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"Keeping the Program Going": Technology Use by Community Organizations to Support the Social Connectedness of Older Adults During the COVID-19 Pandemic

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Social programs run by community organizations provide an important outlet for social connectedness among older adults. However, these programs were disrupted by the COVID-19 pandemic restrictions. In this study, we aimed to understand how community organizations used digital technologies to continue running social programs online for older adults during COVID-19. We conducted semi-structured interviews with 12 staff members from local councils, libraries, community groups and care providers. We found that the use of technology benefited organizations by revealing new program delivery opportunities, and by strengthening their social bonds with older adults. However, organizations experienced challenges when transitioning social programs online. Some organizations lacked financial and human resources to support online programs; staff needed to upskill themselves and put significant effort into transferring older adults online; and it was difficult to replicate in-person experiences in online settings. Staff developed ad-hoc strategies to help older adults participate by providing extra guidance and training to increase digital literacy, and by offering accessible technical support. We discuss the significance of continuing online social programs beyond the pandemic and the importance of scaffolding to enable the online participation of older people in social programs. We outline design considerations for technology-mediated social programs run by community organizations.

CCS Concepts: • **Human-centered computing → Collaborative and social computing**.

Additional Key Words and Phrases: Community organizations, digital technology, older adults, COVID-19, social connectedness

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1 INTRODUCTION

Community-based organizations such as senior centres, local councils, and public libraries play a significant role in the social lives of many older adults [41, 69]. These organizations offer an assortment of social programs that enable older people to come together, in-person, and meet like-minded others, providing opportunities to foster new friendships [21, 40]. Such programs include reading groups, language classes, physical exercise activities, and crafting groups [42]. Participating in these activities offers benefits for older adults in terms of social, recreational, and educational purposes, as well as to obtain information and care support [57, 69].

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In recent years, however, the COVID-19 pandemic has impacted the ability of community organizations to run in-person social programs. In the first two years of the pandemic, various restrictions were imposed worldwide to reduce the spread of COVID-19. These included lockdowns, stay-at-home orders, and curfews [4, 5]. Adhering to these restrictions required the temporary closure of many community organizations, which was problematic for older adults who rely on in-person programs for social connectedness [6]. Moreover, the suspension of in-person activities placed older adults at increased risk of social isolation [6, 69], which has been associated with a variety of physical and mental health problems [20, 24, 24].

Due to the pandemic restrictions, many community organizations turned to social computing technologies to continue delivering programs remotely. For example, local Councils on Aging and community care providers used videoconferencing platforms to deliver fitness classes and leisure activities online [19, 57]. Other organizations, such as the New York State Office for the Aging, attempted to use 'smart technology' to help older adults cope with social isolation [3]. Given this shift, recent studies have investigated experiences with these programs from the perspective of older adults, i.e. the end users [16, 19, 30]. Other work in the CSCW literature has examined how older adults used technologies for social interaction during COVID-19 lockdowns [56, 71].

By comparison, there has been less research on the experiences of the organizations themselves, in terms of how they used technology to enable remote delivery of social programs for older adults. Given the central role that community organizations can play in supporting social connectedness, the people working for these organizations have considerable on-the-ground experience of adapting to, and learning from, the COVID-19 pandemic. Understanding their experiences is significant for CSCW, as it provides an opportunity to learn about how social programs can be run online for older adults. Running social programs online involves the coordination of group activities over time and space, and may not be easy due to issues such as perceived lack of intimacy [52, 71] and the need to improve digital literacy for program participants [56]. It is also societally significant, as many older adults are known to be isolated and lonely [20, 31] and can therefore benefit from new initiatives that use technology to support social connectedness over geographical distance.

Motivated by this, we aimed to understand how community organizations used digital technology to maintain social programs for older adults during COVID-19 restrictions. We conducted interviews with 12 staff members from organizations that provide community-based social programs. We found that organizations discovered new benefits from running social programs online, including opportunities to expand their programs through simple technology appropriation, and the ability to maintain and strengthen relationships with their clients. We also found that, while organizations were able to transit some social programs online, staff members had to overcome significant challenges to keep those programs running smoothly. These included a lack of financial and human resources, a need to upskill staff members and support older adults during the online transition, and a feeling that online programs sometimes lacked positive qualities of in-person social experiences. To help older adults better participate in online social programs, staff members developed ad-hoc strategies, including the development of new approaches to enhance older adults' digital literacy, and the provision of easy-to-access technical support.

Our work makes three contributions to the CSCW literature. First, we provide a deep understanding of organizations' technology use in social programs to support their older clients during COVID-19. This extends existing knowledge of how social computing technologies supported the wellbeing of older adults during the pandemic [56, 71], but with a unique focus on the role of community organizations. Second, our study identifies how additional support is needed to better assist the online participation of older adults in a social program. We argue that fostering online participation in social activities will be beneficial beyond the pandemic, as it will enable organizations to reach more older adults who would otherwise be excluded from these activities, such as

those who are house-bound or living in rural areas. Third, we contribute design considerations for technology-mediated social programs for older people. Community organizations and the people who work there are important in supporting the social connectedness of their older clients, and should be included when designing technology-mediated social programs targeting older adults.

2 RELATED WORK

Our study builds on research about the significance of encouraging social connectedness as people age, the role of organizations in providing social programs for older adults, and technology use practices among older adults during the pandemic.

2.1 The Importance of Supporting Social Connectedness in Later Life

Social connectedness is a fundamental human need [23], and has a positive effect on older adults' health and wellbeing. It is achieved through social networking, which is the process of relating to others, sharing ideas and interests, and interacting with family, friends, and the community [7]. Feeling socially connected is important because it can improve older adults' health and emotional well-being, increase their life satisfaction [46], and assist older people in achieving successful ageing [61]. However, research suggests that many older adults experience a decrease in social connectedness due to life course transitions such as retirement, declines in health and mobility, and the loss of close ties [20, 65]. Socially isolated older people are at greater risk of loneliness [31] and health problems including heart disease [24], cognitive decline, anxiety, depression [20, 22, 44], and mortality [24, 60]. These negative consequences highlight the need for multidisciplinary efforts to alleviate social isolation, and support social connectedness among older adults.

In response to these challenges, researchers in HCI and CSCW have explored the role that digital technologies can play in enhancing social connectedness among older adults [18, 37]. Studies have shown that information and communication technologies (ICTs), such as email, online chat rooms, and voice calls, can help older people to maintain existing social connections with close contacts [17, 36]. Similarly, social media platforms such as Facebook enable older people to stay socially connected and keep updated from their family members, especially grandchildren [33, 35].

While there is a focus of HCI work on enhancing existing relationships for older adults, other studies have explored how technology can foster new connections for older adults who are socially isolated. Some of these studies examined bespoke devices that are tailored to older adults' needs and interests [29]. For example, Waycott et al. [66] investigated the use of a photo and information sharing application called *Enmesh* among isolated older adults who were living independently, and who did not know each other before the study. They found that creating and sharing digital content enabled participants to build new social connections within small peer communities. Other research has explored how emerging technologies such as social virtual reality (VR) could provide opportunities for isolated older people to communicate with others over geographical distance [8, 9]. Baker et al. [10], for instance, found that older adults felt avatar-mediated communication (AMC) in social VR would be helpful for discussing sensitive topics, and that the use of AMC within social VR could be a promising tool to enable connections between socially isolated people.

