CADTH | COVID-19 PANDEMIC

Technologies to Address the Negative Effects of Social Isolation on Older Adults Living in Long-Term Care

This report was published on August 17, 2020.

To produce this report, CADTH used a modified approach to the selection, appraisal, and synthesis of the evidence to meet decision-making needs during the COVID-19 pandemic. Care has been taken to ensure the information is accurate and complete, but it should be noted that international scientific evidence about COVID-19 is changing and growing rapidly.

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Social isolation, loneliness, boredom, and immobility affect many seniors and are recognized to be detrimental to health.[1-4] Maintaining social relationships is critical to well-being and healthy aging;[5,6] however, the COVID-19 pandemic and ensuing requirements for physical distancing, limitations on recreational activities, and restrictions on visitors have increased social isolation and reduced physical activity — particularly for the residents of long-term care homes.[7-11]

Many technologies that are commercially available, or are nearing commercial availability, may help to facilitate social engagement and encourage physical activity in aging adult residents of long-term care homes when in-person visits from family, friends, and recreational therapists are not feasible.

Context

The authors of a 2017 US report that examined technologies for social connectedness and engagement in long-term and post-acute care[12] distinguished social connectedness technologies from social engagement technologies. **Social connectedness technologies** included "social networks, video chats, audio chats, photo sharing, activity/event sharing, email, text chat, and picture chats," while **social engagement technologies** included "life stories, community activity and event management, physical and mental exercises, games, music, facilitated conversations, companion apps or robots, and virtual reality."[12]

However, a rapid review on maximizing mobility in older people who are isolated due to COVID-19 noted that many older individuals (in the UK, an estimated 29%) do not use the internet or digital technologies.[13] For these people, activities in which physical distancing can be maintained, such as telephone calls, television, radio programs, and social events (e.g., hallway bingo and exercises), may be options for encouraging mobility.[13,14]

A recent Canadian editorial noted that "[o]pportunities exist to develop and incorporate novel technologies that are specifically designed for the continuing care context, which can help better support social interaction and medical monitoring in times of needed social distancing."[15] One Quebec physician further commented that technologies to redress social isolation (for example, smartphones and tablets) should be available to all long-term care residents — not just to those who can afford to purchase them — through government subsidies and incentives.[16]

It is important to note that these technologies are intended to supplement and enhance social connections and engagement, but they are not substitutes for the care and human contact provided by health care workers, family, and other caregivers.[11,17-19]

Who Might Benefit?

Long-term care is used broadly in this document to include any type of congregate residential care setting for older adults, including nursing homes, assisted living facilities, and retirement homes. Some of these technologies may also be used by older adults living in their own homes.

Availability in Canada

Where possible, technologies that are available in Canada (or that may be soon) have been noted, but it was not possible to verify this with all vendors.

About This Document

This article summarizes information identified through a limited literature search using PubMed and Google. The intent was to provide a list of potential technologies that may be used in long-term care settings. It is not a systematic review and has not been peer-reviewed. Many of the listed technologies have not been assessed in published studies, and the evidence on those that have been included in published studies was not critically appraised. This article is not intended to provide recommendations for any particular technologies.

Limitations

The included list does not contain programs; for example, those that provide regular phone calls by volunteers, such as the Canadian Red Cross's Friendly Phone Program or the student volunteer–run Chatting to Wellness.[7] Systems for clinical monitoring, administrative and care management, and resident engagement in long-term care residences are also not included, unless the latter include options for enhancing resident communications with friends and family members who live outside the residence. Smartphone apps, such as FaceTime, WeChat, and WhatsApp, are also not included.

Technologies

Robotic Companions and Pets

Social robots and robopets are intended to encourage engagement and communication. Some have additional features, such as entertainment, activities, falls detection, and reminders for medications and appointments.[12,20]

- Ageless Innovation's Joy for All Companion Pets: Interactive, battery-operated, plush kittens, cats, and dogs. Available in Canada through Amazon.ca. The cost is approximately US$65 to US$130.[21]

- PARO (PARO Robots USA): A baby harp seal therapeutic and interactive robopet intended primarily for people living with dementia. Available in Canada. The cost US$6,000.[19,22-28]

- Giraff (Camanio Care; Canadian distributor: The Fermanis Group): This telepresence robot for hospital and home care provides clinical monitoring and social companionship. Available in Canada. The cost is not avalable.[29]

- ElliQ (Intuition Robotics): An assistant and communication "bot" designed for aging adult users that includes messaging, reminders, photo sharing, games, music, and news. Commercial availability in the US, and being piloted at Baycrest, in Toronto. The cost is approximately US$1,500, plus a monthly fee.[30-32]

