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Article

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Perspectives on Communication Technology Use for Alleviating the Impact of COVID-19 on Hospitalized Patients' Well-Being and Transitions in Care

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Résumé

Context La pandémie de COVID-19 a créé de nombreux défis pour les soins aux patients hospitalisés, notamment l'isolement des patients et la limitation des visites à l'hôpital. Bien que les technologies de communication, telles que les appels vidéo ou les textos, puissent réduire l'isolement social, leur mise en œuvre pose des problèmes, en particulier pour les personnes âgées.
Objectif/Méthodes Cette étude a utilisé une méthodologie mixte pour comprendre les défis auxquels sont confrontés les patients hospitalisés et pour explorer les points de vue des patients, de leur famille et des prestataires de soins de santé concernant l'utilisation des technologies de communication. Des sondages ont été menés et des groupes de discussion ont été organisés.
Résultats Les patients ayant accès aux technologies de communication ont perçu davantage d'effets négatifs sur leur bien-être, mais moins sur les résultats de l'hospitalisation, par rapport à ceux qui n'y avaient pas accès. La plupart des prestataires de soins de santé estiment que la technologie pourrait améliorer les programmes proposés, la qualité des liens des patients avec les autres et l'accès aux aides à la transition des soins. Les groupes de discussion ont mis en évidence les difficultés liées à l'infrastructure technologique dans les hôpitaux.
Discussion Les résultats de notre étude pourraient contribuer aux efforts visant à adopter les technologies de communication de manière appropriée afin d'améliorer la qualité des soins aux patients hospitalisés et des soins de transition.

Abstract

Background The COVID-19 pandemic created many challenges for in-patient care including patient isolation and limitations on hospital visitation. Although communication technology, such as video calling or texting, can reduce social isolation, there are challenges for implementation, particularly for older adults.
Objective/Methods This study used a mixed methodology to understand the challenges faced by in-patients and to explore the perspectives of patients, family members, and health care providers (HCPs) regarding the use of communication technology. Surveys and focus groups were used.
Findings Patients who had access to communication technology perceived the COVID-19 pandemic to have more adverse impact on their well-beings but less on hospitalization outcomes, compared to those without. Most HCPs perceived that technology could improve programs offered, connectedness of patients to others, and access to transitions of care supports. Focus groups highlighted challenges with technology infrastructure in hospitals.
Discussion Our study findings may assist efforts in appropriately adopting communication technology to improve the quality of in-patient and transition care.

Introduction

As a result of the COVID-19 pandemic, provincial health authorities in Canada enacted strict visitation measures in hospitals and long-term care homes. While these measures were

implemented to curb the spread of the virus amongst vulnerable populations, changing visitation policies created challenges for hospital care staff and patients including the isolation of patients from friends, families, and their communities. Patient isolation has been associated with increased feelings of loneliness, anxiety, and boredom (Fan et al., 2020). Perissinotto et al. (2012) found that loneliness is an important contributor to functional decline and mortality. A meta-analysis by Sims and Miracle (2006) reinforced the link between open visitation and improved patient outcomes in critical care units citing reduced emotional stress and increased patient mood. Similarly, a cohort study demonstrated that visitation was a modifiable risk factor for delirium (Pun et al., 2021). Virtual visitations can be helpful except there are difficulties encountered by many older people in using communication technology including logistical challenges and barriers to adoption such as limited knowledge of, or access to, devices needed to be technologically connected or physical barriers such as visual impairments or poor dexterity (Haldar et al., 2020).

Technology during the pandemic has transformed how we work, organize our activities, and stay connected. However, there is limited literature from in-patient perspectives on the impact of communication technology on patient well-being. Communication technology of interest for this study was calling, texting, e-mailing, and video calling. One study found substantial interest in incorporating technology in medical in-patient units to learn more about diagnoses and care plans (O'Leary et al., 2015). Another study reported a positive impact on quality of life and hospital experience due to implementation of an online in-patient peer support community (Haldar et al., 2020). Little is known about the relationship between communication technology and patient well-being during the isolating circumstances of a global pandemic. Dowling (2013) and Shepperd et al. (2013) identified communication, co-ordination, education, patient participation, and collaboration between medical personnel as essential elements to successful discharge planning. Additionally, a 2021 integrative review (Hugelius et al., 2021) found that visitation restrictions impacted all facets of patient care including mental health consequences for patients and anxiety for family members (FMs). It found detrimental effects on coping, mental health, and well-being. Their conclusion was to include the perspective of patients, FMs, and health care providers (HCPs) for future pandemic planning.