Collectively, these studies demonstrate the potential for technology interventions to support social connectedness and alleviate social isolation in later life. To the best of our knowledge, however, there has been little research into how community organizations could use technology interventions to support the social connectedness of their older clients. Therefore, we sought to understand the use of technology from the perspective of community organizations, focusing on their experiences during the COVID-19 pandemic.

2.2 The Role of Organizations in Supporting Older Adults' Social Wellbeing

An existing body of research has highlighted the role that community organizations play in the social lives of older adults [41, 69]. These organizations include, but are not limited to: government-funded organizations such as local councils, libraries, community centres, and senior centres; for-profit or non-profit community groups such as activities clubs and social clubs; and aged care providers who offer community-based social care programs. These organizations typically offer various programs which contain activities that support the social connectedness of their older clients. Common examples include physical activities such as walking groups, dancing classes, and exercise classes; and non-physical leisure activities such as crafting groups, literature groups, and other sedentary activities (e.g., board and card games) [42]. The shared objective of these programs is to help community-dwelling older adults maintain and develop social connections with family, friends, and community, to continue participating and engaging in social life, and to encourage good mental and physical health [1].

Studies have explored the impact of social programs on the wellbeing of older adults. For instance, by conducting a one-year mixed methods study with older adults who joined community groups, Lindsay-Smith et al. [42] found that group membership provided older adults with valuable opportunities to maintain and expand their social connections through shared experiences and interests, which was crucial for improving social wellbeing [42]. In addition to community groups, public libraries have been characterised as essential 'social infrastructure' for older adults to interact and foster friendships, helping to alleviate social isolation and improve mental health [21, 40]. A quantitative study conducted by Fulbright [26] indicated that senior centres offered an environment conducive to the formation of social networks, and fulfilled older adults' needs for friendship and social support, contributing to decreased feelings of depression. These studies show how community-based program providers benefit the social wellbeing of older adults, particularly in terms of promoting social connectedness and alleviating isolation.

During the COVID-19 pandemic, many community-dwelling older adults were unable to access these organizations for in-person social activities due to social distancing restrictions [45, 69], which disrupted their opportunities for social interaction [6, 27]. Given this situation, recent research has highlighted that the provision of social programs for older people had to be adapted [50], and that organizations increased their use of digital technology to enable remote social program delivery [54, 57]. According to one survey conducted in the United States [57], the majority of American local Councils on Aging continued to provide services to clients remotely during the restrictions, prioritising socialisation and nutritional needs as vital services. Among the 308 organizations in the survey, 88% offered remote wellness checks via phone, and half provided activities such as fitness classes via public access TV or Zoom [57]. Similarly, community care providers also began to offer web-based activities via Zoom to provide their older clients with leisure opportunities, exercise, and companionship [19].

While existing research has studied the success of these programs from the perspective of older adults [16, 19, 30], less work has examined the online transition from the organizations' perspective. The rapidly evolving nature of the COVID-19 pandemic meant that organizations needed to respond quickly to continue catering to the social needs of their older adult clients. Our work extends the literature by investigating challenges that organizational staff members encountered during the online transition, and what efforts they needed to devote to mitigate these challenges.

2.3 Technology Use Practices Among Older Adults During the Pandemic

After the emergence of COVID-19, research has shown that older adults adopted new technologies, and started to use technologies differently, to stay socially connected under pandemic restrictions

[30, 52, 56]. In addition to using emails and telephones to maintain social connections, older adults used online communication platforms and videoconferencing apps, such as Facebook and Zoom, to stay socially connected [16, 71].

Several studies have investigated the experiences of independently living older adults with digital technology during COVID-19 restrictions. A common focus has been on understanding older people's motivations and barriers to learning and using technology. The main facilitators of older adults' use of technology during COVID-19 were found to be: prior knowledge of and familiarity with technology; level of experience with maintaining social connections with families, friends, and communities prior to the pandemic; observations of other people using technology; and technology accessibility such as appropriate environments, clear instructions, and user-friendliness [30, 56].

Researchers have also investigated key challenges that older adults encountered when using technology to stay socially connected during COVID-19. One fundamental barrier is the lack of access to technology and resources, which includes the lack of knowledge and training, financial costs, trust, and in-person technology support [19, 56]. Other barriers include the disinterest of some older adults in using new technologies, health conditions (e.g. cognitive impairments, arthritis), and fear of technology [19, 47]. Furthermore, it has been reported that some older adults' reluctance to seek technological help from others increased during COVID-19, as they perceived their technological challenges as trivial in comparison to their families and friends, who were dealing with pandemic-related stresses [56]. Sin et al. [56] also emphasized that ageism became more visible during the pandemic. They found that inappropriate assumptions among some older people, such as that they were 'too old' to use Zoom or lacked competency when participating in online activities, intensified experiences of digital exclusion.

While these studies are important for gaining an understanding of older adults' perspectives [19, 30, 56], less is known about the experiences of people who organized and ran social programs for older adults during the pandemic. Considering that community organizations and the people who work there have first-hand experience of using technologies to support older people's social connectedness, we argue that it is crucial to understand the challenges, and opportunities, that these organizations faced when 'pivoting' to remote program delivery. Such an understanding can provide knowledge of how organizations responded to the pandemic situation, as well as exposing opportunities for CSCW and HCI researchers to develop future technology-mediated social programs to benefit older people who may not be able to attend activities in-person.

3 METHOD

We conducted an interview study to investigate the experiences of community organizations who had been using technology to support the social connectedness of older adults during restrictions arising from the COVID-19 pandemic. We conducted the study with ethical approval from our institutional ethics committee.

3.1 Recruitment and Participants

We used purposive sampling [25] to recruit staff who had been working for community organizations during the pandemic. To identify potential participants, we searched government and local council websites to find organizations that provide social programs for older adults. We then visited the official website of each organization to determine whether they had continued to provide social programs during the pandemic. We contacted the program managers by sending invitations to participate using emails and LinkedIn.

We conducted two rounds of participant recruitment. The first round was from September 2020 to October 2020, and the second was in September 2021. These dates coincided with periods of lockdown at our study site (Australia) [2]. Restrictions in place during the lockdowns included a

total ban on group gatherings and mandatory stay-at-home orders, preventing organizations from running face-to-face activities.

We recruited a total of 12 staff members from local councils, libraries, community groups, and aged care providers. Table 1 provides an overview of the participants and the organizations for whom they worked. Ten participants were from Victoria, one was from New South Wales, and one was from Queensland. While there were some differences in restrictions between these states, all three implemented measures that impacted people's ability to meet in-person, necessitating the use of online tools for social activities by community organizations.

3.2 Social Programs Delivered by Participants

The organizations for whom our participants worked were running a wide range of social activities prior to the pandemic. These included face-to-face educational and problem-solving sessions (e.g., guest lectures, digital literacy classes, technology help sessions); leisure activities (such as book clubs, crafting groups, and bus trips); conversational groups (e.g., morning tea, social lunch events); and exercise-based activities (e.g., Tai-Chi groups, exercise classes, and dancing clubs). All of these programs were delivered face-to-face before the emergence of COVID-19.

