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Feasibility and acceptability of virtual programs for people with dementia and their caregivers

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Abstract

Objective To assess the feasibility and acceptability of the Oshawa Senior Community Centres (OSCC55+) virtual programs (VP) in addressing the needs for social connection and interaction for people with dementia (PWD) and their informal caregivers (ICG).

Background During the pandemic, PWD faced increased loneliness and reduced social interaction due to a loss of community programs. The OSCC55+ developed VPs to combat social isolation and provide respite for ICG. These efforts highlight the importance of accessible, and technology-based VPs for maintaining social connectedness for PWD.

Methods A qualitative interpretive research design with PWD ($n = 14$) interviews and ICG focus group and one-on-one interviews ($n = 11$). This research explored the lived experiences of PWD and their ICG, examining the feasibility and acceptability of the VPs.

Results The PWD and ICG interviews provided insight into the positive impacts of VP, challenges of VP, program barriers, program facilitating factors, and suggestions for future improvement for the OSCC55+ VPs. Participants highlighted that the VP created an option for them to remain socially connected to their community; while also outlining the positive impact on reducing loneliness, challenges with technology use, the importance of involving younger generations and volunteers, and the need for more culturally inclusive programs.

Conclusions The VP developed by OSCC55+ were perceived as effective and useful for PWD and their ICG, helping to reduce feelings of loneliness and relieving caregiving tasks. These findings suggest that VP can complement in-person programs in the future, offering a hybrid model that leverages the strengths of both approaches to better meet the needs of PWD and ICG.

Keywords Informal caregivers, Persons with dementia, Social isolation, Social connectedness, Virtual programs

Background

During the COVID-19 lockdowns older adults faced an increase in loneliness due to social distancing measures [1]. Social distancing caused older adults to reduce their social contacts with others, leading to increased loneliness [2]. This created a loss of social engagement in older adults from their pre-pandemic activities such as community classes and Adult Day Programs [3]. The loss of these in-person community programs created specific

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challenges for older adults with dementia. Dementia is defined as a loss of cognitive functioning, which can affect one's ability to think, remember, and reason, making it difficult to engage in daily activities [4]. The symptoms of dementia cause people to become more dependent on caregivers, which also creates challenges [4, 5].

In response to the challenges caused by the COVID-19 pandemic, the OSCC55+ developed VP to combat social isolation and loneliness in the Oshawa community [6]. These VPs aimed to keep older adults engaged and socially connected despite the restrictions. The OSCC55+ Zoom™ and Mercury programs were a part of the organization's effort to utilize VP to combat social isolation. Participants could join both programs or just one based on their ability to access different technology platforms. The OSCC55+ Zoom™ programs offered a variety of online recreational activities such as chair yoga, Zumba, BINGO, painting, and conversational programs [6]. To address the needs of older adults who did not have access to the Zoom™ platform, the OSCC55+ implemented the Mercury program, which was accessible via telephone. The program included interactive sessions such as trivia and other engaging conversational activities designed by the adult day program staff [6]. These VPs ensured inclusivity by allowing older adults without internet access to participate in VPs. These VP were timely and important for PWD as they provided the opportunity for them to remain socially connected within the community.

VPs have emerged as an important resource for addressing the social and cognitive needs of older adults, particularly during the COVID-19 pandemic. Various studies have demonstrated the potential benefits of these VPs, which range from reducing social isolation to enhancing cognitive functioning and overall well-being. In a research study completed by Cotten et al., (2013) [7], the researchers found that VPs, such as online social networking and video conferencing, can significantly reduce feelings of loneliness among older adults. Additionally, in a systematic review completed by Chen and Schulz (2016) [8], highlighted that older adults participating in virtual based technology programs, reported to have improved social support and reduced social isolation. Despite these findings, several gaps in the literature remain, particularly concerning the applicability and effectiveness of VPs designed for PWD. Currently, there is a lack of research focusing on VPs specifically tailored for PWD. Current research has centered on older adults without dementia, leaving a gap in understanding the unique needs of PWD for VPs. Furthermore, the role of ICG in VPs for PWD is

another area that requires further exploration. Current studies have yet to examine how VPs can support both PWD and their ICG by addressing their needs for respite, and community support.

