with older adult patients. Healthcare professionals were physicians, dietitians, physiotherapists, nurses and mental health professionals. All providers had associated expertise related to cardiology, cardiac rehabilitation, chronic disease management and clinical rehabilitation. Given the small pool of providers working in cardiology and cardiac rehabilitation, additional details about demographic information are not reported. All participants consented to have their unidentifiable quotes presented in this study. Due to privacy reasons, numbers were randomly assigned to participants, as well as a letter at the end indicates the gender of the participant (F for female, M for male). It should be noted that, even though the option of 'other gender' was available, all participants identified as female or male. Each quote includes the number of the participant, a letter to indicate their gender, and their group: OA (older adult), or HCP (healthcare provider).

Findings

Older adult participants experienced hospitalization and discharge, as well as enrollment in the cardiac rehabilitation program during the first two waves of the COVID-19 pandemic in 2020 and 2021 in Southwestern Ontario. Older adults described difficult experiences adapting to life post hospitalization. Before the pandemic, all appointments and activities happened in-person. However, when participants were referred to the program, a new model of virtual care delivery was implemented, creating additional challenges for an already vulnerable group of older adults who had been discharged recently and who were experiencing the pandemic mostly in isolation. Older adult participants' perceptions regarding the use of virtual care and telemedicine were mixed. Experiences often related to individual circumstances at home, different levels of knowledge of technology, and preferences regarding face-to-face contact with providers.

Five themes emerged from the data (Figure 1): (1) Lack of emotional intimacy when receiving virtual care, (2) Inadequacy of virtual platforms, (3) Saving time with virtual care, (4) Virtual care facilitated accessibility, and (5) Loss of connections with patients and colleagues. Figure 1 visually represents the five themes

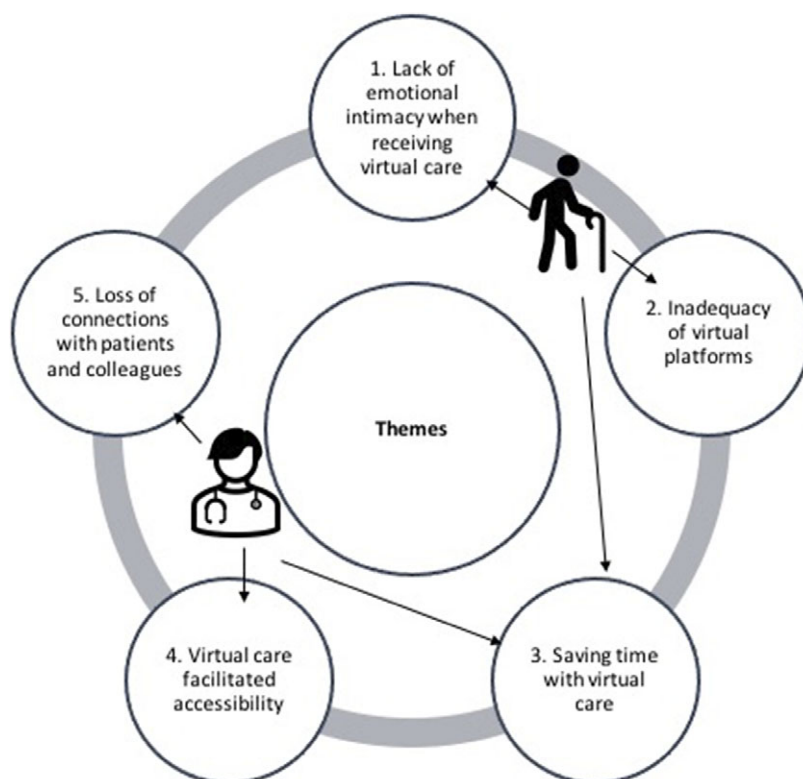


Figure 1. Visual Representation of Themes.

that emerged from the data. Theme 1 and theme 2 are related to the experiences of older adults, while theme 4 and theme 5 related to the perceptions of providers; theme 3 related to both groups.