During the restrictions, participants were able to run some of their existing programs online. These included the aforementioned leisure activities (e.g., book clubs, knitting groups, card games, "karaoke Fridays"); conversational groups (e.g., Zoom morning tea, virtual group gatherings); and exercise-based activities (e.g., yoga groups, gentle exercise classes). Participants described using off-the-shelf hardware to support these activities, including laptops, smartphones, and iPads. Frequently used digital platforms included emails, Zoom, WhatsApp, and Facebook.

Five participants stated that they decided to suspend some programs as they were too difficult to move online. As listed in Table 2, these included certain physical and educational activities, art classes, podcast recording sessions, and a digital literacy course. The reasons for suspending these programs included a high reliance on physical space and equipment, concerns about safety issues, and the capacity of tutors for running online activities.

Participants mentioned initiating two new types of remote technology-mediated activities during the lockdowns. These were online technology support sessions such as over-the-phone technical support and Zoom training; and social outreach activities such as 'caring calls' to check-in on the wellbeing of older adults.

3.3 Procedure

All interviews were one-to-one and were conducted by the first author. Participants read a Plain Language Statement and signed a digital consent form prior to their participation. All interview sessions were conducted and audio recorded via remote Zoom meetings. The duration of the interviews ranged from 27 to 66 minutes (average = 39 minutes).

We used a semi-structured interview protocol. We first asked questions about participants' perceptions of the impacts of COVID-19 on their social programs and older adults' social connectedness. We then asked them to share their experiences of technology use during COVID-19, including what changes they had been forced to make, what challenges they had encountered, and whether there were any benefits of these social programs. Some example questions were: *"How has COVID-19 affected the social programs your organization runs?"*, *"What technology, if any, has your organization used as part of the social program delivery during COVID-19"*, and *"What challenges did you face when using these technologies to run the social programs?"* We asked follow-up questions to obtain richer information as the interview progressed. Each participant was compensated for their time with a $20 AUD digital gift voucher.

3.4 Data Analysis

We used reflexive thematic analysis to analyse the interview data following the six-phase approach described by Braun and Clarke [11]. This approach values the researchers' subjectivity as an analytic resource, and emphasises researchers' reflexive engagements and interpretations with the dataset [12]. The first author began the data analysis by transcribing the interview recordings into text and carefully reading through all the transcriptions to become acquainted with them. The first author then read the entire dataset twice to identify features relevant to the study aim. These were later developed into initial codes using an inductive approach. 164 distinct codes were developed during this phase. Example codes included "Lack of visual elements," "Interacting with older adults differently," and "Help older adults increase digital literacy". The first author constructed candidate themes by combining or clustering the developed codes to reflect the multifaceted and meaningful patterns that responded to the research aim. These candidate themes were later discussed and reviewed by the research team, at both codes and data transcriptions level, to ensure their relevance to the study. The reviewing process was conducted iteratively by the research team, and we initially developed six themes. After writing the first version of this paper and receiving feedback from reviewers, we performed an additional round of refinement which involved deleting one theme, splitting another theme into two, and moving some findings into two new themes that describe strategies participants used to overcome specific challenges. We finally settled on eight themes that we grouped into three categories: benefits of using technology for organizations, challenges, and strategies employed to help older clients. We selected appropriate quotes from participants to illustrate the themes. In line with reflexive thematic analysis, the first author was ultimately responsible for the final versions of themes included in this paper [13].

4 FINDINGS

Overall, we found that transitioning to online settings revealed unexpected benefits for organizations. In particular, (1) digital technology provided new program delivery opportunities, and (2) digital tools helped organizations strengthen their social bonds with older clients. However, organizations experienced four main challenges. These were that: (3) it was difficult for organizations to run online activities without sufficient financial and human resources; (4) staff members needed to upskill themselves quickly to facilitate online activities; (5) staff had to put significant effort into helping older adults shift online; and (6) it was difficult to replicate in-person experiences in online settings. Organizations developed ad-hoc strategies to assist older adults in participating online by (7) providing guidance and training to increase digital literacy, and (8) offering accessible technical support to help older adults participate in social activities.

4.1 It's Not Just Technology, But Also Connections: Benefits of Using Technology for Organizations

Participants mentioned that using technology to provide online social programs brought unexpected benefits to their organizations. Specifically, using technology revealed opportunities to deliver new types of programs and enhance their relationships with the older adults in their programs.

Table 1. Demographics of the participants.

Pseudonym	Organization	Description of organization	Role	Primary responsibilities	State/highest restriction level
Anne	Community Healthcare Provider	Provides registered and enrolled nurse driven services to older adults under a wellness care social model.	CEO, Founder, Director	Manage the organization	New South Wales, Stage 3*
Bonnie	Public Library	Provides services in partnership with local senior centres and U3A; offers technology support to older adults.	Branch Manager	Provide technology support to older adults; run iPads and beginner Internet classes	Victoria, Stage 4*
Cassie	Public Library	Provides public library services to residents; offers various services to seniors, including social groups and digital classes.	Learning Technologies Librarian, Team Leader	Help people connect, increase their literacy and digital literacy, and run technology classes for older adults	Victoria, Stage 4
Donna	Independent Advocacy Organization	Represents the rights, needs and interests of people over the age of 50 in Victoria; works with older adults in the community, and advocates on behalf of people who are in residential aged care.	Policy Officer	Examine governmental policy initiatives and provide feedback to the government about better supporting older adults; Coordinate an alliance about assistive technology	Victoria, Stage 4
Emma	Local City Council	Provides various services to older adults, including personal care, home care, respite care, and a social inclusion program; Supports older community residents to live a happy, healthy, active lifestyle and keep them connected.	Positive Aging Activities Officer	Help enhance older adults' use and understanding of technology	Victoria, Stage 4
Fiona	Local City Council	Provides various services to older adults, including personal care, home care, respite care, and social inclusion program; offers social inclusion program to older adults in the Commonwealth Home Support Program.	Coordinator of Social Inclusion Program	Encourage seniors to come together, support each other and make connections.	Victoria, Stage 4

Table 1 continued from previous page.

Pseudonym	Organization	Description of organization	Role	Primary responsibilities	State/highest restriction level
Gary	Aged Care Provider	Provides both community and residential aged care services to older adults; runs national pilot intergenerational project with older adults who live independently.	Creative Engagement Adviser	Train lifestyle coordinators and explore ways of giving residents agency, diversity and choices; Run national pilot intergenerational project with older adults who live independently	Queensland, Stage 3
Hannah	Network of community organizations	Oversees community and neighbourhood houses that offer learning to people in the neighbourhoods; offers various courses and programs, including technology.	Lead Digital Mentor	Train people to be digital mentors to sit with older people and go through the lessons and learn about technology; run technology classes in community houses	Victoria, Stage 4
Ivy	Community Centre	Provides technology support for older adults.	Manager	Manage the organization, apply for grants to run technology support programs, and support staff members to run these programs	Victoria, Stage 4
Judy	Community House	Runs CHSP (Commonwealth Home Support Program) program for older people.	Social Support Facilitator	Organize activities for older people in the community houses	Victoria, Stage 4
Kelley	Community Centre	Provides various classes, runs social connection groups and activities for the whole community.	Executive Officer	Manage day-to-day operations, employ the staff, and manage the volunteers	Victoria, Stage 4
Lilly	Community Centre (rural area)	Provides technology support for older adults, runs technology events and digital classes.	Manager	Manage the community centre, provide digital support for volunteers and older adults	Victoria, Stage 4

*Stage 3 restrictions: People must obey stay-at-home orders and may leave their homes only for four reasons: shopping for essentials, outdoor exercises, work and education unless it is impossible to do so at home, and care or caregiving. Businesses and services such as gyms, restaurants, libraries and community facilities must be closed. People are not allowed to have social visitors at home unless the person is providing care or essential services [2].
*Stage 4 restrictions: An evening curfew from 8pm to 5am is added in addition to the stage 3 restrictions. People are not allowed to leave their homes except for working, receiving or giving care, or visiting their partner during the curfew time [2].