Social connectedness, defined as the quality and number of human connections an individual develops with others, is crucial for maintaining mental and emotional well-being [9]. When an individual experiences a decreased sense of social connectedness, they are more likely to suffer from loneliness, isolation, and a desire for human interaction [9]. Social isolation, the physical absence of social interactions with friends, family and community, and loneliness, a decrease in the individuals desired versus actual level of social isolation have been linked to poor cognitive functioning, impaired mental health, and dysfunction [2, 10, 11]. These issues were particularly pronounced during the COVID-19 lockdowns but remain relevant today as older adults continue to navigate the post-pandemic world. The importance of addressing social isolation and loneliness among older adults extends beyond the pandemic. Current healthcare approaches must prioritize long-term solutions that enhance social engagement and prevent social isolation. The use of technology, which saw increased use during the pandemic, offers potential to enhance social engagement, but also presents challenges for older adults that are unfamiliar with navigating digital platforms [12]. However, technology can be very unfamiliar for older adults, and may potentially create many barriers and challenges to maintain social connectedness. Virtual and online platforms can help diminish the negative impacts of social isolation if they are accessible and user-friendly for older adults, including those with cognitive impairments [12].

In 2024, it remains critical consider the potential capabilities and limitations of older adults with mild cognitive impairments when developing and implementing VPs to ensure they are effective and meet their specific needs. It is crucial to analyze social isolation and loneliness among PWD to help identify challenges faced by PWD as well as highlight the role of technology to provide social support, and how the transition to VPs opened up new opportunities to support PWD. This study aims to contribute to the existing literature by assessing the feasibility and acceptability of the OSCC55+ VPs in enhancing social connectedness and reducing loneliness in today's current healthcare situation. Understanding the long-term impacts of these interventions and refining them to meet the evolving needs of PWD can inform future strategies for promoting mental and emotional well-being in this population that can guide future public health initiatives and improve the quality of life for PWD.

Methods

Aim

The aim of this study was designed to assess the feasibility and acceptability of the OSCC55+'s VPs in addressing the needs for social connection and interaction for PWD with mild cognitive impairment and their ICG during the COVID-19 pandemic. This study also aimed to provide recommendations to the OSCC55+ on how they can better engage, communicate, and deliver VPs to PWD with mild cognitive impairment. From April 2020 to December 2020, 176 PWD received VP services from the OSCC55+. The study focused on achieving the following objectives: 1) What are the factors and impact of social isolation on older adults with dementia and their ICG living in the City of Oshawa, and what actions must be taken to reduce the negative consequences of social isolation. 2) What are the gaps and opportunities to improve the effectiveness of OSCC55+ VPs, volunteer involvement, intergenerational activities, program participation and social engagement to support PWD with mild cognitive impairments to combat social isolation.

Design and setting of study

A qualitative interpretive research design was used to examine the lived experiences of PWD and their ICG during COVID-19 physical distancing. This design is suitable for this study because it allows for an in-depth exploration of participants' personal experiences, perceptions, and meanings, which are crucial for understanding the impacts the VPs had on their lives during the pandemic [13]. This approach also captures the subjective experiences of individuals making it appropriate to assess the feasibility, acceptability, and satisfaction, of the OSCC55+ VPs aimed at promoting social connectedness during the pandemic. Individual in-depth one-on-one interviews and a focus group were employed to explore the perspectives of PWD and ICG regarding their experiences of OSCC55+ VPs. These methods were chosen to gather more insights into the program's barriers, strengths, and future opportunities. The focus group was conducted online through Zoom™, and the one-on-one interviews were conducted through telephone. The inclusion criteria for this study were PWD who had mild cognitive impairment and have participated in the virtual Zoom™ and Mercury Programs provided by the OSCC55+. The ICG must have been a direct caregiver for a PWD who was involved in the OSCC55+ VPs. Participants who were not English speaking and were not directly involved with VPs of OSCC55+ were excluded from the study. This study did not require participation of dyads (both PWD and their corresponding ICS); thus,

either party could participate independently, resulting in an unequal number of PWD and ICG participants.

