Diverse Perspectives on Aging in a Changing World

Edited by Gillian Joseph

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2017
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2017 Gillian Joseph, selection and editorial material; individual chapters, the contributors

The right of the editor to be identified as the author of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of *Congress Cataloging-in-Publication Data*
Names: Joseph, Gillian, editor.
Title: Diverse perspectives on aging in a changing world / edited by Gillian Joseph.
Description: London : Routledge, 2017. | Series: Routledge studies in health and social welfare ; 14 | Includes bibliographical references and index.
Identifiers: LCCN 2016019698| ISBN 9781138195479 (hbk) | ISBN 9781315638386 (ebk)
Subjects: LCSH: Aging--Social aspects. | Aging--Economic aspects. | Older people--Social conditions. | Population aging.
Classification: LCC HQ1061 .D575 2017 | DDC 305.26--dc23
LC record available at https://lccn.loc.gov/2016019698

ISBN: 978-1-138-19547-9 (hbk)
ISBN: 978-1-315-63838-6 (ebk)

Typeset in Sabon
by GreenGate Publishing Services, Tonbridge, Kent

Contents

List of illustrations ix
List of contributors x
Foreword xx
Acknowledgments xxi

Introduction 1

SECTION 1
Aging spaces and the individual 7

1 Aging and sustainability: creating a discourse on places of inclusive mobility for the promotion of longevity 9
GINA SYLVESTRE

2 Portrayal of older adults in popular television shows 24
MARGARET WALTZ AND BRIAN K. GRAN

3 Health-related technology use by older adults in rural and small town communities 38
BETH PERRY, MARGARET EDWARDS, CAROL ANDERSON, MAIGA CHANG, Dr KINSHUK AND PAMELA HAWRANIK

4 Relationship between physical/psychological predictors and self-rated health among older people in Hong Kong 54
SHELLY KIN SHAN LEUNG, LINDA CHIU WA LAM, OI LING SIU AND GILLIAN JOSEPH

SECTION 2
Aging families: caregiving and gender 69

5 Men providing care to aging parents in the internet age: part of the stalled gender revolution? 71
LORI D. CAMPBELL AND MICHAEL P. CARROLL

6 Dynamic care networks: the changing face of family caregiving 86
ADAM DAVEY, MAXIMILIANE E. SZINOVACZ AND KATHERINE W. BAUER

7 Revised perspective on the communication predicament between adult children and their aging parents 104
VALERIE POWELL

8 Neoliberalism, temporary foreign workers and precarious eldercare/eldercare work 115
GILLIAN JOSEPH AND BELINDA LEACH

9 Vision care services in long-term care facilities: why are they overlooked? 130
PAMELA HAWRANIK, SANDY BELL AND DONNIE McINTOSH

SECTION 3
Aging and economics 143

10 When healthcare is delivered in your home, will you need to make economic trade-offs? 145
LEE ANNE DAVIES, JOHN P. HIRDES AND ROGER MANNELL

11 Do fuzzy retirement-income systems work best? 168
BRIAN K. GRAN

12 Grey ghettos: inclusion or exclusion in the post-modern Canadian city? 184
GINA SYLVESTRE AND NORA CRISTALL

13 What drives older consumers' entertainment choices? 203
GORD HENDREN, GILLIAN JOSEPH AND KRISTIN CRAWFORD

Index 219

3 Health-related technology use by older adults in rural and small town communities

Beth Perry, Margaret Edwards, Carol Anderson, Maiga Chang, Dr Kinshuk and Pamela Hawranik

This chapter explores how older adults living in rural and small town communities use technology for health-related purposes to remain healthy and live independently. Specifically, we explored if, and how, this population uses technology for health-related education, social support, health reminders (e.g. medication reminders), health alerts (e.g. texts to family if the person has fallen) and health parameter monitoring (e.g. blood pressure, pulse rate or breathing rate). The study is foundational to addressing questions related to effective use of technology for improving health self-care self-efficacy and maintenance of ability to independently perform activities of daily living in older adults. Data gathered include ways older adults use technology (mobile and home-based) for health-related purposes, access they have to health-related technology and ways older adults consider health-related technology helpful in assisting them to remain independent and community-dwelling.

A review of background literature, description of the research methods used, study findings and a discussion including recommendations for enhancing the use of health-related technology by older adults is included. The chapter concludes with recommendations for further research.

Background literature review

The number of older adults worldwide is growing due to factors such as an aging population, longer life expectancy and longer prognosis associated with chronic diseases (Kinsella et al., 2013). Additionally, restructuring healthcare in some countries places increased emphasis on home-based care, keeping older adults living in their own homes for as long as possible. Older adults with advanced illness or chronic conditions are increasingly community-dwelling rather than moving to institutionalized care (Stall et al., 2013). Increased community-dwelling places less strain on the institutional health system and independence is also the desire of many older adults who prefer to remain "at home" (Rosenberg, 2012).

The World Health Organization (2011) defines older adults as "people 60 years and older." "Rural and small town" populations consist of people

"living in towns and municipalities outside the commuting zone of larger urban centres [which are] centres with populations of 10,000 or more" (Statistics Canada, 2001). In some rural and small town areas, there are insufficient numbers of institutional care facilities for older adults, fewer healthcare educational and support resources (Tryssenaar and Tremblay, 2002) and healthcare workers are more scarce (Park et al., 2009).