Table 2. Suspended programs reported by participants.

Pseudonym	Organization	Impacted programs	Program description	Reasons for suspension
Cassie	Public library	Digital literacy sessions	Face-to-face training sessions to increase the digital literacy for older adults. Older adults normally come to the library and use the library's devices to participate in the sessions.	Older adults cannot access the public digital devices at the library; Older adults do not have digital devices at home; The library has limited devices (iPads) to loan out.
Fiona	Local City Council	Social inclusion program	Design and create opportunities to encourage older adults to come together, meet face-to-face, support each other, make new friends, and be connected to the community. Older adults who are in this program are usually over 80 and less tech-savvy, and more frail residents who come to council for support with their home care.	The organization decided to suspend face-to-face activities under COVID-19 restrictions.
Ivy	Community Centre	Storytelling podcasting; Exercise programs	Storytelling podcasting activities for older adults.	The centre is closed during COVID-19 so that older adults couldn't get access to the recording equipment in the centre; The non-profit organization decided to put the exercise programs on hold because it's not worth to pay the tutors to run the online classes while there were only five attendees (normally 15 attendees).
Judy	Community House	Exercise classes	Face-to-face gentle exercise classes for older adults.	People could not get back to the community house due to the lockdown restrictions; the organization did not see online exercise activity as an option because of older participants' concerns about safety issues and their preferences to have face-to-face group social interactions while doing exercise classes.
Kelley	Community Centre	Art classes	Bobbin Lace: intricate craft activity that involves weaving.	Limited by the tutor's availability: the tutor is about 80 years old and does not have good eyesight.

4.1.1 Digital Technology Provided New Program Delivery Opportunities. Staff members mentioned that technology allowed them to be more creative about program delivery. For example, Judy was able to host group trivia quizzes via Zoom by creating PowerPoint presentations, and having her older clients call out the answers during a group call. Similarly, Hannah managed to run music quizzes using YouTube videos. She stated that technology allowed her organization to teach in a variety of new areas, and that fun technology-mediated activities could keep people entertained while also reducing their fear around technology.

More importantly, participants felt that using technology enabled them to make their programs more accessible to older people, especially those with mobility issues who would normally have difficulty leaving their homes. They perceived this to be beneficial as it alleviated the physical barriers that prevented some older people from attending activities and reduced their social isolation:

> "We've had a lot of people say to us that they've actually been able to attend more social activities during COVID. Because for people who may not have had good access to transport before, they may have had mobility difficulties, that means that going into the city and going to an event is hard. Those people, if they're digitally literate, they've noticed a huge amount of benefit from just being able to get online and do things from home because they can do it within their own time. You don't have to find public transport or anything to make it happen. So that's been one advantage." (Donna)

Furthermore, some participants mentioned that prior to COVID-19, they were hesitant to use technology in social activities. However, their experience during the pandemic made them feel that their older clients were ready for this change, and this encouraged the organizations to explore more opportunities for technology use in their future social programs.

4.1.2 Staff Could Maintain and Strengthen Social Bonds with Older Adults. The second benefit of using technology was that organizations were able to maintain their existing relationships with older adults. Judy noted that continuing the program in online mode made it easier for her organization to return the in-person programs when the restrictions eased:

> "It kept the program going. So [in 2020], when the restrictions eased... we were ready to go back straightaway. Because I had kept in contact with them. I knew that they were just ready and willing. So, there was none of this wait and see. We were just ready to go." (Judy)

The use of technology also enabled staff members to reach out to older adults remotely and increase their social welfare during lockdowns. Some participants described working with older adults who had become lonely due to limited social contact. For example, Bonnie noted that some of her clients seemed to be depressed because of being isolated at home, and they were very grateful after receiving phone calls from the organization. Others reported that opportunities for caring social contact emerged under the guise of providing technical support. For instance, Lilly worked in a rural area, where social distancing restrictions were more lenient than in urban areas of Australia. She was therefore able to provide in-person support to some older adults when required:

> "One lady lives just around the corner from me, and she was living alone up until she was placed into palliative care. So she would ring me and say, 'I've broken my iPad,' or 'I've done something.' I think it was the socialization that she needed more than the fixing of the iPad" (Lilly)

These examples speak to the role that the organizations played in providing social support for their older clients: not just running activities, but being a point of contact for those who felt isolated. As Bonnie noted, once the older adults were socially connected, they were more ready and brave to

try new things, but the "social connection has to be the first thing that we do, and then everything else flows from there".

Although some staff members felt that videoconferencing platforms could not fully satisfy their clients' needs for presence in group activities, others felt that these platforms enabled them to interact with older people differently, and this sometimes deepened their understanding of their clients. Judy highlighted her experiences of Zoom communications:

> "Well, personally, I didn't expect to get so much enjoyment out of interacting differently with the group. I found out a lot more about them. We did a lot of stories last year about their travel adventures. We learned a lot about each other. And people were really happy to share more of their private lives, or their travel stories. So for me, there was that really unexpected benefit of getting to know them completely differently. I feel closer and more connected to them than I ever did before COVID." (Judy)

Anne also reflected on her own experiences of making video calls with her clients:

> I call [the clients] and they go, 'My goodness, there's Anne. It's cool!' [They said,] 'I'm in the garden at the moment, how's your gardening going?'. Then they'd say a lot of chat about gardening skills. And while they're doing that, they're moving around their apartments or their house. You walk around, and that engages them. Then when we speak with [the clients] next week we can say, 'look, I took on board your comments [on the garden], or I didn't, or hope that looks better or worse.'

In Anne's case, video calls allowed her organization to gain deeper understanding of the clients' living situations, and offered both parties more opportunities to share their daily lives, which could not be achieved as easily in regular face-to-face meetings.

Other participants noted that having video interactions with their clients allowed them to continue practices that they would normally do face-to-face, such as getting a sense of the older people's health conditions:

> "And for the older generation, if you were able to see them, you're still able to actually see the decline if they are not fit, or anything like that. You can at least get a sense through the screen, through their facial expressions. So, I have a group set-up that I actually talk to, if we are in lockdown, I've set them all up on Facebook. And then, that's my way of checking in on them and saying, 'Is everyone okay?' I can actually see their faces, which means that I can see if they're, sort of, not telling me the truth in some way." (Lilly)

This example suggests that, in addition to maintaining social connectedness with older adults, the use of technologies like videoconferencing provided opportunities for staff members to express care for their clients when they were unable to meet face-to-face.