The VPs evaluated in this study consisted of two main VPs: the Zoom™ VP and the Mercury phone call VP, both of these are group-based programs. The Zoom programs occurred at various times between 9 AM to 4 PM each weekday. The duration of these programs varied depending on the specific activity being held. Activities included virtual fitness classes, chair yoga, painting sessions, and other interactive activities aimed at cognitive and social engagement. The instructors for these programs were specialized fitness or art instructors with experience in working with older adults. The Mercury phone VP took place twice a day per each weekday, with one session in the morning and another in the afternoon. Each session lasted for one hour. These calls were facilitated by Adult Day Program Workers who were trained to engage with PWD through telephone-based activities. Activities during the Mercury calls included trivia, conversational exercises, and other engaging tasks designed to promote social interaction and cognitive stimulation. Participants are involved in one or more of these programs based on their schedule, needs and preferences.

Characteristics of participants

The inclusion of the PWD was based on a self-reported diagnosis or confirmed by their ICG. The stages of dementia were indicated on the demographic data forms. The study sample included PWD and ICG who were involved with the VPs delivered by the OSCC55+. The study participants were classified into two main groups: (1) PWD; (2) ICG. A total of 25 participants were recruited for this study (PWD ($n=14$), ICG ($n=11$)). The PWD participants completed one-on-one interviews, while the ICG participants completed one focus group and one-on-one interviews.

Recruitment

Participant recruitment was conducted in phases to target two groups: PWD and ICG, using purposive sampling techniques. The OSCC55+ stakeholders played a crucial role in recommending potential PWD and ICG participants to support the recruitment process. The stakeholders from OSCC55+ was informed of the inclusion criteria for each type of participant through the use of a recruitment flyer. Once the stakeholder provided a list of potential participants, the research assistants (RAs) reached out to the eligible participants (through phone or email), and then informed them about the study details, followed by scheduling a virtual interview after receiving informed written consent. A total of 31 participants were initially recruited and deemed eligible for the study, but only 25 provided verbal and written consent to participate.

Data collection

Ethics approval was received from the Research Ethics Board [#16335] in Ontario Tech University. There was no pre-existing relationship between the researchers and the participants. All interviews were conducted from June 2021 to May 2022. If a PWD needed assistance with the forms, an ICG provided help. The interviews lasted 20–45 min and were audio recorded using the online platform Audible. A pilot test of the interview guide was conducted with two ICGs to ensure consistency. The RAs conducted online one-on-one semi-structured interviews using an interview guide (Refer to Appendix A and B for Interview Guides). Due to ICG availability and preferences, data collection included both an online focus group via Zoom™ and one-on-one interviews over the phone. The RAs provided instructions on using Zoom™, and for confidentiality, participants kept their cameras off during the focus group. PWD interviews were conducted one-on-one over the phone. No participants dropped out of the study. All participants were offered the option to engage in member checking, but none of the participants requested to provide feedback.

Data analysis

Data analysis was conducted by the principal investigator the RAs from Ontario Tech University. Verbatim transcripts were prepared simultaneously with data collection. Demographic data was analyzed using Excel to calculate means and standard deviations. Data collection continued until data saturation was achieved, where no new information was being obtained from the participants. Thematic analysis was conducted following Braun and Clarke's (2006) thematic analysis model [14]. This model is comprised of six phases including 1) Familiarizing with collected research data, 2) Generating initial codes of data, 3) Putting codes into potential themes, 4) Reviewing generated themes, 5) Defining and naming themes, 6) Producing the report. The transcripts were created, and each transcript was re-read, coded, and emerging themes were identified. The RAs developed a codebook in an Excel spreadsheet. After coding all transcripts, a peer debriefing meeting was held to discuss and identify common themes for each participant group (PWD and ICG). The main themes, along with quotes were then shared with the stakeholders from OSCC55+ for review.

Results

Quantitative descriptive findings

The age range of the PWD participants with mild cognitive impairment was between 60–79 years, with 71% aged 60–69 and 29% aged 70–79. ($M=67.1$, $SD=5.2$). Most of

the PWD participants were female (64%). The majority of the participants had completed high school (71%), while a few completed post-secondary degrees (29%). The marital status of the PWD participants varied; among 14 participants, three were married, four were widowed, five were separated, and two were unmarried (Refer to Table B1).