We explored two objectives in this study. First, we aimed to identify the unique challenges on the in-patients' well-being created by COVID-19 pandemic-specific hospital policies. Second, we would like to investigate the perspectives of patients, FMs, and HCPs on communication technology as it relates to the in-patient hospital experience. Study findings should serve to highlight priority needs as well as health care gaps created or exacerbated by the pandemic for which communication technology may play a role. They should also provide a current state of understanding on how communication technology is being used in the in-patient setting. Furthermore, results should shed light on how communication technology implementations may be effective in improving the social, mental, and physical well-being of frail, isolated hospital patients.

Methodology

This is a sequential explanatory mixed-method study conducted with patients, FMs, and HCPs in Royal Alexandra Hospital in Edmonton, Alberta (AB), Canada, which collected and integrated both quantitative and qualitative data (Creswell et al., 2004; Schoonenboom & Johnson, 2017). Surveys were completed, followed by a series of guided focus groups. Although data gathered from the surveys and focus groups were analysed independent of each other, results were also compared with each other and integrated for discussion. This mixed-method design enabled exploration of our study objectives for this rather complex topic with sufficient breadth and depth which otherwise may not be possible through only quantitative or qualitative approaches (Dawadi et al., 2021). The quantitative approach, through our surveys, supported gathering the views from as large a number of patients, FMs, and HCPs as possible, while the focus groups provided the opportunity to conduct more comprehensive discussion with smaller numbers of patients, FMs, and HCPs concerning specific areas identified from the surveys as worthy of further exploration and elaboration. The triangulation across the quantitative and qualitative results provided confirmation or validation of information from the different sources in support of study conclusions or further suggestions for consideration. This study was approved by the Research Ethics Boards at the University of Alberta and Alberta Health Services. Verbal and written consent from all participants were obtained prior to initiating the survey and focus groups.

Surveys

Surveys were developed to explore the perceptions and experiences of patients, FMs, and HCPs regarding patient well-being, social connectedness, and the use of communications technology, such as texting, voice calling, video calling, and e-mailing, to aid patient connections with friends and family throughout hospitalization and discharge during the COVID-19 pandemic (please see the survey in the Supplementary Material). Surveys for patients and FMs consisted of six domains: demographics, frailty, mental well-being, physical well-being, social well-being, and use of communication technology during their hospitalization. HCP surveys included all but the frailty domain. Since the literature was void of studies exploring the areas that we were focusing on, our surveys were co-developed by our study team consisting of frontline clinicians and staff, health professional students, and researchers with expertise in both quantitative (i.e. surveying) and qualitative (i.e. focus groups) research. Language, literacy, clarity, and appropriateness of questions for both surveys and focus groups were reviewed by the diverse stakeholders on the team as well as Patient/Family Advisors within Alberta Health Services. All surveys were developed in a licensed and private online REDCap, a secure web application for building and managing online surveys and databases, for data collection and analysis.

Survey participants

Patients, their FMs, and frontline HCPs aged >18 years were recruited from the Medicine units (total ~ 300 acute beds) of a major acute care hospital, Royal Alexandra Hospital, in Edmonton, AB, Canada. Recruitment numbers for the groups were based on convenience samples: 40 patients and 40 HCPs, based on a 10–15 per cent sample frame (McLeod, 2014). For FMs, we targeted 20 participants. COVID-19 affected the recruitment and final sample sizes for all groups as it influenced the accessibility, availability, and comfort level of participants doing surveys at this time. Patients were primarily identified through physicians and unit managers. Patient inclusion criterion was a clinical frailty assessment of a score of 1–6 (6 = moderately frail, needing help with all outside activities and with keeping house, and 1 = very fit) (Rockwood et al., 2005). Exclusion criteria included: language barrier (inability to read and

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understand consent form), active delirium, dementia, and a Mini Mental State Exam score of <10. Information recorded regarding the reason for patient hospitalization was not required. Research assistants assisted frail or disabled patients with the consent process and where necessary, with the completion of the surveys by reading out the questions and recording their responses. Patient responses were collected between March 12 and April 14, 2021. This was during the third wave of COVID-19 in our region.

FMs were identified by potential patient participants and were asked to complete either a paper or online version of the questionnaire, which they completed independently between March 12 and August 22, 2021, which spanned from our third COVID-19 wave to the fourth wave.

From approximately 100 HCPs on the Medicine units (including physicians, nurses, and rehabilitation staff), 50 were randomly sent e-mail invitations to complete the survey. Responses were collected between February 21 and May 2, 2021.