4.2 Challenges Experienced by Organizations Running Social Programs Online

4.2.1 Activities Were Hard to Run Without Sufficient Financial and Human Resources. One fundamental challenge organizations faced when transferring social programs online was the lack of financial and human resources to support older adults during the online transition. Participants had only limited resources to obtain extra devices, provide accessible assistive training to older people, and hire extra tutors for online program delivery.

Participants described how, prior to the pandemic, older clients typically used computers, laptops, and tablets on the organization's premises to participate in technology-mediated social activities. The pandemic restrictions, however, prevented older adults from accessing these public resources,

and required organizations to purchase extra mobile devices, such as tablets, to loan to clients to assist them in joining online activities at home.

For some organizations, this created a significant challenge: their budgets were insufficient to purchase enough technologies for all of their clients to be included. This was exacerbated when clients required assistive technology and specialised training. Donna, who worked for an independent advocacy organization, emphasised this as follows:

> "So, for example, for people with limited dexterity, a lot of people have arthritis. They might not be able to manipulate a tablet device or a computer in the same way as someone who has full use of their hands, but there's all sorts of assistive technologies out there that can actually make that easier. It's just that there's no funding to provide that specialised training to people in how to use those platforms. There's no funding to actually get the specialised software, and for older people with disability, with limited vision, there's really no bucket of funding." (Donna)

Limited financial resources also made it difficult for non-profit organizations to continue running activities that, before the restrictions, were hosted in-person by external paid tutors. Running these activities online proved too costly in relation to the number of attendees. Ivy, who worked for a non-profit community centre, said they had to suspend their exercise activities because they could not afford to continue hiring tutors to run the classes online:

> "Because we're not for profit, we just can't afford to pay the tutor to run the classes. We sort of made a decision because there were only five attending, whereas the number of average participants was 15 before the pandemic. It just wasn't worth doing." (Ivy)

This illustrated a tension between wanting to continue running social programs online and the need to manage the organization's available budget. In Ivy's case, resolving this tension involved the difficult decision to suspend the program, whereas other participants managed to obtain government funding to support the continuation of their initiatives.

In addition to financial barriers, some participants mentioned that they experienced a shortage of human resources, especially tutors willing to teach online classes:

> "We used to do Tai Chi. However, if you didn't get a tutor quick enough at the start of the year [2021], all the available tutors got taken." (Judy)

This shortage prevented organizations from continuing certain regular activities, as they did not have enough staff members to manage all their pre-COVID-19 activities online.

4.2.2 Staff Needed to Upskill Themselves Quickly to Facilitate Activities Online. In response to the rapid online program transition, staff members had to quickly upskill themselves in order to better manage and support online social activities for older adults. This often involved extensive self-education to learn how to use unfamiliar devices and digital platforms.

For instance, Bonnie, who worked in a public library, noted that some staff members did not even have mobile phones before the pandemic. They had to "pivot very quickly to having devices, learning the devices, and learning how to use things that might not be ideal [for them to work]". Similarly, Judy, who worked for a community organization, noted that she learned how to use Zoom with the help of her daughter, and by attending other Zoom meetings herself. She was then able to teach her older clients how to use Zoom for online social activities.

Staff members also needed to learn about a wide range of devices to support older adults in using technologies and participating in online programs. Each of their clients typically used a different device, and some of the devices were very old. This meant staff members had to learn how to deal with technology glitches on a swathe of products to provide individualized support:

> "There were many different devices, which I had to learn about. So I had to learn about a Samsung, an old Samsung phone, an old Samsung tablet, different versions of iPads. Some were still on their PC, so they all had slightly different technology glitches. So in that first couple of months, I just had to read everything I could, because most of the literature was just based on connecting to Zoom from laptop to laptop." (Judy)

This learning process was often challenging and time consuming, leading to a feeling of exhaustion. Hannah, from the community organization network, gave a specific example about their tutors who were responsible for running exercise classes online:

> "They first had to get their head around the technology... And some of them have never used technology. For some of them, it's like me saying to you, you have to learn how to strip down a car engine in order to live in the world. And it's so overwhelming for them, and they find it really difficult. And that's been our experience with some of the older tutors, it's that they themselves are saying like, it's not for me, I'm going to resign. Find someone else." (Hannah)

This challenge aligns with the shortage of human resources mentioned above, and suggests that a possible reason for the unavailability of tutors was because some were not comfortable teaching online.

4.2.3 Staff Had to Invest Significant Effort to Help Older Adults Transition Online. Despite staff efforts to improve their own digital skills, organizations still lacked preparedness in helping older adults adapt to the online environment. This meant that staff members needed to spend extra time and effort beyond their regular duties to help older adults access technologies at home. They also needed to alleviate fear and reluctance of using digital technologies, and improve older adults' digital literacy remotely.

Participants described how some of their older adult clients had limited access to digital devices and the Internet at home, especially those living in rural areas. Ordinarily, these clients would have visited the organization's premises to use technology resources, but were unable to do this during lockdowns. Some could only access public WiFi in order to participate in online activities:

> "I have another student [in technology class] who doesn't have an internet connection at home. So, he takes his tablet, and sits outside of Woolworths [a supermarket] and uses the free WiFi. The connection is very good. But he has to sit in his car and the public are walking by." (Hannah)

This situation required organizations to coordinate technological resources for their geographically isolated clients to be included in online programs from home. Some participants achieved this by consulting with older adults' family members to coordinate available digital resources, such as an iPad, while others explained how to use a telephone to call in to Zoom activities when there was no Internet at home.

Participants reported that some of their patrons were reluctant to use technology to join online programs, and it was a challenge for them to help these older people feel more confident about participating in technology-mediated activities. They mentioned three main reasons behind this reluctance, including the mindset of treating technology as "too complicated to learn", the difficulty of remembering what to do, and the fear of cybersecurity issues. Other perceived reasons were the sense of pride that prevents people from asking for help, and the fear of breaking the technology.

The online program transition also added barriers for staff members to continue their digital literacy programs for older adults. Participants noted that, due to the pandemic restrictions, they often had to use one type of technology to teach older adults how to use another type of technology. A simple example might involve using a voice call on a mobile phone to tell someone how to operate

Zoom on an iPad. This situation lacks in-person interactions, such as pointing and deictic references, which can be beneficial when teaching older adults how to use technology [15]. Participants felt that it was challenging to teach clients how to use technology in these circumstances, especially for those who had less digital literacy before going online:

> "Teaching them to use a Zoom app, for example, on their phone, you generally need to be face-to-face with someone when they're doing it. It's really difficult for them, if they have limited digital literacy, to teach them when you're not with them." (Cassie)

Another time-consuming task involved resolving technical issues encountered by older adults remotely. Participants explained that it was difficult to diagnose and troubleshoot these issues when they were unable to see the actual devices:

> "One person regularly has problems. And it's too hard to fix up over the phone. Because I can't see her phone. I don't know what's going on, it's very hard to pick up error messages over the phone when it's not the technology that you're using." (Judy)

This example echoes the earlier challenge around staff having to upskill themselves and learn about various devices, before being able to help older adults solve specific technical issues.