For the ICGs, the age range was 40–70+ years ($M=55.8$, $SD=8.4$). The majority of ICG participants were female (91%). The education level of ICGs was evenly split with 50% having completed high school and the other 50% being post-secondary graduates. The ICGs reported providing an average of 81.4 ($SD=71.99$) hours per week of care to their loved one with dementia, with three providing 24/7 assistance to their loved one with mild cognitive impairment. Of the 11 ICGs, seven were daughters, three were wives, and one was a brother. The ICGs who were spouses of a PWD lived together with the PWD, while the ICGs who were children lived separately from the PWD. Most of the ICGs ($n=7$) had secondary helpers to support them with caregiving. Only three ICGs participated in the OSCC55+ VPs with their loved ones. (Refer to Table B2).

Qualitative Findings

Qualitative one-on-one interviews with PWD with mild cognitive impairment and ICG and a focus group interview with ICG were conducted. During these interviews, PWD were asked questions based on their lived experiences related to social isolation and their perceptions about the VP. (See Table A1, A2 and A3 for Illustrative Quotes). The qualitative themes drawn from the PWD interviews were categorized into three main areas: (1) positive impacts of VPs, (2) challenges of VPs and (3) suggestions for improvement.

The ICG interviewees were asked questions about their lived experiences with social isolation, the social isolation behaviours they observed in their loved ones, and their perceptions of the VP. The main themes generated from the ICG interviews were categorized into five areas: (1) positive impacts of VPs, (2) challenges of VPs, (3) program facilitating factors, (4) program barriers, and (5) suggestions for improvement.

PWD qualitative findings

PWD Lived experiences of social isolation during the pandemic

PWD reported that their overall well-being was negatively impacted during the pandemic lockdowns due to isolation. They missed in-person interactions with friends and family but appreciated the opportunity to participate in VPs to stay connected.

"Yeah isolated, and you know you can't go nowhere. And can't talk to any people." (PWD 7).

"Oh, that was very tough. Very tough not seeing anybody" (PWD 13).

PWD Lived experiences regarding VPs

Positive impacts of VPs:

PWD found the VPs were convenient and engaging. They could participate from home, mitigating the pandemic risks, and enjoyed the engaging activities provided. VPs helped PWD increase their social interactions by remaining socially connected during lockdowns, reducing loneliness by enabling them to interact with other participants and program staff. The VPs also provided daily enjoyment and something for the PWD to look forward to, with well-organized activities enhancing their quality of life.

"Well, you get to talk to other people, and you know, and participate and you know, like, and all of those different games we play there. And we have bingo once a week... And all the different games we play." (PWD 7).

"Oh, I feel very much ... connected with other members while participating in the program activities." (PWD 4).

"Oh, very connected (with other members of VP). I go there to pass some time away. It's time well spent as far as I'm concerned." (PWD 5)

"Everything (about the VP) was very good. And it was quick. It was. It was on and off before you knew it and yeah. I looked forward to it, yeah. I'd sit on the chair waiting for the phone to ring." (PWD 8).

Challenges of VPs:

PWD experienced significant difficulties hearing the conversations during VPs, making it difficult for PWD to fully engage in certain VPs when too many participants were speaking at once. PWD also missed the in-person face-to-face interactions that VPs could not fully replace in-person programs. PWD preferred the in-person programs over the VPs as they were able to physically socialize and interact with their friends in a face-to-face format rather than having the barrier of connecting over the phone or through Zoom.

Sometimes I have a slight hearing issue when I call in to talk to people. There are a lot of people attending and I have trouble hearing." (PWD 5).

"I'd rather be there in person talking to them face to face." (PWD 7).

"I'd rather come in person. definitely enjoy the in-person programs more...Yeah, I get to see my buddies." (PWD 11).

Suggestions for future improvement:

PWD suggested that VPs could involve younger generations in the program to promote intergenerational interaction and bonding, particularly with their grandchildren. They viewed this as a way to enrich their VP experience and make the VPs more meaningful. PWD also emphasised the value of increased volunteer participation in the program. They enjoyed forming meaningful relationships with volunteers, which positively affected their overall experience. The presence of volunteers was appreciated for creating a positive environment and for their dedicated contributions and sense of respect towards participants.

"I love kids. I have seven grandchildren. So, I love the kids." (PWD 4).

"Well, I am an uncle to 5 little ones. So, I get Facebook and see the kids there. That (involvement of younger generations and volunteers) is very important." (PWD 13).

"What are your thoughts on having volunteers in online programs? PWD6 It's okay...I find it helpful." (PWD 6).