Survey data analysis

Descriptive statistical analyses were performed to summarize the survey data. Group means and percentages were calculated for patients, FMs, and HCPs. A χ^2 test of independence was done to assess the significance of technology on the impact of hospitalization, physical, mental, and social well-being, and visitation between patients with access to technology versus those with no access to technology.

Focus groups

Following analysis of the survey, focus groups were held with patients, FMs, and HCPs to further explore their perspectives, attitudes, and experiences.

Semi-structured interview guide

Priority areas of need identified from the survey results helped to inform the semi-structured focus group guide. The questions focused on the impact of the COVID-19 pandemic on patient well-being, ideas for improving patient hospitalizations and discharges to home or community, experiences, motives for willingness or lack of willingness with respect to technology adaptation, and areas for technology intervention.

Focus group participants

Patients, FMs, and HCPs on the Medicine units, some who had completed the surveys and others who had not done so, were invited to participate in the focus groups. Recruitment for each of the focus groups was purposive by verbal invitation from members of the research team randomly to patients, FMs, and those HCPs who expressed interest to have input in focus groups. The intent was to have two 1-hour focus group sessions for each cohort of patients, FMs, physician HCPs, and non-physician HCPs, with four to six participants in each focus group session. The number of focus groups needed depended on data sufficiency and saturation. COVID-19 restrictions also influenced whether the focus groups would be in-person or conducted virtually using the Zoom platform (Zoom Video Communications, Inc., San Jose, California, United States). The patient focus groups were conducted in-person, whereas the others were conducted virtually. Each focus group was facilitated by an experienced moderator along with note takers. All sessions were audiotaped and transcribed verbatim by a professional transcriptionist.

Focus group data analysis

Qualitative descriptive content and thematic data analyses of all transcripts and notes were performed to determine the coding and key common themes for each participant group of patients, FMs, and physicians/allied health staff combined, and overall across all groups (Vaismoradi et al., 2016). Data saturation was determined when new code frequency was less than 3 per cent (Guest et al., 2020). Two qualitative data analysts independently and manually coded the transcripts and identified common themes. The two analysts collaborated to ensure inter-rater reliability through 'sense-checking' and reviewing the codes and themes to ensure completeness and to resolve differing interpretations.

Results

Surveys

Of the 39 patients who responded to the survey, there was an almost equal split of males and females. The majority (79%) of patients who completed the survey were over the age of 69 years and came from various socioeconomic backgrounds (full demographic data in Supplementary Table S1). Forty-nine per cent of the patient respondents reported that the COVID-19 pandemic had impacted their hospitalization outcomes. Most (88%) indicated that visitation restrictions impacted their hospitalization experience. The negative influence of the pandemic on social well-being was more frequently acknowledged (69%), followed by mental (56%) and physical (49%) well-being (Supplementary Table S2).

Almost three quarters of the patient participants reported having access to technology during their stay in the hospital. This included personal cell phones, iPads, fitbits, and computers. About 77 per cent reported having used technology to communicate in the past year whether it was texting, e-mails, video calls, or phone calls. Many participants (69%) recognized the value of using technology in their daily routines, with 59 per cent willing to learn to use new technology. Offering support and training to help them learn new technology, however, did not increase their willingness to learn.

Figure 1 compares responses between patients with and without access to technology. Overall, patients who had access to communication technology such as a smart phone or a tablet saw more value in technology ($p = 0.01$), felt more adverse impacts from the COVID-19 pandemic on their physical ($p = 0.17$), social ($p = 0.01$), and mental ($p = 0.15$) well-being, but less adverse impacts on their hospitalization ($p = 0.40$) outcomes, as compared with patients who had no access to technology. Interestingly, patients with access to technology felt more impacted by visitation restrictions ($p = 0.0$) as compared with patients who had no access to technology.

FMs were difficult to recruit on the ward due to the limited hospital access during the pandemic. After many attempts to recruit, 9 of the targeted 20 FMs (8 females and 1 male) of hospital in-patients responded to the study survey. All the FM respondents felt that pandemic visitation restrictions had negatively impacted their loved ones (Supplementary Table S2). Most (78%) believed that their loved ones' mental well-being was negatively impacted, with 67 per cent and 44 per cent reporting social and physical well-being negatively impacted, respectively.

Almost half (44%) of FM participants saw value in incorporating technology into their loved ones' daily routine. The group was split (56%) on patient access to technology, and fewer (44%) anticipated their loved ones would be willing to learn how to use technology. These numbers did not change when training and support were offered.