Theme 1: Lack of emotional intimacy when receiving virtual care

The older adults in the study held the majority of their interactions with providers via phone or video calls. The use of virtual care and telemedicine had a negative impact on their experiences, with negative feelings often associated with lack of face-to-face contact during group activities and a perceived lack of the emotional intimacy. Not having the opportunity to bond with other attendees in-person affected the experiences of some older adults who started their program virtually. The older adult participants reflected on the use of technology to engage in rehabilitation and to communicate with their healthcare providers.

“I couldn’t have my rehab program happening in class... um, setting... together. Couldn’t have meetings of... face-to-face, you... kind of have them face-to-face but.... Affects mostly the rehab, as a whole team, as a class” (P01M – OA, 75yr)

“One-to-one in person is much more personal and satisfactory. It feels better, more comfortable. Talking to the air on the phone... is not as intimate or a satisfactory experience” (P07M – OA, 67yr)

Theme 2: Inadequacy of virtual platforms

Several older adults indicated that engaging in virtual care sessions with their healthcare providers was difficult and confusing,

particularly when sessions included multiple participants. Sessions often included one or more healthcare providers and a group of patients. When using these virtual platforms, older adults reported challenges identifying healthcare providers when several individuals were trying to get set up their cameras.

“The virtual one, you mean? It was fine, it was a little confusing based on the number of members that were... participants who were in it. I think it was more of a distraction, people trying to get on the camera, if you will... but it was fine. It was a little confusing trying to figure out all the different members of the team [...] and I’m still not 100% sure who they all are” (P18M – OA, 65yr)

Other older adult participants reported that conference calls sometimes resulted in several difficulties and frustration. These challenges were especially pronounced for those who needed personalized care and one-on-one sessions with their healthcare providers.

“They [providers] tried to connect the three of us in the conference call, and it just wouldn’t work [...] I’m not very happy with it because I can talk to the doctor over the phone... but the doctor isn’t there to take my heart rate, he is not there to do my blood pressure. Now, I’ve got my own blood pressure machine, but if there was a family that didn’t have a blood pressure machine... they wouldn’t take their blood pressure, so they won’t know if their blood pressure is up, if their blood pressure is below a 100, and you call the doctor cause you don’t know [...] it has really affected me and I’m not very happy with it” (P20F – OA, 74yr)

Theme 3: Saving time with virtual care

For several other older adult participants, the use of virtual care was associated with positive experiences. Not having to physically to be

in the medical office at the time of the appointment was perceived as positive. Many older adults reported that the virtual appointment helped them save time.

“Is new to me [use of virtual care and telemedicine], I’m not used to doing it. Uh, but it saves a lot of time both on your part and my part [...] we can do it here for an hour or two quarters of an hour instead of taking two hours to go to the hospital and back as long as we got good internet connection [laughs]” (P10M – OA, 82yr)

Timely access to healthcare providers also was reported by older adults as a major benefit. Virtual care was reported as beneficial by older adults who lived outside of the city area and who required to travel to the hospital to participate in the cardiac rehabilitation program.

“We should do it this way, with somebody calling me once... but if they have to, they have to see me... they have to see me, but if they can just have a good solid conversation. That’s fine by me too. That is a lot of stuff we should do in the future [...] have that kind of stuff going on... rather than me... have to go, find a place to park, walking to the hospital” (P15M – OA, 67yr)

Healthcare provider participants also reflected on the flexibility that the virtual care model offered, particularly for patients who live outside of the city area. In addition, several providers reported that the use of the virtual care model enhanced patient attendance and engagement in their rehabilitation activities.

“People are thrilled that they don’t have to drive to London. They don’t have to park at the hospital. They can do the things in the comfort of their own home in their own time, and, so, we built in some flexibility, I think. I think in a dreamworld, we would have both options, simultaneously and patients could choose what, which one is... you know, most agreeable to them” (P14F – HCP)

“A lot of people, if they don’t have transportation, they can’t get to the hospital or they live in a different city, they are able to actually join us. So, there is a lot of positivity for sure [...] we have even a higher percentage of participants and a higher percent of people actually attend our program, you know, whereas, as I remember in the past some people wouldn’t show for their appointment, but now you are calling them, right? So, they are not going to forget the appointment” (P23F – HCP)

Given the flexibility that virtual care offered, healthcare providers reported that enrollment in the program increased during the pandemic, and that it promoted better accessibility for patients who lived in remote areas or out of the province.