"Yeah, we do have young volunteers. And one of the volunteers here wrote me a card telling me how wonderful I was, it touched my heart." (PWD 9).

ICG Qualitative findings

ICG Lived Experiences of social isolation during the pandemic

ICGs experienced emotional and psychological stress during the lockdowns, finding confinement at home depressing. They reported that caring for their loved ones without respite was exhausting and left them with no personal time. They observed signs of depression and cognitive decline in their loved ones due to the lack of social contact and program participation.

"The psychological change would be for myself because I became his only friend...So there was just no escape. And I had to be there for him if he wanted to play cards. So, I mean, I was also working, I work from home. So, it took away a lot of my own me time. (ICG 3)." (ICG 3).

"I found that each time they had a lock down, my mother experienced a lot of stress around that and a lot of depression around that. Just you know, not being able to go outdoors, have the activities in the retirement home, or even her day program." (ICG 5).

ICG Lived experiences regarding VP

Positive impacts of VPs:

ICGs found the VPs were engaging and interactive for their loved ones, providing daily entertainment and topics and conversation and something to look forward to while being isolated. ICGs found the VPs improved social connections, allowing their loved ones to maintain their social network and provided them with mental stimulation. ICGs also found that the VPs gave them some relief once the VP learning curve was achieved, providing them respite and allowing them to focus on themselves or household tasks.

"It was a benefit to her because it gave her something to talk about. When I would do my daily phone calls with her, she would tell me what they talked about on the phone call that day, whether it was like trivia, or she would reiterate maybe a couple of the questions they talked about. And so it was that gave her something to talk about on her own day." (ICG 8).

"I am 100% thankful and appreciative that the program exists, because without it, I don't think my mom would have any kind of social life at all. So, I'm very thankful for the program." (ICG 8).

"A little bit (reduce caregiving workload). 'Because I would sit him in the dining or in the kitchen area. And he could talk on the phone, and I could sit down and watch a half an hour program by myself and have a cup of tea and not worrying where he was or what he was doing." (ICG 10).

Challenges of VPs:

When the VPs were first introduced, the ICGs reported they had to assist their loved one with setting up and participating in VPs and have to prompt their loved one during the VP to participate fully. This created an initial burden due to PWD and some ICGs being unfamiliar with technology. ICGs also mentioned that their loved ones had difficulties fully participating in the VP due to their cognitive decline.

"She wouldn't even know how to turn a computer on. And I'm the one who remembers that it's time for the program and I hooked her up for it. And I mean, you know, it's added a little bit more stress sometimes, because it's just something else I have to remember I

have to do at certain times of certain days." (ICG 4).

"The Zoom, she forgets that they can see her, and she doesn't engage very much with the Zoom. I don't think she really understands much of it (due to mild cognitive impairment)." (ICG 4).

Program facilitating factors:

ICGs reported that the VPs had convenient scheduling and availability which made the programs an important part of their loved one's routine. ICGs also agreed that the regularly scheduled programs provided a sense of routine and consistency as well as something for their loved ones to look forward to. ICGs also reported that the program staff were inclusive and helpful throughout the VP.

"It was just my schedule to line up with when they had Zoom calls. And the phone calls, obviously, were much more convenient, because it was the same time every day, it's 11 o'clock every day, the same time where Zoom calls were on different days of the week, at different times of the day. And that wasn't, you know, as consistent whereas with the phone calls she doesn't need assistance with that. Whereas the Zoom calls were totally opposite." (ICG 9).

"So, it's become part of her daily routine. So, she looks forward to it." (ICG 4).

"I think they did a great job handling everything in the way they were still on top of everything, and including everybody and trying to make, you know, interactive for everybody to be involved." (ICG 9).

Program barriers:

ICGs found it challenging to teach and assist their loved one with the technology used in the VPs (i.e., computers and tablets). ICG also stated that during the Zoom programs many participants had their microphones unmuted which created a lot of distractions due to external noises. Some ICGs reported that their loved ones had limited access to virtual devices which hindered their participation in all of the VPs offered by the OSCC55+. ICGs also noted that there were not enough devices available in the household for their loved ones to participate in the VP. ICGs reported that there were some cultural differences and language barriers that prevented the full engagement from their loved ones to be involved in and participate in VPs that involved in North American based trivia and music. ICGs reported that many participants in the VPs had unmuted microphones which caused

increased distractions and difficulties hearing during the VPs.