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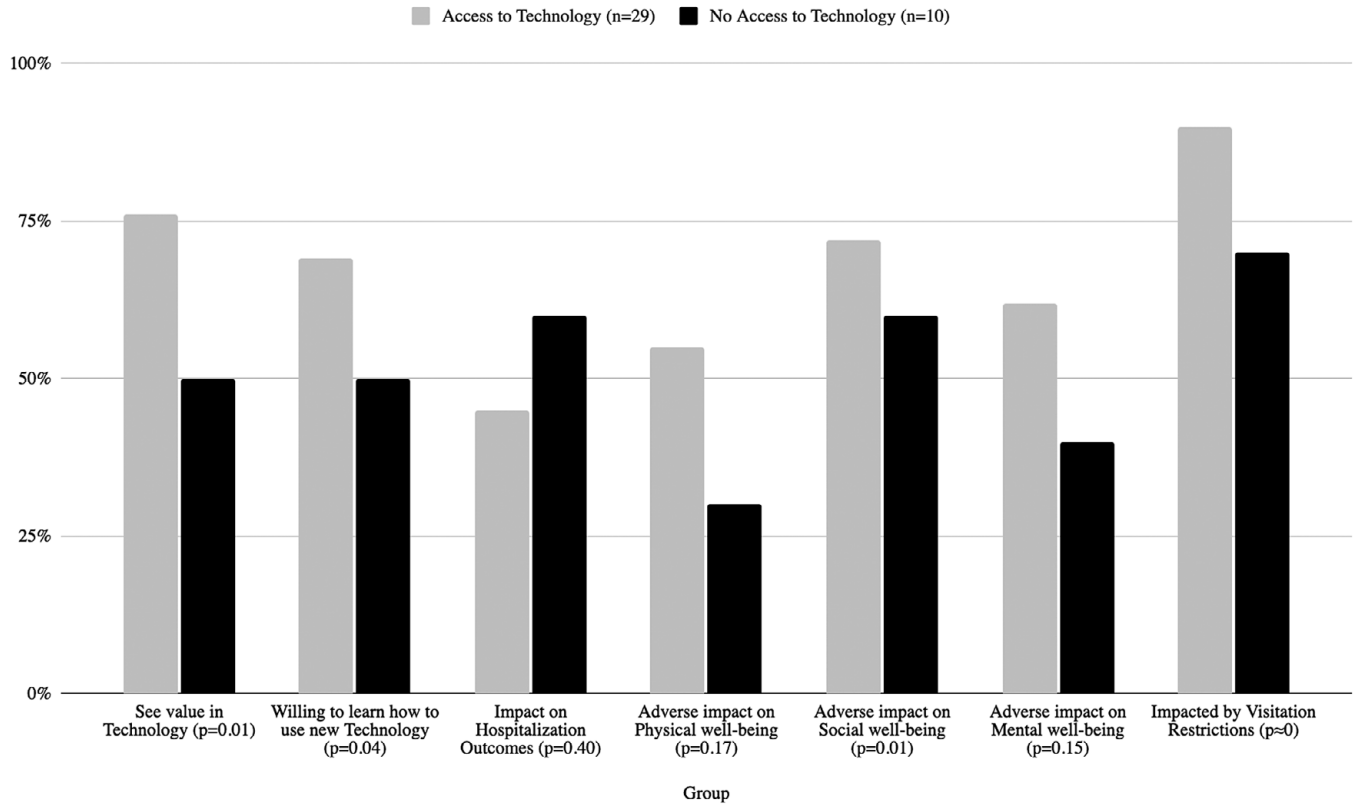

Figure 1. Comparison of patients who had communication technologies and those who did not on impacts on well-beings, hospitalization outcomes, and value of technology.

The HCP group was composed of physicians, nurses, allied health staff, and unit managers. The group had disproportionately more female (26 of the 36 survey respondents). The bulk of the group survey participants were 30–49 years old (Supplementary Table S1).

Responses from HCPs, who work frontline on the wards, suggested a more significant impact on patients. About two-thirds (69%) of HCPs felt the pandemic had adversely affected the outcomes of patient hospitalization (Supplementary Table S2). Most (94%) indicated the visitation restrictions imposed in the hospital had an impact on their patients. A similar number (97%) of respondents identified that mental well-being of patients was most negatively influenced by the pandemic followed by social (92%) and physical (78%) well-being.