Theme 4: Virtual care facilitated accessibility

The use of a virtual care by healthcare providers required active learning of new skills and the implementation of numerous strategies to assist patients to navigate the new system. According to healthcare provider participants, accessibility was greatly improved by the virtual model because it facilitated the accommodation of patients’ needs, including vision or hearing difficulties, as well as language preferences.

“We started off with [a] virtual model to incorporate more telephone use, internet use and try to get people to do one-on-one appointments when they are more vulnerable [...] We have been able to utilize virtual care to be able to offer services for our patients, I think in one aspect it’s helped us to move forward in a lot of projects that we wanted to [...] I

think we’re learning and adapting, to try to help, you know, make sure that we are incorporating all ages and abilities, into our virtual programming” (P16F – HCP)

Even though some providers were skeptical, and the virtual model was new to them, the reported that the system was reported as helpful to their patients especially for patients unable to leave their homes.

“I have to say that, before COVID hit, I did not do phone work. I was very skeptical and never did online work, and I rarely did phone work [...] I can be quite effective in working by phone or by WebEx with patients, even with some relatively complex difficulties like obsessive compulsive disorder with major depression, PTSD [...] It certainly is useful, and my feelings about it have changed” (P21M – HCP)

“We’re learning that maybe the first meeting can be in person but then, subsequent follow ups don’t need to be in person, so I think what we’re going to see in the future is a more hybrid approach to clinics, where some patients are seen in-person and some are on the phone, and it really depends on the needs of each appointment. [...] I think virtual care is here to stay. Even clinics in hospital are investing in their virtual care platforms, so that they’re faster. They are more reliable” (P25M – HCP)

Several providers expressed that their cardiac rehabilitation care system might transition soon to a hybrid mode of care. Incorporating both virtual care and in-person care could accommodate the cardiac rehabilitation care needs of a diverse group of patients with a range of different cardiac care requirements.

Theme 5: Loss of connections with patients and colleagues

Despite the benefits of virtual care for patient accessibility, several providers reported that the virtual model resulted in challenges for communicating with healthcare professionals in other settings and those across the healthcare continuum.

“From a systems perspective, one of the things I feel has happened since the pandemic, and switched to virtual care is... we’ve become more siloed again, um, we were trying to build more and more connection with our upstream referral partners, and now we’re not... it’s not that easy to do... their priority has shifted especially in the in-patient world” (P14F – HCP)

In addition, healthcare providers expressed the difficulties providing care that is appropriate for older adults and addressing their unique needs, such as physical contact and the establishment of trusting relationships.

“It would be amazing to having them [patients] come into the office and then, you know, you are just forming relationships and it’s more like, from my end, it’s more like education and teaching them how to self-manage [...] Teaching how to check their blood sugar. I can’t do that so, certainly, it [virtual care] has its limitations” (P23F – HCP)

Several healthcare providers reported that older adults who attend cardiac rehabilitation in-person benefit more from the face-to-face interactions and physical contact than do other age groups. The providers also reflected on the interactions that occurred via phone calls, and how older adults did not know what their healthcare providers look like. They felt that this lack of face-to-face contact can greatly undermine trust and negatively impact patient-provider relationships.

“The nature of virtual care, that is the barrier [...] being able to be in person makes a difference and it is more beneficial for older adults” (P22F – HCP)

“Most of our interactions are on the phone now and we don’t get to physically examine them and also, it does interfere with the rapport that we can build with our patients because they don’t know what we look like, you know, vice versa, and to the elderly, often the physical contact is very important” (P25M – HCP)

Overall, the perspectives of the older adult and healthcare provider participants on virtual care were diverse. Both groups noted that relationship building was affected negatively by the use of virtual care, reflected in the perceived lack of intimacy and the loss of critical social connections established by previously between the older and their cardiac rehabilitation providers.