“And one thing that the seniors center has provided my mom is a tablet...I felt it challenging to show her how to use it. The tablet was not easy to get her to learn it. So, I don't think if she would be able to do it...although the tablet is great for like a game, to go onto the internet or any other sort of application on the tablet is very challenging for her. Just cognitively I don't think she understands how to use the applications.” (ICG 8).

“I guess the only thing would be the Zoom video where there would be a barrier where she didn't have access to that...she has no access to any type of video device.” (ICG 8).

“Um, the Zoom calls were a little difficult, because she would want to do the Zoom calls while I was working on my computer. So that was a little difficult. But the Mercury calls definitely worked out better. And it was just more convenient.” (ICG 9).

“He wasn't born here. So, when they do trivia, he usually can't participate in that because it's a trivia that is very North American, and Canadian, and so he doesn't participate, but he enjoys seeing everybody virtually.” (ICG 3).

“I think just the comment would be when we do the virtual, it would be nice if the host could mute other people. So that you can get rid of the other external noises, because sometimes we're having, let's say, a memory game or a trivia game, and then you hear the microwave turning on, or somebody in the background talking elsewhere, so it gets a little distracting.” (ICG 3).

Suggestions for improvement:

ICGs suggested involving younger generations in programs to foster intergenerational connection and incorporate specific activities like arts and crafts for PWD and their children to engage together. ICGs reported that increasing volunteer involvement would be beneficial to create enhanced support and increased engagement for their loved ones during VPs.

“I am thinking probably just like you know, any type of art or drawing things of that nature, she is not an active lady, and a lot of the Zooms involve moving and exercise which she will not, and does not participate in. So, I do know when the younger kids were in the day program, and the facility she enjoyed the

artwork that they did with her.” (ICG 4).

“I think that's really important...So even if they can incorporate children into the program that are not someone's grandchildren, like, you know, like from a daycare or volunteers, children, just definitely a bonus, definitely having children involved, younger generations volunteered.” (ICG 5).

Discussion

The pandemic significantly impacted the social interactions of PWD, increasing their risk of loneliness and social isolation due to the shutdown of in-person programs [15]. The OSCC55+ VPs created an option to allow PWD and their ICG to remain socially connected to their community during lockdowns. One comparable program is the Kitchener Connections, which is a free interactive telephone-based program for older adults in the community [16]. It allowed older adults to stay connected and engaged in their community from their home through various online activities. This city also offered the Rock Solid Connections, which was an interactive Zoom™ program [16]. This city's VPs structure is similar to the OSCC55+'s VPs, as they both provided consistent and engaging programs to combat loneliness and isolation and utilized virtual platforms to deliver activities to meet the needs of older adults in their communities. These programs also demonstrate the effectiveness of both telephone and Zoom™ based VPs to maintain social connectedness among older adults.

Our study found that despite missing in-person interactions, many PWD experienced increased social interactions through the VPs, enhancing the social aspects of their daily lives. Similarly, in a study completed by Maffioletti et al. (2021), [17] a virtual day centre was evaluated to discover if a VP reduced instances of social isolation during the COVID-19 pandemic. The majority of PWD and ICG reported they were highly satisfied with the VP and adhered to the program for over twelve months. Therefore, this highlights that the implementation of VP were effective in reducing social isolation for PWD and the VPs were beneficial for ICG.

A significant barrier reported by ICG was the difficulty in teaching PWD how to use technology. Limited access to devices and technological issues further hindered participation in VPs. As a result, some clients could not participate in the Zoom™ VP. The National Council on Aging reported that many older adults require assistance to become familiar with technology [18]. They noted that some evidence-based programs successfully transitioned to virtual delivery by mailing step-by-step packets to assist older adults with accessing online programs [18]. Additionally, if older adults lacked access to technology,

there were federally funded programs that provided a technology loan program to older adults [18]. Therefore, to address this barrier and ensure all PWD can engage in VPs, future organizations could consider implementing a technology loan program to address this barrier.