Other participants found the error messages were hard to understand based on older adults' own verbal descriptions:

> "It's been that loss of the connection and being able to see the devices well, because depending on their ability to explain what's going wrong, it can be really hard to tell sometimes." (Bonnie)

This shows that providing a clear and straightforward verbal description of the technical problem is essential for staff to diagnose the issues and offer effective technical support online.

4.2.4 Replicating the In-Person Experience Was Difficult in Online Settings. The final challenge was the difficulty of replicating the social experiences of in-person activities in an online environment. This related to the etiquette of online meetings, the lack of physical contact, and a perceived loss of in-person class dynamics.

Since videoconferencing platforms, such as Zoom, were extensively used during the pandemic, participants encountered challenges in teaching older adults the etiquette of attending online meetings. For example, some struggled to teach older people about muting microphones while using Zoom. Staff members had to keep reminding their clients to mute and unmute themselves during the meeting, which was distracting and affected their ability to run things smoothly.

Moreover, participants noted that there were particular difficulties in engaging older adults in online group activities due to the perceived lack of social presence and absence of physical contact. Some explained that this is because Zoom interactions could not meet their clients' desire for social and physical presence:

> "It's those people who, for whatever reason, they don't feel comfortable with Zoom. So, one person described it as 'I need you to be in the same room, I need to feel you. This screen is just an artificial thing'." (Judy)

This lack of presence added to the resistance that organizations sometimes experienced when running group exercise programs online:

> "It was a challenge because you have to have a certain presence when you're doing those things online to make it appealing to people, otherwise people just get bored and walk away." (Donna)

Moving physical activities online introduced new safety concerns, as it was not easy to accommodate diverse individual needs during group exercise classes. That is, if older adults had specific

physical issues, it was challenging for tutors to help them stay safe while exercising. Organizations also needed to consider safety issues for both their tutors and clients due to the limited space at home, as many of their tutors were older people themselves.

Some staff members struggled to replicate class dynamics and help individuals feel equally included in remote group activities. Attendees' ability to interact with each other and facilitators' ability to perform different types of group activities were constrained by the digital tools provided by the online platforms, and each facilitator's own digital literacy. Hannah stressed that facilitators needed to incorporate features of digital products, such as Zoom whiteboards and breakout rooms, into remote activities to maintain people's attention and prevent sessions from becoming "like a lecture". Yet it was not easy for them to replicate all of the social aspects of offline activities:

> "it's been a process of getting them up and running online, but what they've really missed in terms of social connection is they said it doesn't allow them to foster friendships. Because if you come into the office to do something like a meeting, you might arrange to have a one-on-one catch up with someone afterwards, have a coffee. So, they're really missing that type of connection. And they don't feel that something like a Zoom meeting really gives them access to the same thing." (Donna)

Participants saw the point of their programs was not only to engage older adults in completing activities, but also to provide opportunities for their clients to make social connections. However, as Donna observed, the shift to online format appeared to affect older adults' ability to form new friendships, suggesting a need for further thinking about how to replicate this in an online program.

4.3 Strategies to Help Older Adults Participate in Online Activities

While challenges related to financial constraints, personnel shortages and replicating in-person experiences were difficult to address in the short-term, participants used existing resources to develop ad-hoc strategies to help older adults engage more smoothly in online activities. This involved reducing older adults' fear around technology and building their confidence of participating in online activities. Most of these efforts focused on improving digital literacy and providing accessible technical support.

4.3.1 Providing Extensive Guidance and Training to Increase Clients' Digital Literacy. The pandemic created an environment of pushing older adults to use more technology for staying socially connected. While this was beneficial for people who were already tech-savvy, it increased potential social exclusion for others. Because of this, participants felt that improving the digital literacy of older adults was essential to maintaining their social connections in the face of geographic dispersion during social distancing restrictions:

> "I took the attitude that digital literacy is almost, it's a form of literacy and if you don't have it under COVID, you're excluded from society, and I was very strong about that message and making sure we had all the supports for people." (Kelley)

Many participants developed structured guidance to help older adults increase digital literacy, particularly in how to use emails and Zoom. For example, Anne, from a community healthcare provider, said: "We did a How-To-Guide. One thing we did find is they [older adults] are absolute experts on following each step." Similarly, Emma's organization, a local council, mailed a step-by-step guide to all their residents on how to use emails and Zoom:

> "A lot of them said that it was very hard to get on the computer and know exactly where to go and what to do, but having this flyer that we mailed to them, they found it much easier to follow the steps that we had given them on how to create an email and how to use Zoom." (Emma)

Emma added that the printed guide worked so well that other councils had asked for a copy of the guide to do similar work. She further emphasized that the key point in providing guidance is that it should be printed out and follow a step-by-step format, and that the guide worked best when it was accompanied by a phone call explanation to their older clients.

Since many online social activities were conducted using Zoom, organizations offered extra training to ensure that older adults could confidently and successfully participate. One popular strategy was the use of a peer support model. For example, Donna's organization trained groups of peer educators to become "Zoom Champions":

> "One of the other things we've done is we've trained up a number of our peer educators to be what we call Zoom champions. So we've given them a series of fact sheets on how to use different aspects of Zoom and we've up-skilled them to be able to use the platform really confidently, so that if we have other older people who want to learn those skills, it's older people who can provide that direction through them." (Donna)

Similarly, Hannah mentioned that they paired up clients who owned similar devices, so that they were able to solve one another's problems over the phone. Participants found the peer support model was successful because older adults could better understand each other.

Peer support was also perceived to be useful for demonstrating the benefits of using technology to reluctant users:

> "Peer mentoring is a great way to break down that barrier because if you've got older people that have already climbed over that wall and they've realised the benefits themselves and they're using technology, they're the best people to inform other older people of the benefits." (Donna)

This was particularly important in the pandemic environment, as people were being "forced to use technology" (Hannah), and the use of technology was essential for older adults to maintain their connections to others during lockdowns.

4.3.2 Offering Timely and Easy-to-Access Technical Support. The second strategy participants adopted was to ensure they provided accessible technical support to reduce older adults' fear about technology. Lilly from a community centre shared her experience of encouraging one of her older clients to use an iPad by providing support over the phone:

> "And what made it easier, was that she knew she could ring me... And because I lived close, it was sort of a bit of a relief to her that if something did happen, she was still going to be connected when I got home. So she would ring me at work, and she'd be like, 'Oh, can you just call in on your way home? I've just got this problem.' I'd be like, 'Yeah, no problems.' And we'd fix it and it'd be fine." (Lilly)

Participants took different approaches to providing this support. Lilly emphasized that when she gave the iPads to her clients, she would include a sheet with the phone numbers and emails of the staff members to ensure that the older adults had easy access to available support staff in multiple ways. While this sometimes meant that staff needed to respond to clients' inquiries outside of work hours, they were still willing to do so because it helped encourage older adults to self-explore technology and increase their confidence in using it.