Discussion

Due to the COVID-19 restrictions in Canada, cardiac rehabilitation programs across the country have implemented virtual care and telemedicine in lieu of the traditional, in-person, face-to-face, centre-based model of care delivery (Moulson et al., 2020). In the present study, several older adult participants reported a positive experience using virtual care and telemedicine, especially those faced with transportation barriers and those who live in rural areas and remote locations. This finding aligns with recent literature that suggests virtual care holds the potential to help overcome barriers to transportation, the lack of community-based programs and limited staffing, as well as improve access for patients living in remote and rural areas (Krishnaswami et al., 2020). Despite the benefits of the virtual care model, there may be multiple challenges for patients and healthcare providers, including barriers related to socioeconomic determinants, age, gender and education, digital literacy and social environment (Garg et al., 2020). Some individuals might feel uncomfortable using technology or feel self-conscious when interacting on video; additionally, some may have limited access to internet and computers required to engage in a virtual visit with providers (Gorodeski et al., 2020). For older adults, this can be particularly challenging when adopting digital health technologies, resulting in underutilization of these services (Krishnaswami et al., 2020).

Several older adult participants reported that using virtual care and telemedicine was a challenge and often perceived as a sub-optimal replacement for the traditional in-person, face-to-face interactions with their providers. Healthcare provider participants also reported that, despite the benefits of the virtual care approach, establishing relationships with their patients was difficult when using technology, particularly when interacting with older adults. This finding is consistent with previous literature showing that patients and clinicians have both positive and negative experiences when interacting on video consultations, suggesting that virtual care is a convenient model but not superior to in-person face-to-face consultation (Thiyagarajan et al., 2020). This finding also aligns with recent qualitative studies that reported on the limitations of virtual care, such as older adults’ need for physical examination and touch, the lack of nonverbal communication when interacting online, the difficulties using technology, that some older adults may encounter and other systemic barriers unique to this age group (Abdallah et al., 2022).

Other barriers to relying on virtual care in cardiac rehabilitation were related to financial constraints. The use of hardware such as

smartphones, blood pressure machines and exercise machines, among other various care items that may potentially place an increased financial burden on patients (Tersalvi et al., 2020). In the present study, older adults did not report experiencing financial difficulties when accessing devices for monitoring, such as blood pressure machines. However, this may not be the case for all patients accessing cardiac rehabilitation via virtual care platforms. The use of virtual care also comes with challenges related to technical support and adequate internet connection, resulting in additional barriers for low-income patients and those living in rural communities (Smith & Raskin, 2020). Older adult participant also reported various levels of comfort with virtual care and telemedicine. As Kumar and Pina (2020) indicated, a virtual model involves heavier patient self-reliance, which can result in an added burden for older adults to self-monitor and track their rehabilitation activities.

There were several similarities between older adults and their providers’ perceptions of virtual care, often related to the limitations of a virtual model and to the difficulties providing or receiving adequate patient-centered care. However, given that older adults have different and unique experiences when interacting with these platforms, a co-design approach might be required when developing virtual care interventions. For instance, studies on virtual care and older adults have highlighted the need for user-friendly interfaces, particularly for those who present with cognitive, sensory and physical impairments (Savira et al., 2023).

While previous studies on older adults who received remote care during the pandemic have reported very high rates of satisfaction, with similar rates when comparing face-to-face care to virtual care (Alsabeeha et al., 2023), these findings may not be applicable to populations with cardiovascular disease or those who have underwent a surgical procedures. Finally, awareness of all the potential barriers that older adults may face when engaging with digital technologies may help close the gap in virtual care utilization and satisfaction for this population.

Limitations

This study has several limitations. Given COVID-19 restrictions in Southwestern Ontario at the time of data collection, key qualitative research methods such as field immersion and observations were impossible to use. The fact that data were collected remotely, via Zoom or phone call, could have impacted the recruitment of potential participants who did not have access to an electronic device, or those who are more comfortable establishing trust and rapport with researchers via face-to-face interactions.