Relatively fewer HCPs (36%) reported that their typical patient has access to technology. While most respondents (78%) saw value in incorporating technology into their patients' lives, only 33 per cent were confident that their patients would be willing to learn a new technology. Nevertheless, 69 per cent of respondents believed that patients would be willing to learn how to use a new technology if training were provided. Figure 2 compares survey responses between the three groups.

Focus groups

Seven focus group sessions were conducted, two with hospitalized in-patient participants (n = 7), two with patient FMs (n = 5), one with physician HCPs (n = 4), and two with allied health staff or non-physician HCPs (n = 8). The major themes and categories that arose from the focus group discussions are presented below. Themes/sub-themes and relevant quotes are provided in Supplementary Tables S3 and S4. The themes from the participants extended to discharge process and transition of care as they felt that it was an integral part of the in-patient hospital experience.

COVID-19 impact for patients

Negative patient outcomes

Patients, along with most FMs and HCPs, agreed that the restrictions imposed during the pandemic created significant negative impacts on the well-being of hospitalized patients. Individuals made mention of adverse physical, emotional, and mental outcomes including infections, aspiration pneumonia, pressure sores, increased use of chemical treatments and restraints, poor mood, isolation, loneliness, and loss of motivation: *'In terms of patient outcomes…has resulted in increased length of stay… we were seeing a lot more… infections… aspiration pneumonias, or more pressure sores, because they were just in hospital for longer'* (Physician 3, Focus Group 1). These factors were thought to have contributed to an increased length of stay for the hospitalized patient.

Disconnect in communication of care plan

Many FMs felt that the pandemic restrictions were responsible for disrupting the communication of care plan in the hospital. Communication breakdown between patients or their FMs and care teams was seen as a major source of uncertainty and anxiety. Families felt that they were not kept informed when it came to understanding details of their FMs' hospital stay and would have liked more regular communication and updates from their physician regarding tests, results, and next steps. This concern was

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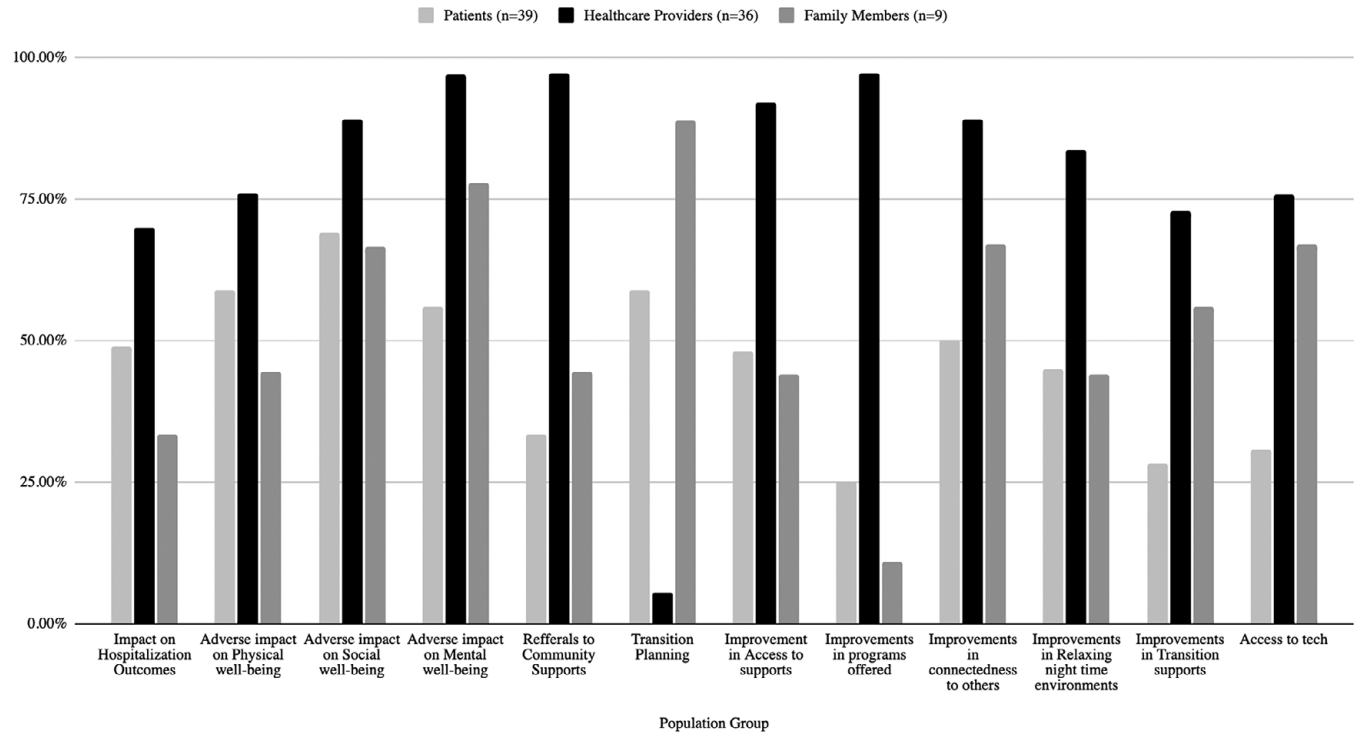

