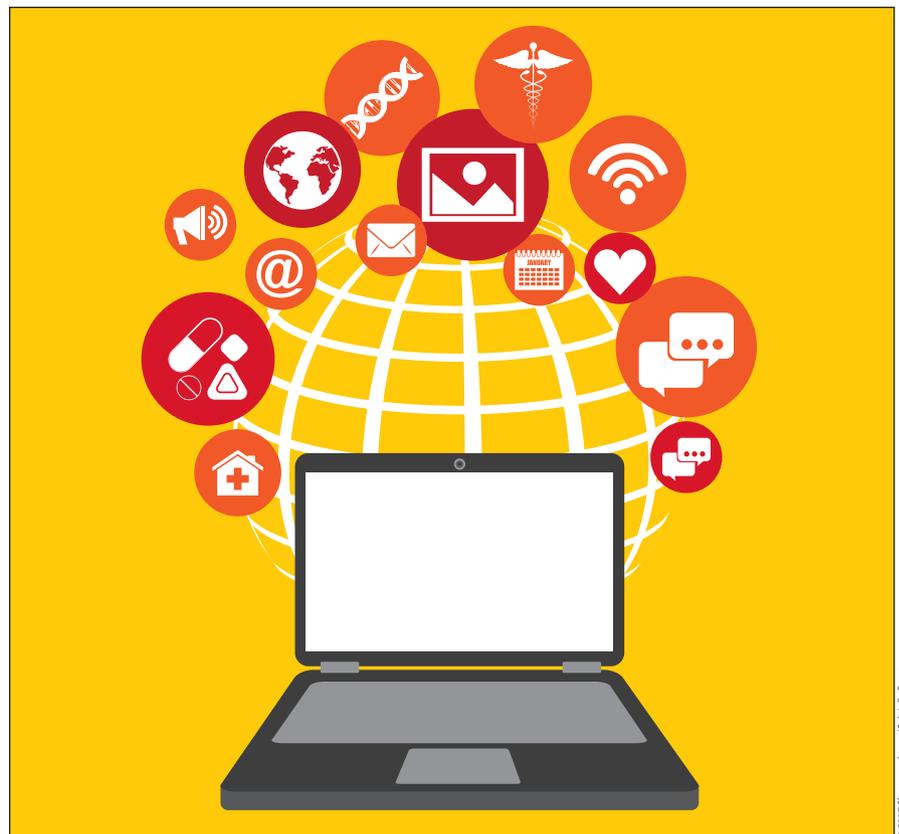


# The Roles of Telehealth Tools in Supporting Family Caregivers

## Current Evidence, Opportunities, and Limitations

The demands for caregiving are increasing as a result of a constant rise in the aging population and patients with chronic conditions. There are more than 40 million U.S. adults serving as informal caregivers for a family member or friend (National Alliance for Caregiving & AARP, 2015). Main caregiving tasks include assisting the care recipient in activities of daily living (ADLs), performing medical/nursing care tasks, monitoring the patient's health and symptoms, communicating with health care professionals, and serving as the patient's advocate when navigating the health care system. Most family caregivers do not receive any formal caregiving training but are still asked to provide such a wide array of complex tasks for their care recipient.

Family caregivers need more information and training on caregiving as well as supportive tools to facilitate stress management and enhance their coping skills. In addition, family caregivers need social support and practical assistance. *Telehealth tools*, broadly defined as technology-based tools that bridge geographic distance, can be a promising method to deliver interventions designed for family caregivers and enhance access to resources and support. Telehealth technologies are especially important for caregivers living in rural areas or providing remote caregiving.



Chi and Demiris (2015) conducted a systematic review of 65 studies that used telehealth interventions to support family caregivers. Telehealth tools that were used included videos (i.e., videoconferencing or videophone solutions), web-based interactive platforms, telephone-based technology (i.e., phone call or text message), and remote monitoring (i.e., electronic data collection and transmission).

The types of interventions delivered via telehealth tools were education, consultation (including providing decision support aid), psychosocial/cognitive-behavioral therapy (including problem-solving training), social support, data collection and monitoring, and clinical care delivery. Below are examples of each type of telehealth tool.