Moreover, the literature also revealed that a structured technology training program, including person-centred approaches, could mitigate these challenges and enhance engagement for PWD, however they need the proper support to learn how to use the devices. In a literature review completed by Kerkhof et al. (2020), [19] a person-centered tablet program was used to assist PWD and their caregivers to learn how to use tablets. It was found that an average of nine to thirteen technology training sessions lasting 30–40 min is most effective. The program focused on four main concepts to properly teach technology to PWD: 1.) Avoid guessing to prevent errors, 2.) Provide a demonstration of how each step was performed, 3.) Use verbal and visual instructions, 4.) Use vanishing cues (which is withholding cues after successfully performing the task) [19]. Thus, by implementing a structured technology training program for PWD, similar to the one proposed by Kerkhof et al. (2020), can help overcome technological barriers and properly support PWD and ICG to navigate VPs [19].

Additionally, alternative options like the OSCC55+’s Mercury phone call program can be provided for those with limited access to digital devices, as it allows older adults to remain connected within their community when there is limited access to technology or unavailable government funding to provide a tablet-loan program. The study also revealed the importance of incorporating specialized programs tailored to individuals with mild cognitive impairments. Organizations such as the Alzheimer Society’s offers ‘Virtual Social Recreation’ program that can keep PWD engaged with brain-stimulating activities and support their specific needs [20]. By addressing these recommendations from ICG, the OSCC55+ and other organizations can enhance the effectiveness and inclusivity of their VPs, ensuring they meet the diverse needs of PWD and their ICG.

Cultural diversity also posed challenges for some participants in engaging with the VP. Oshawa is a city that is rich in cultural diversity, and it is important to incorporate cultural traditions into the community programs to promote inclusivity. Due to the many different cultures, and languages spoken in the community, the literature suggests that organizations should support cultural diversity among staff, administrators, members, and volunteers, such as incorporating cultural decorations, art, books, and music from different cultures into the VPs to promote inclusivity to increase participant engagement [21]. Additionally, it is recommended to incorporate

cultural traditions and customs into programming such as special events, celebrations, hobbies, and crafts [21]. These implementations allow members and staff to appreciate elements of each other’s cultures by contributing to a sense of community in the organization. It is also important to provide cultural sensitivity training to members and staff’s cultures to allow everyone to feel included and accepted into the organization [21].

For example, an older adult community group in British Columbia, Canada called the Gaia Community Care and Wellness Society incorporated cultural inclusivity into their community programs [22]. They provide specific programs for Chinese-speaking older adults and organize activities involved in their culture to offer them a supportive environment where they can engage in cultural activities and language specific programs with other older adults who share similar cultural values and increase their overall well-being [22]. The OSCC55+ can implement strategies such as incorporating cultural traditions or involving client-specific, one-on-one sessions tailored to various cultures into VPs to create a more inclusive and supportive environment for all participants to better serve the diverse cultural backgrounds of the community members.

Our study revealed that both PWD and ICG expressed a desire for increased intergenerational programs. Increasing the involvement of younger generations and volunteers in VPs could reduce staff workload, better support ICGs, and enhance the satisfaction and engagement of PWD [23]. Developing intergenerational programs can create meaningful connections and enhance the quality of life for PWD [23]. Studies have shown that such interactions can enhance the well-being of older adults and foster positive attitudes in younger generations [24, 25]. The literature suggests that older adults reported that interacting with younger generations has increased their self-esteem and well-being, relieved loneliness and decreased feelings of depression, anxiety, and stress [24, 25]. The literature states that younger generations have reported that intergenerational programs created positive attitudes towards older adults and allowed them to understand the aging process [24, 25]. Additionally, these programs allow older adults to teach younger generation traditional games and provide the opportunity to discuss their cultural heritage and traditions [24, 25].

During the pandemic, volunteering opportunities decreased immensely which left many community organizations with few to no volunteers during the delivery of VP in the community. However, according to Sun et al. (2021) [26] virtual volunteering is as effective and provides similar positive benefits as in-person volunteering. The use of virtual volunteering can allow those with physical limitation or time constraints to continue

making contributions through volunteerism using online or virtual platforms [26]. By encouraging virtual volunteering, it can provide essential support for the delivery and implementation of VPs. Volunteers also play a vital role in community programs. Our study findings suggest that virtual volunteering can be as effective as in-person volunteering, providing essential support and engagement opportunities [26]. Incorporating these elements into OSCC55+ programs could lead to improved outcomes for PWD and their ICG. Implementing intergenerational programs and encouraging virtual volunteering can help build a more supportive and engaging community for all participants.