- Bot Care (Samsung): A two-foot tall, wheeled artificial intelligence robot that is intended to monitor blood pressure and heart rate, call for help in an emergency, play music, provide companionship, and enable video calling. Expected to be commercially available soon. The cost is not available.[33,34]

- BUDDY PRO (Blue Frog Robotics): A mobile social companion, communication (i.e., video calls and messaging app), and assistance robot for aging adults. Official launch planned for September 2020. The cost is approximately US$1,700 to US$2,000.[35]
- Ohmni Robot (Ohmnilabs): A telepresence robot for two-way video communication that is available globally. The cost is US$2,195.[36]
- Zorabots (NAO, Pepper, James, and others) (Zorabots; Canadian distributor: RobotShop): Programmable, humanoid companion and care robots. In group settings the robots can be used for rehabilitation exercises, games, stories, and singing. They may also be used one on one to provide social interaction. Available in Canada. The cost is approximately $20,000.[37-41]

Physical Activity and Games

- Wii Fit (Nintendo): Balance boards (for fall reduction exercises), games, and sports (such as cycling, canoeing, and bowling). Available in Canada. The cost varies.[42-45]
- Jintronix (Jintronix): An interactive, virtual rehabilitation and exercise therapy program (games) designed for use in long-term care facilities. Can be used by recreational or occupational therapists for either individual or small group activities. Available in Canada. The cost is not available.[46-49]
- Rendever (Rendever): A virtual reality platform intended to engage seniors in residential care through reminiscence therapy, games, virtual travel, social connections with other residents, and facilitating communicating with family. Available in Canada. The cost is not available.[50]
- BikeAround (Camanio Care; Canadian distributor: The Fermanis Group): A program that uses a stationary exercise bike and Google Street View to provide an immersive experience, reminiscence therapy, and physical activity. Available in Canada. The approximate cost of the package for screen is US$7,500, or for JDome is approximately US$13,600, including bike.[51,52]
- Motiview (Motitech AS): A program that uses an exercise bike, video, and sound to motivate older adults to increase their physical activity by enabling a virtual bicycle trip through familiar or new surroundings. Available in Canada. Motiview is in use in several Canadian centres (Bruyère Research Institute/Bruyère Continuing Care; Baycrest Health Sciences; West Park Health Centre). Various licensing options are available from approximately $800 to $4,000.[53]
- Samsung Gear VR/HMD Odyssey (Samsung): Virtual reality systems (using a smartphone or computer with headphones or a headset) for viewing virtual reality films or apps for games. Available online. HMD Odyssey costs US$499, while Gear VR costs US$129.[3,54,55]

Communication

- FamliNet (TAGLab, University of Toronto/Simon Fraser University/AGE-WELL): A tool for tablets and smartphones that uses the EasyConnect messaging platform (formerly InTouch app), FamliNet offers a simple interface designed for use by seniors for video calls, texting, sharing photos, listening to music, playing games, and searching the internet. Developed and available in Canada. The tool is free to use.[56]

- Claris Companion (Claris Healthcare Inc.): A simplified, pre-set up tablet for video and audio calls, texting and emails, photo sharing, and medication and event reminders. Available in Canada. The cost is $399 for a WiFi tablet, plus a monthly subscription fee $29; or $489 for a 4G tablet, plus a monthly subscription fee of $49 (personal communication: Samantha Sawyer, Claris Companion Support, Claris Companion, Vancouver, British Columbia; Jul 7, 2020).[57]

- Birdsong: A Samsung tablet (10" handheld or 15" tabletop) designed for use by older adults. Can be customized for the individual. Available in Canada. The cost is US$300 to US$450, plus a subscription fee for access to games, music, internet, picture sharing, texting, email, and video calls.[58]

- GeriJoy (Care.Coach): A caregiving and companionship system designed to engage seniors (particularly those with dementia) in conversation with remote caregivers and through the use of pet avatars, as well as to facilitate connecting with family members. Available in Canada. The cost is US$249 per month.[59]

- It's Never Too Late (iN2L): Tablets and large touch-screen TVs to engage seniors in interactive, online activities, including physical and cognitive exercises, entertainment, video conferencing, telehealth visits, music, social opportunities, and connecting with family via the tablet and its preloaded apps. Available in Canada. The cost varies depending on the package.[60]

- K4Connect (K4Connect): Designed for seniors' residences, the platform includes elements for smart home technologies, television insertion channels, wellness monitoring, engagement activities, and video communications between residents, their families, and staff. Available in the US. The cost is not available.[61]

- LifeLoop (LifeLoop): A technology platform for seniors' residences that includes communication, activity calendars and reminders, a family portal, photo sharing, and video calls, as well as facility and service management features for staff. Available in Canada. The cost is not available.[62]

Additional Sources and Research

- Life story programs (various packages available), such as HeartLegacy (HeartLegacy.com)[63] and LifeBio (LifeBio):[64] Online website and software to help create an individual's biography via phone interviews, handwriting or typing, and producing a print book. The cost is not available.