An alternative approach was described by Donna, who had paid an external consultant to provide personalized technical support before and during each online event, to ensure that older clients were able to successfully participate:

> "Whenever we've been doing [Zoom activities] in the COVID environment, we've paid an external consultant. We call her our Zoom Guru. She'll be able to do a trial session with people in advance, or if they've never used Zoom before... We also have

> her available half an hour before the actual meeting starts so that she can help people tease out any technical problems and people can also call her mobile and she can talk them through any issues they're having." (Donna)

These examples suggested that the ease of access to timely technical support was important to enable older adults to confidently participate in online social activities.

5 DISCUSSION

This study aimed to understand how community organizations used digital technology to continue running social programs for older adults during COVID-19 restrictions. We focused on the benefits that staff members experienced when interacting with their older adult clients through online social activities, the challenges that organizations encountered when moving social programs online, and the strategies that organizations developed to help their older clients participate in online activities.

In this section, we discuss the significance of our findings for the continuation of online social programs beyond the pandemic, the importance of scaffolding to enable the online participation of older adults in social programs, and design considerations for improving technology-mediated social programs run by community organizations.

5.1 Supporting Online Social Programs for Older Adults Beyond the Pandemic

Our study demonstrates the crucial role that community organizations played in supporting the social connectedness of older adults during COVID-19 lockdowns. While some programs had to be suspended due to diverse difficulties, the staff members in our study were able to continue running a variety of social programs online successfully, and helped their older clients stay socially connected under pandemic restrictions.

This is significant given previous reports within the CSCW literature, where ageist attitudes have been shown to influence decisions about the feasibility of running online programs for older people. For example, Sin et al. [56] reported that some program providers were apprehensive about transitioning courses online during the pandemic due to the belief that older people were "slow" and "uninterested in learning technology" (p. 9). These attitudes contributed to excluding older adults from social programs that they were previously able to attend [53, 56].

Unlike these cases, staff members in our study worked hard to support their older clients when moving programs online, and discovered that they themselves could also benefit from this transition. Their practical experiences demonstrate that — contrary to the ageist narrative — it is feasible to run online social programs for older people who cannot meet in-person. We argue that this evidences the potential for organizations to reach more older people through online social programs, which is important given that social isolation among older people is a global problem and was exacerbated during the pandemic [69].

In addition, our findings support the idea that the online program transition added to the accessibility of social programs for older people by giving staff members and older adults more control over how they wanted to participate in social activities [54]. It is worth noting that much of what worked well for the participants in our study involved simple appropriation of existing technologies to replicate activities that previously took place in-person. This speaks to an important opportunity to enable older people's online participation after the pandemic without introducing complex or expensive systems that require high effort to deploy.

However, our study illustrates the important challenges that must be considered when running social programs online. The first challenge was that, before even considering the introduction of technology, it was very difficult to run online programs without adequate financial and human resources. In particular, online social programs were hard to run without skilled facilitators or staff

members to perform the work that takes place around the technology itself. Program facilitators in our study were essential to ensure the smooth delivery of online social programs. As well as managing the programs and sometimes running the activities, they needed to provide extra technical support and look after the physical and social wellbeing of their clients. They can also play a variety of roles, from coordinating available resources for the programs (as with our participants) to being a group leader responsible for prompting discussions between strangers [e.g. 8]. In this way, they constantly provide an informal form of care that may be "covert" and not immediately recognised as care by their clients [62].

Therefore, like Muller et al. [43], we argue that, rather than "parachuting" technology into its usage environment directly, the diverse support needs associated with multiple staff roles should be adequately considered when designing and deploying technology into online social programs for older adults. For CSCW, this means foregrounding the role of staff when introducing technology for a social program, such that the system does not conflict with the diverse forms of work they need to carry out, and ensuring that their roles are adequately resourced. Moreover, given that these staff members are responsible for helping older people stay digitally connected, we argue that community organizations and the people who work there are important stakeholders and should be included when designing technology interventions for online social programs. Their hands-on experience can be valuable for creating systems for isolated people in community, such as those who have mobility issues or other reasons why they cannot leave their home.

5.2 The Importance of Scaffolding for Older Adults' Participation in Online Social Programs

Another salient issue revealed in our findings is the need for additional support to enable the successful participation of older adults in online programs. We found that staff focused predominantly on increasing older adults' digital literacy. A risk highlighted by transitioning social services and programs online during COVID-19 was that older adults who are less digitally literate could be excluded from the social lives they were previously able to enjoy [56, 68], thereby leading them to experience both digital and social exclusion [53]. To avoid this, it is crucial to help older adults become digitally literate in order to bridge the 'gray digital divide' (the gap between those who use technology and those who do not within the older population) [56], and to help them successfully engage in online social activities.

However, our study supports previous CSCW work [15, 56] that achieving this in an online environment is difficult due to the lack of shared physical space and visual elements. To mitigate this issue, organizations can provide additional scaffolding, in the form of instructional support, to help older adults who are less digitally savvy learn digital technology remotely based on their individual learning preferences and contextual needs. This instructional support should be sustainable in order to provide ongoing support for older people learning technology online. These recommendations extend the work of Cerna et al. [15], who found that it was necessary to scaffold the involvement of older people in online participatory design research during the pandemic [15]. Our work reveals that similar support was required to ensure older adults' participation in online social programs.

5.2.1 Provide Contextualized Guidance and Instructions. We recommend that when introducing new technologies to older adults remotely, organizations should provide hard-copy guidance in addition to digital demonstrations, and supplement these with telephone explanations as needed. Our study strengthens prior work [15, 38] which established that printed, step-by-step guidance complemented by verbal explanations can be an effective aid in helping older adults learn new technologies online. This is because these are perceived as easier for older adults to access and

maintain than digital user guides, and because printed guidance can meet older adults' preferences for independence in technology learning [48].

This guidance should be developed based on the organizations' and their clients' mutual understanding of the technology ecology for participants in each social group [14, 15], such as the devices and software commonly used within the group, and the group members' understanding of key terms and expressions used when talking about different technology. A lack of such understanding may cause some older adults to feel excluded when participating in technology-mediated activities [67]. Organizations should therefore provide targeted guidance to demystify technology for their older clients when running technology-mediated social programs. Moreover, the guidance needs to be provided in plain language that older adults can easily understand and follow [58, 63], and contain ways to quickly recover from emergencies during online activities, such as Internet drop-outs or screen freezes.

Such contextualized guidance can also be integrated into designing online technology tutorials for older adults, which should contain some mutually developed "meta" instructions about how to understand and follow the digital instructions at the first place [15]. This can be achieved by constructing technology use scenarios based on older adults' real-life experiences, and using physical analogies that are familiar to them to explain digital concepts.

In addition, our findings show that including the contact information of available organizational support staff in the guidance can improve older adults' access to support resources and increase their confidence in using technology independently. However, this may create extra challenges for the support staff, such as the expectation that they would be always available outside of working hours. We believe that this presents an emerging opportunity to design technologies that could mimic the mundane and routine work for organizational staff members to alleviate their workload. Stegner and Mutlu [59], for example, have explored similar directions to understand how robots could be better designed to support the workflows and practices of caregivers in senior living communities. Their work illustrated design scenarios where robots could perform mundane tasks assigned by caregivers, such as delivering drinks and opening the windows, so that they could save time for caregivers to engage in more meaningful activities with residents. From our study, we see a potential supporting and coordinating role, whereby intelligent systems could support organizational staff members running technology-mediated activities by doing mundane tasks, such as creating and sending out digital materials, and introducing basic digital literacy through conversational human-robot communications.