Conclusions

The study applied a qualitative design to examine the experiences of PWD with mild cognitive impairment and ICG during the pandemic. The findings highlighted that the VP developed by the OSCC55+ were effective and convenient for PWD and their ICG, helping to reduce feelings of loneliness and alleviate caregiving tasks. Additionally, the study underscored the challenges related to the use technology by PWD, revealing that both PWD and ICG had little to no experience with or access to technology in their homes. PWD and ICG identified several areas for improvement in the VPs, such as involving younger generations and incorporating volunteer participation. These enhancements could further improve participant experiences and engagement. Overall, the study illustrates that VP positively impacted the lives of PWD and ICG in the Oshawa community.

Overall, this study provided valuable insights into the feasibility and acceptability of VPs for PWD with mild cognitive impairment and their ICG in the Oshawa community. However, several limitations must be acknowledged. First, the sample size was small, which may limit the generalization of overall findings. Second, the participants were recruited from a specific community centre in Oshawa, which may not represent the overall population of PWD with mild cognitive impairment and their ICGs perceptions and opinions about the use of VPs. Third, access to technology posed as a barrier for PWD to fully engage in all VPs, which excluded some participants from engaging in the study. Additionally, this study also relied on self-reported data from PWD with mild cognitive impairments and ICGs, which can introduce respondent and recall biases and may affect the overall assessment of the VPs feasibility and acceptability. This study also only focused on VPs offered by the OSCC55+, which may present different findings compared to other types of VPs that were offered by other organizations during the pandemic.

Future research should address these limitations by including a larger and more diverse sample, providing additional technology support for participants, and incorporating improved measures to further assess the impact of VPs on PWD with mild cognitive impairment and their ICG. The findings from this study will inform the development of future VPs to ensure they meet the needs of PWD and ICG. The OSCC55+ programs which were initially cancelled due to the pandemic, demonstrated that the implementation of VPs could effectively maintain the social connectedness of their participants. This suggests that VPs can complement in-person programs in the future through the use of a hybrid model, to leverage the strengths of both approaches. This could be implemented into the OSCC55+ and future organizations by incorporating both in-person and online programs to promote the accessibility of the programs, as well as enhancing the quality of these programs to improve the overall experiences of participants.

Abbreviations

PWD	Persons with Dementia
ICG	Informal Caregivers
OSCC 55 +	Oshawa Senior Community Centres 55 +
VP	Virtual Program

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12877-024-05375-6>.

Additional File 1. Interview Guide (Persons living with Dementia).
Additional File 2. Focus Group Interview Guide for Informal Caregivers.
Additional File 3. Letter of information and Participant Consent Form for Persons with Dementia (PWD).
Additional File 4. Letter of information and Participant Consent Form for Informal Caregivers.
Additional File 5. Illustrative Quotes for ICG Lived Experiences Regarding Virtual Programs and Social Isolation during COVID-19.
Additional File 6. Table A1. Illustrative Quotes for the PWD and ICG Lived Experiences of Social Isolation during the Pandemic.
Additional File 7. Table A2. Illustrative Quotes for PWD Lived Experiences Regarding VPs.
Additional File 8. Table A3. Illustrative Quotes for ICG Lived Experiences Regarding VP.
Additional File 9. Table B1. PWD Demographics.
Additional File 10. Table B2: ICG Demographics.

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Authors' contributions

WS made substantial contributions to the creation and design of the study, assisted with the interpretation of data, and substantially revised the work, and has approved the submitted version. GG and RA made substantial contributions to data collection, interpretation of the data, and drafted the final manuscript, and has approved the submitted version. LL and JP made

substantial contributions to participant recruitment, and substantially revised the work and has approved the submitted version. Each author has agreed to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

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Availability of data and materials

The authors do not have any research data outside the submitted manuscript.

Declarations

Ethics approval and consent to participate

Ethics approval was received from the Research Ethics Board [#16335] in Ontario Tech University. All participants provided written and verbal informed consent before the interviews. Some of the PWD participants did not have an ICG and were able to participate because they could provide informed consent on their own, as they had mild cognitive impairment. Of the 14 PWD participants, 8 did not have an ICG and provided their own consent.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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