- Ability411 (CanAssist, University of Victoria): Information on tools and technologies for seniors (not solely those in long-term care); for example, on simplifying video calls using commercial platforms or simplified TV remotes.[65]

- Aging 2.0 Global Innovation Search: Innovators developing new and emerging technologies intended to mitigate social isolation and loneliness in seniors. The website includes a list of organizations who submitted COVID-19 innovations.[66]

- AGE-ON (GERAS Centre for Aging Research, McMaster University): A six-week iPad education course for older adults.[67]

- Virtual visits toolkit. Family Councils Ontario/Ontario Association of Residents' Councils/Tech Coaches Inc.; April 2020: Instructions for setting up video calls for long-term care residents during the COVID-19 crisis.[68]

- Playful aging: digital games for older adults: A white paper by the AGE-WELL 4.2 project, February 2020 that examines digital games for various purposes, including education or improving cognitive skills, relaxation, falls prevention, exercise, and rehabilitation.[42]

- [What are the ways that long-term care homes can improve the psycho-social well-being of residents in the context of pandemic restrictions](#). Toronto, ON: University of Toronto, Dalla Lana School of Public Health, REAL: COVID-19 Rapid Evidence Access Link; Jun 2020.[69]

- [Video calls for reducing social isolation and loneliness in older people: a rapid review](#). Cochrane Database of Systematic Reviews 2020, Issue 5. COVID-19 Rapid Review.[70]

- [Maximising mobility in older people when isolated with COVID-19](#). Centre for Evidence-Based Medicine. COVID-19 Evidence Service Team Rapid Review; Mar 2020.[13]

- [Evidence check: Tools to support communication between patients and families](#). COVID-19 Critical Intelligence Unit – Evidence Check, New South Wales, Australia, Apr 2020.[71]

- [Emerging technologies to support an aging population](#): US National Science & Technology Council; Mar 2019. A general overview of the use of technologies for cognitive training, social communication, and movement.[72]

- [AGE-WELL: Canada's Technology and Aging Network](#). [The future of technology and aging research in Canada](#): Various research projects on technologies for healthy aging (some completed and some in progress).[73]

- [TAGLab](#) (Technologies for Aging Gracefully, University of Toronto): Various research projects on technologies to reduce social isolation and loneliness in seniors.[74]

- [Canadian Frailty Network](#) (projects)[75]
  - [User studies with intelligent assistive robots and elder residents living in long-term care homes](#)
  - [Using mobile health applications (mHealth) to support communication with frail elderly people in long-term care](#)

- [Research Institute for Aging](#) (Schlegel-University of Waterloo-Conestoga) (projects)[76]
  - [Evaluating the music and memory program](#): Use of iPods with personal playlists.
  - [Virtual reality](#): A virtual reality game to support people with mild cognitive impairment to exercise.
  - [You've Got E-mail](#): Social networking to reduce loneliness and increase well-being for older adults.

- [Centre for Aging & Brain Health Innovation (CABHI)](#) (projects)[77]
  - [Prescribing VR (Virtual Reality)](#): VR that allows people with dementia to experience simulated natural environments to decrease depression, etc.
  - [MouvMat: An Interactive Game Mat Designed for Older Adults](#): An interactive digital gaming surface for adults living in long-term care homes.
  - [Virtual Reality Reduces Negative Moods in Long-Term Care Residents](#): Using virtual reality to improve the moods of those living in long-term care homes.
  - [Fitlight](#): Dynamic motion activated LED lights that challenge users to move and play
  - [Seniors' Centre Without Walls: Connecting Isolated Seniors by Phone](#): A conference call technology that connects seniors.
  - [ABLE-Music: movement-music interactions to engage older adults with cognitive impairments](#)
  - [Memory Care Experience Stations for Assisted Living Memory Care Community](#)

- Neighbourhood Time: A New Approach to Recreation and Leisure for Increased Reach and Impact
- Tess – A Digital Health Companion for Older Adults
- Virtual-Gym: A Serious Game Platform to Personalise Exercise Sessions for Seniors at Home: Guided by physical therapists who remotely monitor their clients' progress.

Related Developments

The results of a Canadian scoping review on non-robotic assistive technologies that may encourage social engagement in residents of long-term care homes is expected to be published in late 2020.[5]

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