In terms of gender of participants, more men than women agreed to have an interview in the older adult group, and no participants selected their gender as ‘other’ in the demographic form. In terms of age, the group of older adults is mostly representative of a young-old and old cohorts (65yr to 85yr). There were no older adult participants from the oldest cohort (over 85yr). It should be noted that older adults in this study were highly educated, and reported having a strong social support; additionally, financial stressors or housing were not reported as a concern. Finally, the experiences of older adults living in Southwestern Ontario might differ from the experiences of older adults living in other areas of the province, from those across Canada, and in other health care jurisdictions. Results from this study could have been different with a more diverse group of participants, including diverse cultural and linguistic backgrounds, gender identification, low income and other intersectional identities.

Future research should consider the patient experience as key for quality improvement of virtual care services, particularly the experiences of older adults who felt abandoned by the system, alone and vulnerable, and those who perceived suboptimal care when navigating the virtual model. Finally, a co-design approach with older adults as partners in the development of virtual services can be a fruitful strategy to overcome some of these barriers.

Conclusion

The present study contributes to the body of literature on the use of virtual care in rehabilitation settings during the COVID-19 pandemic. While virtual care was reported to be beneficial for the delivery of cardiac rehabilitation during the pandemic, several challenges reported by participants revealed a disconnection between healthcare providers and older adults during a vulnerable time such as the discharge to cardiac rehabilitation after hospitalization. As new studies addressing care for older adults during the pandemic and beyond emerge, the present research contributes to a better understanding of the needs of older adults who participate in cardiac rehabilitation through virtual care.

In line with our findings, suggestions for the improvement of cardiac rehabilitation delivered via virtual care include: (1) promote emotional intimacy with older patients during virtual care sessions, particularly with those who are recently discharged from hospital; (2) ensure that concerns unique to older adults, such as hearing and vision difficulties, are addressed when implementing a virtual care model; (3) assist older adults who may not be comfortable using technology before engaging in virtual group sessions; (4) consider a co-design approach when implementing new virtual care platforms.

Older adults in this study were highly educated and reported having a strong social support network; therefore, future research should focus on older adults who might have lower levels of education, and health literacy. In addition, factors such as income, race, ethnicity, housing and other socioeconomic factors that might shape the experience of older adults were not examined. Future research should further explore how cultural and language barriers, as well as financial constraints may impact the way older adults perceive the use of virtual care.

Funding statement. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing interest. The authors declare that there is no conflict of interest.

Affiliation note. This research was conducted as part of the first author's thesis to receive the degree of Doctor of Philosophy in Health and Rehabilitation Sciences, Health and Aging. The part of the thesis related to transitional care has been published elsewhere. The research was conducted at Western University. The first author included her Western affiliation. However, her current affiliation is Parkwood Institute Research, Lawson Health Research Institute, London, Ontario, Canada.