Figure 2. Responses by patients, health care providers, and family members.

experienced most especially by those whose loved ones did not have regular access to communication technology. A void was created by the absence of FMs who would normally visit their hospitalized loved ones and provide additional care, attention, and help explaining the care plan to the patient. From an HCP focus group, '*I think a lot of elderly patients, the 70, 80, 90-year old's specifically, really struggled with not having their go to caregiver or their primary support person*' (Allied Health Staff 1, Focus Group 3).

Activities compromised by COVID-19 restrictions

Several in-hospital and community resources, such as physical and recreational therapies, were closed during the pandemic and alternatives were not immediately available, which added to patient and FM frustration. Mobility was further restricted by isolation measures and COVID-19 precautions, resulting in less opportunity to move and walk around: *'I have trouble getting out of bed. But I think if I had a tripod I could pull myself up … Different mobility equipment'* (Patient 2, Focus Group1). Even where limited rehabilitation services were still offered, the quality was negatively impacted due to the absence of FMs to encourage participation. One HCP suggested that a more robust virtual care platform, using technology as a broader term not limited to communication, may have allowed certain hospital services/programming to continue for patients. The COVID-19 pandemic disrupted important service delivery for patient's health and rehabilitation.

Concerns and challenges with technology

Infrastructure deficiency

Factors such as a lack of enhanced technology and patient devices along with the slow pace at which health care adopts new technology were seen as major obstacles. For patients wishing to phone or connect with family, their main issue was that families had to provide phones or iPads. Other issues included: patients and staff not knowing whether hospital devices were available, how to access them, or a lack of training with setting up the devices limiting their use. FMs also reported poor hospital Wi-Fi connections during video calls with their loved ones, for example: '*it was just that either the network was bad, or the nurses didn't know how to do it*' (Family Member 2, Focus Group 5). Barriers to technology adoption in the hospital were recognized by many patient, FM, and HCP focus group participants: *'No reluctance to using technology but the coordination was not always there. Frequent delays in requests for technology due to administrative policies ie. Sign out process and user privileges'* (Allied Health Staff 1, Focus Group 1).

Lack of experience/training

Another major obstacle to technology adoption was a lack of training. Many of the patient participants alluded to a lack of familiarity with communication technology claiming *'I never tried using an iPad. I am old school'* (Patient 1, Focus Group 2) or feeling that *'it would be hard for me to learn how to do it'* (Patient 3, Focus Group 2). Comments were made regarding the need for training and future support, as well as ensuring security and privacy for participants. FMs expressed concerns for patients, especially older patients who are not technologically adept and need assistance. FMs also pointed out that it was not always patients who had challenges with the technology – staff (e.g., HCPs) were also challenged with how to use certain devices or how to connect with them: '*I felt sorry for the nurses because he had his iPad but nobody could connect to it, or the network kept dropping*' (Family Member 1, Focus Group 1).

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Physical/cognitive impairments

Physical disability and cognitive impairments were a major concern in utilizing technology on in-patient wards. HCPs noted that frustration with virtual care was more common among geriatric patients than those in younger age brackets. Reference to physical disabilities such as '*hearing impairments, or vision impairments*' (Physician 3, Focus Group 1), or lack of dexterity and slowed processing speed are common conditions among older individuals that make it difficult to navigate an iPad: '*…sometimes I have a hard time doing it because sometimes my brain is really good at things, and sometimes it just slows down*' (Patient 1, Focus Group 2), making it challenging to use devices such as a tablet.

Technology and virtual care

Benefits of technology

Despite the challenges that accompanied technology implementations, there was a high level of agreement regarding the value of technology in improving patient well-being. FMs and HCPs alike reported that the social interactions patients received from a phone or video call with their family was a lifeline: '*Visual technology like facetime, zoom, or skype was really helpful especially since family members want to see loved ones … Many … are cognitively impaired so visual aids are very helpful… helped improve mood, and increased motivation*' (Allied Health Staff 1, Focus Group 2).