5.2.2 Leverage Peer Support Models to Facilitate Collaborative Learning. The peer support models presented in our study, such as having a "Zoom Champion", were perceived to be successful for helping older adults learn new technology and resolve technical issues. This is because the people involved could better understand each other and solve problems through collaborative learning. These findings support the notion that that peer-to-peer models can remove barriers for older technology resisters and advocate the benefits of using technology among older people [49].

Studies suggest that older adults should not be considered as a homogeneous group who are incapable of using technology [39, 51], and that there are technology "super-users" within older adult groups who would like to provide technology support [32, 64]. We suggest that a peer support model can serve as additional scaffolding for organizations to increase the accessibility of technical support to older adults, especially in situations where professional support resources are limited. Web-based communities and telephone support [55] could be useful examples to help older people increase digital literacy and receive technical support tailored to their needs. More importantly, implementing peer support models could help organizations to increase their clients' participation

in digital social activities, and result in benefits such as fostering new friendships [49], which contributes to increasing the social connectedness among older people.

5.3 Recommendations for Designing Technology-Mediated Social Programs for Older Adults

5.3.1 Adapt Lightweight Digital Tools to Create Simple Technology-Mediated Activities. The staff members in our study implemented off-the-shelf technologies to run social activities for groups of older people in online settings. As other research has shown that many organizations have expressed a desire to continue running online activities after the pandemic [54], we argue that community organizations could be supported by designing simple technology-mediated social activities for older people. That is, by appropriating lightweight digital tools, such as Microsoft PowerPoint and YouTube videos to support social activities, organizations could create simple group activities such as trivia quizzes for older people to attend online.

It is important to note that these activities should be designed based on the in-person activities that older adults are usually interested in. Our findings indicate that this contextual appropriation could add to the enjoyment of social activities while allowing older adults to naturally familiarize themselves with the use of technology. The activities should provide a simple medium for social interactions and should be short in duration. This will help mitigate the fatigue that staff members and older adults experience due to being online.

These simple, low-cost technology-mediated activities also have the potential to help organizations alleviate the financial constraints mentioned above by using existing technology resources without further financial commitment, and sustain the online social activities beyond the pandemic.

5.3.2 Incorporate Asynchronous Communications to Combat Technology Barriers. Our study highlights the lack of fundamental technology infrastructure, such as the Internet and broadband, for organizations to assist their older clients in connecting online from home, which supports previous work in the context of COVID-19 [54, 68]. While acknowledging that certain actions need to be made by aged care sectors and governmental authorities to provide organizations and their geographically isolated clients with better access to technology infrastructure, we believe that the CSCW community can also consider how to include these older people in technology-mediated social programs when basic technological infrastructure is not guaranteed.

One way of achieving this is to incorporate asynchronous communications in online social activities. Participants in our study primarily relied on synchronous discussions over tools like Zoom, with some asynchronous platforms (such as Facebook) used to coordinate meetings. In contrast, a recent CSCW study explored older people's experiences of joining online activities through a combination of mail deliveries and Zoom meetings during COVID-19 [71]. In that study, older people were able to continue participating in painting groups online by receiving drawing packages through the physical mail, finishing the paintings at home, and then sharing the final results through online meetings. This suggests that synchronous and asynchronous media could be combined as part of the same social activity, so that older adults can participate in these activities in an asynchronous way when their access to technology infrastructure is sporadic.

5.3.3 Promote In-person Experience for Technology-Mediated Activities. The participants in our study encountered a variety of difficulties associated with replicating in-person experiences in online social activities. Reflecting on this, we suggest that some efforts could be made on current digital platforms to facilitate socialization in online environments, such as promoting class dynamics and social bonds in group technology-mediated social activities.

As our findings show, current one-to-many online meeting platforms, such as Zoom, do not entirely meet staff members' and older adults' needs of having small interpersonal interactions

during and after online group activities. We suggest that features targeting dyadic or small group communications could be developed based on current videoconferencing platforms. For example, instead of depending on the host to create 'breakout rooms' to facilitate small group conversations on a platform like Zoom, the platform could also grant participants the flexibility and autonomy to create their own conversations during or even after the event.

While organizations can create simple online activities by incorporating lightweight digital tools into social programs, they might still struggle to foster a form of social presence for their older clients. This is where some emerging technologies, such as augmented reality (AR) and virtual reality (VR), could play a role in creating a sense of in-person experience for technology-mediated activities [70]. Such a system could be tailored to support the hybrid delivery of organizational social programs for older adults, creating a sense of presence for some special events, such as celebrating birthdays. However, while various research has attempted to create tools that mimic in-person interactions by using mixed-reality and social VR with older adults [8, 28], many of them are still lab-based, and these technologies may not be accessible for use by older adults without sufficient scaffolding [8]. They may also be prohibitively expensive, both for organizations and older adults. The pandemic highlights the need for further research and development in this space to ensure older adults can participate in meaningful social interactions online with appropriate support, even when not physically co-located.

6 LIMITATIONS AND FUTURE WORK

This study has three main limitations. First, we recruited staff members only from community organizations in Australia, which had some of the longest lockdowns globally [34]. The experiences of staff members in other cultures may differ from our study. Given that social isolation among older people is a global problem, we believe that it would be beneficial to include staff members from other countries for future research on technologies for social connectedness. Second, most of our participants were recruited from local government organizations and community groups. Recruiting more participants such as volunteers and social workers or staff from community aged care providers and churches could be helpful to obtain richer information. Third, our research was conducted when most of the organizations were under strict social distancing restrictions due to lockdowns. COVID-19 restrictions have since been lifted in most parts of the world, so it would be interesting to explore how organizations are navigating the tension between scheduling in-person activities and the need for social distancing, along with the role that technology might play in resolving this tension. For example, technology could support in-person social activity where social distance mandates still need to be followed, such as the need to maintain appropriate physical distance and wear masks when older adults participate in group activities.

7 CONCLUSION

In this paper, we studied how community organizations used technologies to continue delivering social programs for older adults during the COVID-19 pandemic. By interviewing staff members from these organizations, our study investigated the key benefits and challenges that participants encountered when shifting programs online, and how they helped older adults engage in online activities.

We found that the use of technology provided new program opportunities for organizations, and helped staff members enhance their social bonds with older clients. However, organizations needed to be adequately resourced when running online social programs for older adults. Staff needed to devote significant efforts to improve their own digital skills, and provide additional support to increase older people's digital literacy. We also found that staff felt online gatherings lacked some qualities of in-person experience, such as social presence.

We conclude that running online social activities for older adults is beneficial for community organizations and older adults, but such programs must be adequately resourced and supported by scaffolding to enable the participation of older people who are unfamiliar with technology. Designing technology-mediated social programs that are enjoyable, engaging and easy-to-access represents a significant opportunity for CSCW research and design, given the prevalence of loneliness and isolation among older people and the potential for these programs to support social connectedness between older people who cannot meet in person due to geographical distance.

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