References

- Abdallah, L., Stolee, P., Lopez, K. J., Whate, A., Boger, J., & Tong, C. (2022). The Impact of COVID-19 on Older Adults' Perceptions of Virtual Care: Qualitative Study. *JMIR Aging*, 5(4), e38546.
- Alsabeeha, N. H. M., Atieh, M. A., & Balakrishnan, M. S. (2023). Older Adults' Satisfaction with Telemedicine During the COVID-19 Pandemic: A Systematic Review. *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association*, 29(1), 38–49.
- Arian, M., Valinejadi, A., & Soleimani, M. (2022). Reviews Evaluating Information Technology-Based Cardiac Rehabilitation Programs and Support: A Systematic Review. *Iranian Journal of Public Health*, 51(7), 1525–1537.
- Babu, A. S., Arena, R., Ozemek, C., & Lavie, C. J. (2020). COVID-19: A Time for Alternate Models in Cardiac Rehabilitation to Take Centre Stage. *Canadian Journal of Cardiology*, 36(6), 792–794. <https://doi.org/10.1016/j.cjca.2020.04.023>
- Banner, D., Lear, S., Kandola, D., Singer, J., Horvat, D., Bates, J., & Ignaszewski, A. (2015). The experiences of patients undertaking a "Virtual" cardiac rehabilitation program. *Studies in Health Technology and Informatics*, 209 (January), 9–14.
- Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation? *Qualitative Health Research*, 26(13), 1802–1811.
- Cahill, B. J., Allsup, K., Delligatti, A., Althouse, A. D., & Forman, D. E. (2021). Differences in Comorbid Conditions among Older Adult Participants in Cardiac Rehabilitation. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 41(2), 109–112.
- Carpenter, C., & Suto, M. (2008). Why Choose Qualitative Research in Rehabilitation? In *Qualitative Research for Occupational Therapists and Physical Therapists* (pp. 21–39). Blackwell Publishing.
- Charman, S. J., Velicki, L., Okwose, N. C., Harwood, A., McGregor, G., Ristic, A., Banerjee, P., Seferovic, P. M., MacGowan, G. A., & Jakovljevic, D. G. (2021). Insights into heart failure hospitalizations, management, and services during and beyond COVID-19. *ESC Heart Failure*, 8(1), 175–182.
- Chu, C., Nayyar, D., Bhattacharyya, O., Martin, D., Agarwal, P., & Mukerji, G. (2022). Patient and Provider Experiences With Virtual Care in a Large, Ambulatory Care Hospital in Ontario, Canada During the COVID-19 Pandemic: Observational Study. *Journal of Medical Internet Research*, 24(10), 1–15.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). *The SAGE Handbook of Qualitative Research* (Fifth edit). SAGE Publications.
- Flint, K. M., Stevens-Lapsley, J., & Forman, D. E. (2020). Cardiac Rehabilitation in Frail Older Adults with Cardiovascular Disease: A NEW DIAGNOSTIC and TREATMENT PARADIGM. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 40(2), 72–78.
- Garg, S., Gangadharan, N., Bhatnagar, N., Singh, M., Raina, S., & Galwankar, S. (2020). Telemedicine: Embracing virtual care during COVID-19 pandemic. *Journal of Family Medicine and Primary Care*, 9(9), 4516.
- Gorodeski, E. Z., Goyal, P., Cox, Z. L., Thibodeau, J. T., Reay, R. E., Rasmussen, K., Rogers, J. G., & Starling, R. C. (2020). Virtual Visits for Care of Patients with Heart Failure in the Era of COVID-19: A Statement from the Heart Failure Society of America. *Journal of Cardiac Failure*, 26(6), 448–456.
- Grace, S. L., Chessex, C., Arthur, H., Chan, S., Cyr, C., Dafoe, W., Juneau, M., Oh, P., & Suskin, N. (2011). Systematizing inpatient referral to cardiac rehabilitation 2010: Canadian association of cardiac rehabilitation and canadian cardiovascular society joint position paper. *Canadian Journal of Cardiology*, 27(2), 192–199.
- Grace, S. L., Prior, P. L., Mamataz, T., Hartley, T., Oh, P., & Suskin, N. (2021). Cardiac rehabilitation component attendance and impact of intervening clinical events, as well as disease severity and risk factor burden. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 41(1), 40–45.
- Krishnaswami, A., Beavers, C., Dorsch, M. P., Dodson, J. A., Masterson Creber, R., Kitsioui, S., Goyal, P., Maurer, M. S., Wenger, N. K., Croy, D. S., Alexander, K. P., Batsis, J. A., Turakhia, M. P., Forman, D. E., Bernacki, G. M., Kirkpatrick, J. N., Orr, N. M., Peterson, E. D., Rich, M. W., ... Bhavnani, S. P. (2020). Gerotechnology for Older Adults With Cardiovascular Diseases: JACC State-of-the-Art Review. *Journal of the American College of Cardiology*, 76(22), 2650–2670.
- Kumar, K. R., & Pina, I. L. (2020). Cardiac rehabilitation in older adults: New options. *Clinical Cardiology*, 43(2), 163–170.
- Lee, K. C. S., Breznen, B., Ukhova, A., Koehler, F., & Martin, S. S. (2023). Virtual healthcare solutions for cardiac rehabilitation: a literature review. *European Heart Journal - Digital Health*, 4(2), 99–111.
- Lutz, A. H., Delligatti, A., Allsup, K., Afilalo, J., & Forman, D. E. (2020). Cardiac Rehabilitation Is Associated with Improved Physical Function in Frail Older Adults with Cardiovascular Disease. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 40(5), 310–318.