One patient acknowledged the '*benefit of having phone and iPad helped during isolation…if one didn't work, the other did*' (Patient 3, Focus Group 2). FMs similarly felt that these interactions, both verbal and visual, were essential during the pandemic not only with their hospitalized loved ones but also with the care team.

Adoption of technology

The need to provide patients with technologies based on their individual needs was noted during discussions; cognition, comfort level, and language skills were the main factors mentioned. Patient access to technologies such as radios, clocks, and televisions was deemed necessary to reduce isolation: '*Access to technology like tv, radio, time, would be really helpful for coping… I think it helps to orient them and keep track of time*' (Allied Health Staff 4, Focus Group 1). It was also recommended that ideally each patient would have a personal bedside tablet, although some patients disagreed. HCPs found that some patients preferred visual communication (e.g., Zoom and FaceTime), though most opted for phone calls due to familiarity. One physician acknowledged that the hospital was '*able to quickly deploy technology to try and assist our patients*' due to a recognized urgent need (Physician 2, Focus Group 1).

Technology as part of discharge process and follow-up virtual care

Increased complexity

Discharge was a complex process during the pandemic with many interdisciplinary teams involved and is an important part of in-patient hospital experience. Improved communication between patients and their families regarding any processes in place and for updates was seen as necessary to ensure effective co-ordination. Additional '*formalized checks and balances were in place to make sure that everything was done adequately and properly [which] felt like it was…more of a burden of process and often it felt more cumbersome*' (Allied Health Staff 1, Focus Group 4). HCPs found that communication played a large role in successful patient experiences during the pandemic; this included answering questions and not delaying or avoiding difficult conversations with patients. HCPs saw patient and family interested in transitioning patients to virtual care after discharge. In reference to certain follow-ups from hospital, out-patient practices, and increased accessibility for patients, a physician commented, '*in some respects I think [they] are better suited to a virtual or telephone visit*'. Another physician mentioned, '*most patients have loved virtual care medicine, especially if it's deployed […] appropriately*' (Physician 3, Focus Group 2).

Readiness of patients and family members

Fractured messaging was seen as an issue during the pandemic, especially on important topics such as discharge. For example, notification of discharge was inconsistent and often without warning which was detrimental to timing and planning for FMs. This disconnect with medical providers led to substantial anxiety for many patients and FMs who felt unprepared for discharge or transfer. One FM participant recounted: '*And then all of a sudden…my mother's getting a call that he's on his way home to get dropped off by the ambulance at home. Nobody had made us aware and given the 24 hours' notice, so we were all upset because the issue is you're not giving us notice*' (Family Member 3, Focus Group 6). Delays were seen in transitions between facilities such as rehabilitation and long-term care.

Resource availability

The pandemic had a significant impact on the resources available to aid with discharge. It was a challenge knowing what was available in the community with so many changing rules and regulations. HCPs admitted '*there were things in [the] community that we depend on significantly that were no longer in place*' (Allied Health Staff 2, Focus Group 4). Suspended community supports such as the '*same day service of home care*' (Allied Health Staff 2, Focus Group 4) made discharges difficult. Hence, there was interest in virtual follow-up care.

Discussion

This study detailed the perceptions of patients, FMs, and HCPs on the impact of COVID-19 public and hospital health visitation policies on the frail, older patients' well-being, and health outcomes as well as on the use of communication technology as it relates to hospital in-patient experiences. As confirmed by the literature (from non-pandemic times), patients in our study who had access to communication technology such as smartphone or tablet saw more value in communication technology, and felt more adverse impacts on their social well-being, as compared with patients who had no access to technology (Sims et al., 2017; Tsai et al., 2010). Patients with either no access to technology or experienced challenges with using technology were shown to feel more impact on hospitalization outcomes by visitation restrictions as compared with patients who had access to technology (Khan et al., 2023; Peek et al., 2016; Pilotto et al., 2018). All FMs and most HCPs expressed feeling the impact of visitation restrictions on the patients. Most HCPs felt adverse impacts on patients' mental and social well-being. Additionally, we found that most patients, FMs, and HCPs saw value in technology, both communication and also on broader terms such as virtual platform for rehabilitation or post-discharge virtual follow-up, and felt the need to improve supports in hospital and in transition to the community and also be more involved in transition planning (Mohammed et al., 2021; Sims et al., 2017; Tsai et al., 2010).