- *Videos*. The Hospice Caregiving Research Network (access

<http://www.hospice-research.org>) has used technologies to support caregivers of patients at the end of life. Family caregivers can participate in the regularly scheduled hospice interdisciplinary team meeting via videoconferencing

monitoring systems can monitor patients' activities or data, which may reduce family caregivers' workload and decrease their stress. Some electronic devices measure patients' vital signs, blood sugar, or weight, and automatically trans-

family caregivers can receive social support from online communities and social media tools. Family online support groups can provide both social and tangible supports. They can use websites or applications (apps) to schedule tasks, such as respite, meal delivery, transportation, medical appointments, and visits, which could share some of the caregiving workload. Friends and families can identify the timing and type of assistance that is most needed.

Furthermore, experienced family caregivers in similar situations can share real-life experiences with novices. This first-hand knowledge is just as valuable and informative as structured educational material or lessons. More importantly, online communities create bonds and friendship among users. Caregiving is a long and laborious journey filled with unexpected challenges; caregivers need to feel supported emotionally. By connecting with other individuals who are in a similar situation, family caregivers can converse with someone who is understanding of their pain and suffering; thus, they will feel supported in a way that they otherwise would not have received from friends and families who do not fully understand the circumstances.

Although technology tools are used routinely to support family caregivers, emerging technologies are being explored and tested for feasibility, and they are anticipated to greatly impact caregiving in the near future. Such new technologies include robotic applications that can perform specific tasks, such as assisting with ADLs or even providing social support for patients and their families; sensors that facilitate passive monitoring and create a "smart home" environment that monitors residents' quality of life over time and detects or even prevents adverse events; and the so-called Internet

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and become "virtual" team members (Wittenberg-Lyles, Oliver, Demiris, & Baldwin, 2010). Moreover, educational interventions and psychosocial therapies can be delivered through videophone. Demiris, Oliver, Wittenberg-Lyles, and Washington (2011) delivered problem-solving therapy to hospice family caregivers via video-phones.

- *Web-based interactive platforms.* Family caregivers can acquire disease-related knowledge and find available resources through educational websites, organizations' websites, and other online sources. Northouse et al. (2014) designed a web-based, psychoeducational program for cancer patients and their family caregivers.

- *Telephone-based technology.* Family caregivers can receive information, education, and support through phone calls or text messages. Wilz, Schinköthe, and Soellner (2011) designed a cognitive-behavioral therapy telephone intervention for family caregivers of individuals with dementia. The Veteran Affairs Caregiver Support Line (access <http://www.caregiver.va.gov>) provides family caregivers with monthly telephone support and education about self-care.

- *Remote monitoring* (including electronic data collection). Remote

mit the information to patients' electronic medical records or share with family caregivers. There are several medical alert systems, such as Philips Life Line (access <https://www.lifeline.philips.com>) and Live!y™ (access <http://www.mylively.com>), that can detect a fall, assist with an emergency, and provide medication reminders.

### OPPORTUNITIES AND LIMITATIONS

According to AARP (2016), 71% of caregivers are interested in technology, but only 7% are using it to assist with their caregiving tasks. Some reasons are that caregivers do not know which technology is the right one for them, and they do not have time to learn a new technology. Clinicians and nurses can suggest appropriate and user-friendly telehealth technologies for family caregivers to support caregiving.

Through telehealth tools, family caregivers can gain access to additional resources and improve their caregiving experience. Although there are several structured educational programs delivered through telehealth platforms for family caregivers, the cost effectiveness and sustainability of such solutions are rarely examined. In addition to educational material,

of Things, namely the option of connecting everyday objects to the internet and facilitating the exchange of data among devices and their remote control. The Internet of Things is anticipated to enable home automation, remote monitoring, and the creation of emergency notification systems at a large scale.

As we consider the many opportunities that technology introduces, we must be aware of the challenges as well, including: the digital divide that results in a segment of the population without appropriate infrastructure to access and use sophisticated technologies and with limited prior computer experience; the cost of new hardware and software and reimbursement for new types of technology-mediated services; and the concern that technology tools may de-personalize care or impact the frequency and nature of personal communication among caregivers, patients, and health care providers.

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**Nai-Ching Chi, MS, RN, CNS-BC**  
 PhD Candidate  
 School of Nursing  
 University of Washington  
 Seattle, Washington

**George Demiris, PhD, FACMI**  
 Alumni Endowed Professor in Nursing  
 School of Nursing  
 Professor & Vice Chair for Informatics Education  
 School of Medicine  
 University of Washington  
 Seattle, Washington

*The authors have disclosed no potential conflicts of interest, financial or otherwise.*

doi:10.3928/00989134-20170111-04