- Maddison, R., Rawstorn, J. C., Stewart, R. A. H., Benatar, J., Whittaker, R., Rolleston, A., Jiang, Y., Gao, L., Moodie, M., Warren, I., Meads, A., & Gant, N. (2019). Effects and costs of real-time cardiac telerehabilitation: Randomised controlled non-inferiority trial. *Heart*, **105**(2), 122–129.
- Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, **24**(1), 9–18.
- Moulson, N., Bewick, D., Selway, T., Harris, J., Suskin, N., Oh, P., Coutinho, T., Singh, G., Chow, C. M., Clarke, B., Cowan, S., Fordyce, C. B., Fournier, A., Gin, K., Gupta, A., Hardiman, S., Jackson, S., Lamarche, Y., Lau, B., ... Krahn, A. D. (2020). Cardiac Rehabilitation During the COVID-19 Era: Guidance on Implementing Virtual Care. *Canadian Journal of Cardiology*, **36**(8), 1317–1321.
- Norekval, T. M., & Allore, H. G. (2020). Cardiac rehabilitation in older adults: Is it just lifestyle? *Heart*, **106**(14), 1035–1037.
- Pang, H. Y. M., Zhao, G., Kithulegoda, N., Agarwal, P., & Ivers, N. M. (2022). Aligning Virtual Care in Canada with the Needs of Older Adults. *Canadian Journal on Aging*.
- Pedretti, R. F. E., Ambrosetti, M., & Sarzi Braga, S. (2020). From geriatric cardiology to 'cardio-geriatric' prevention and rehabilitation: Need for a new core curriculum? *European Journal of Preventive Cardiology*, **27**(5), 550–552.
- Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of Counseling Psychology*, **52**(2), 126–136.
- Rahimipour Anaraki, N., Mukhopadhyay, M., Wilson, M., Karaivanov, Y., & Asghari, S. (2022). Virtual Healthcare in Rural and Remote Settings: A Qualitative Study of Canadian Rural Family Physicians' Experiences during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, **19**(20).
- Savira, F., Gupta, A., Gilbert, C., Huggins, C. E., Browning, C., Chapman, W., Haines, T., & Peeters, A. (2023). Virtual Care Initiatives for Older Adults in Australia: Scoping Review. *Journal of Medical Internet Research*, **25**.
- Senderovich, H., & Wignarajah, S. (2022). COVID-19 Virtual Care for the Geriatric Population: Exploring Two Sides of the Coin. *Gerontology*, **68**(3), 289–294.
- Smith, S., & Raskin, S. E. (2020). COVID-19's impact on telehealth. *Nurse Practitioner*, **45**(8), 6–7.
- Tersalvi, G., Winterton, D., Cioffi, G. M., Ghidini, S., Roberto, M., Biasco, L., Pedrazzini, G., Dauw, J., Ameri, P., & Vicenzi, M. (2020). Telemedicine in Heart Failure During COVID-19: A Step Into the Future. *Frontiers in Cardiovascular Medicine*, **7**(December), 1–7.
- Thiyagarajan, A., Grant, C., Griffiths, F., & Atherton, H. (2020). Exploring patients' and clinicians' experiences of video consultations in primary care: A systematic scoping review. *BJGP Open*, **4**(1), 1–8.
- Wakefield, B., Drwal, K., Scherubel, M., Klobucar, T., Johnson, S., & Kaboli, P. (2014). Feasibility and effectiveness of remote, telephone-based delivery of cardiac rehabilitation. *Telemedicine and E-Health*, **20**(1), 32–38.