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Our focus group data corroborated many of the inferences drawn from the survey results with many participants implicating the loneliness and isolation induced from visitation restrictions as responsible for the decline in patient well-being. There was a perception that patients' recovery time increased, leading to prolonged hospitalization. Families felt a negative impact on patient health status communication and readiness for patient discharge and transitioning care to their community. Technology was seen as beneficial in preserving social connection between FMs and patients, and as a means for virtual care, especially for post-discharge continuity of care (Mohammed et al., 2021). We found a high level of support for communication technology that aims to reduce isolation and improve patient well-being during hospitalizations, consistent with the literature that was before COVID-19 pandemic, that correlated the use of communicative technologies with reduced loneliness and improved well-being.

Nevertheless, our study also identified challenges and barriers to communication technology adoption and implementation including accessibility, physical or cognitive barriers, or simply learning/knowing how to use the technology. Prior research has identified similar barriers to communication technology implementation in older adult and frail populations and more specifically visual impairments, poor dexterity, limited knowledge of devices, fear of losing human connection, and lack of accessibility (Haldar et al., 2020; Pilotto et al., 2018). While the majority of participants in our study recognized a value in communication technology and expressed a willingness to learn, other studies have found that negative attitudes can sometimes act as barriers to adoption (Gitlow, 2014; Young et al., 2014). The many barriers to social or communication technology implementation in hospitals and for follow-up post discharge or transition care must be considered and appropriately addressed if broad use of technology with patients and by staff generally, is to be successful.

Consistent with the literature (Dowling, 2013; Shepperd et al., 2013), our study found that families struggled to be involved in the care of their hospitalized FMs and HCPs struggled to plan for smooth discharge to the community. One potential reason for this may be the dramatically dynamic nature of hospital capacity, and outbreak and isolation status during the pandemic leading to heightened uncertainty and fractured messaging. Families felt that important details pertaining to patient discharge were withheld until the last minute, thus leaving them scrambling to accommodate the transfer back home. HCPs similarly acknowledged a difficulty associated with co-ordinating discharge with families citing frequent modifications to discharge plans as a result of community service disruption. A recent study by Chovanec and Howard (2021) observed similar complexities involved with patient discharge and vulnerability in the setting of a global pandemic. They recommended incorporating a remote transitional care support that does not end when the patient leaves the hospital setting to avoid the common pitfalls that are associated with unfavourable outcomes. Respondents in our study, particularly physicians, support the notion of virtual care via telephone or video conferencing with patients following their transition home from the hospital.

One of the strengths of this study was the mixed methods, whereby the focus group findings with patients, FMs, and HCPs confirmed survey responses, providing more detailed perceptions and experiences related to the use of and challenges of communication technology with hospitalized patients. However, participant selection bias was a limitation in this study. Patient subjects were identified by physicians and unit managers on the clinical care teams and had higher level of cognitive functioning as per the inclusion criteria. Furthermore, patients in isolation were not approached, though these patients were subject to the most severe restrictions, hence likely underestimating the adverse outcome impacted by pandemic restrictions. The frontline HCPs who participated are often the most interested in the well-being of older patients and are not necessarily representative of all frontline care providers. Additionally, sample sizes were relatively small due to the difficulty of recruitment during the COVID-19 pandemic.

Conclusion

This study examined the perceived impacts of the COVID-19 pandemic on older hospitalized patients' well-being and particularly how they feel communication technology can impact on their well-being, hospital outcomes, and the transition care from hospital to the community from multiple stakeholder viewpoints. Our results indicated that the COVID-19 pandemic impacted all aspects of patient well-being and discharge processes and that communication technology such as texting, video calling, and virtual care may have potential in alleviating isolation and improving multiple aspects of well-being for patients both in hospital and after discharge. Barriers to technology implementation for older hospitalized populations, included access and comfort/skill in using devices, and integration with existing systems available in the hospital for staff for successful adoption.

These study results should inform future research and health care system designs focused on what and how technologies may help frail, older patients improve their social connection, cognitive function, and physical health both during and after hospitalizations. At the hospital level, researchers can look to introduce technologies such as tablets, phones, and other devices, to promote quality of life for hospitalized patients and their families, as well as to facilitate enhanced communication between health care teams and families. The utility of large-scale changes such as transitioning discharged patients to virtual care and creating digital discharge training programs may also be investigated. This may require dedicated staffing to support technology training and implementation to enhance quality of care and the patient experience.

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