Older adults who reside in rural communities are especially vulnerable to negative health outcomes (Public Health Agency of Canada, 2010). This situation arises not only from their status as older adults but also through the potential compounding effects of rural residency. Innes et al. (2011) emphasize the need for more research regarding the impact of rurality on education and support requirements of rural residents. Health-related technology potentially brings effective and cost-effective solutions to help maintain health, well-being and independence in this vulnerable population.

Inefficiencies, increased demand and rising healthcare costs have severely crippled the healthcare system in many countries (Ghose, 2012). Jurisdictions are trying to reduce inefficiencies and meet demand by seeking better methods to deliver essential patient care services (Heckerman, 2009). Using health-related technology may help increase self-care self-efficacy, thus reducing the burden on the healthcare system. For example, non-invasive medical examination equipment can be used by individuals doing self-medical parameter monitoring (Tseng et al., 2007). The collected data can be transmitted to a central system via the Internet that returns the result and related information to the user (Chang et al., 2012). Many new, non-invasive mobile examination tools have been developed. For example, blood pressure, electrocardiogram, breath frequency and body temperature can be done by mobile devices (Koch, 2005). Blood glucose and international normalized ratios (INRs) can be home-monitored and results transmitted to physicians electronically (through the Virtual medical gend) for cost saving (Collen, 2000). Individuals are becoming more comfortable using technology for health-related purposes. For example, Seto et al. (2010) found heart failure patients were very comfortable using mobile phone-based remote monitoring.

Terry (2010) found that the quality and cost of mobile applications varies widely but concluded that smartphone applications have the potential to benefit the health and well-being of older adults. Contrary to stereotypical belief, recent research concludes that older adults are active users of the Internet and consumers of online information, with many expressing comfort with Internet-based technology (Mori and Harada, 2010). Gao and Koronios (2010) studied smartphone applications developed specifically for older adults to improve their life quality and concluded there was great potential but that more research was needed. Specifically, research focused on the use of technology by older adults to address educational, social support and health monitoring needs (Free et al., 2013).

Enhanced self-efficacy, adequate social support, the ability to call for help and receive expedient interventions when needed and consistent health

parameter monitoring are linked to positive outcomes for populations (Spinsante et al., 2012). Low self-efficacy results in older adults lacking motivation to take actions toward maintaining their independence and levels of health. Likewise, perceived social support has also been linked to positive health outcomes. For example, Clark (2007) showed a positive correlation between social support in older adults and self-rated physical and mental health, and others found the same outcome for quality of life (Sherman et al., 2006). Essentially, adequate self-efficacy and perceived social support are linked to an improved sense of well-being and the potential for independence.

In sum, enhanced self-efficacy, perceived social support, health reminders and health parameter monitoring may have positive outcomes for the health and independence of older adults. These outcomes could lessen the strain on healthcare institutions and reduce related costs (Soderstrom et al., 2001). Institutionalized care may not be ideal for older people and many simply prefer to stay in their communities (Soderstrom et al., 2001). Using technology to educate, support, remind and monitor may help maintain the well-being of older adults, save healthcare resources and enhance quality of life for older adults.

Approach

This descriptive qualitative study elicited information from older adults living in rural and small town Alberta. A purposive convenience sample of older adults residing in three communities was recruited. From a list of older adult social clubs in Alberta, those groups from communities that met the definition of "rural or small town" (i.e., greater than 100km for a major urban centre) were selected for contact. The research assistant (RA) emailed the contact person from each qualifying social club explaining the study and asking if their group would be willing to participate in a focus group. From the 15 groups contacted, three agreed to participate. A total of 34 people participated in the focus groups with group sizes of 17, seven and ten people. Inclusion criteria included the ability to speak English, aged 60 years or older and consent to participate. Research ethics approval was obtained from the appropriate Research Ethics Review Board prior to commencing data collection.

A focus group was held in each participating community led by the RA who is a registered nurse with experience in data collection, care of older adults and administration in long-term care. Focus group sessions, held at a mutually agreeable time and place, lasted between one and two hours each and were audio-recorded and transcribed by the RA. Detailed notes were taken by the RA to supplement audio recordings. Each group began with a period of socialization where participants and the RA got acquainted over refreshments provided by the RA. Focus group sessions began by the RA obtaining consent from participants and ensuring that all participants met the inclusion criteria.

During the focus groups, questions regarding current availability, uses, functionality and fluency with health-related technology were asked. Further questions focused on perceived effects of health-related technology on health-related self-care self-efficacy, social support, health reminders and health parameter monitoring. Barriers to using technology for health-related purposes were discussed. The RA noted that participants were pleased to be selected for the study and noted that their opinions were rarely sought due to their geographic location.

Data were analyzed for themes using qualitative content analysis. The aim of qualitative content analysis is to condense data and produce a broad description of the phenomenon with categories describing the phenomenon (Elo and Kyngas, 2008). Content analysis began by the researchers' immersion in the data, followed by open coding where notes and headings were written on the transcripts. Categories were created bringing headings that were similar together. Then general categories or themes were determined from these headings. The themes are reported in this chapter. Data were coded and themes created by merging similar codes inductively (Elo and Kyngas, 2008).

Findings

Six themes emerged from the data, including types of technology used, primary uses of technology for health-related purposes, enthusiasm regarding use of technology for health-related purposes, desire for easy-to-learn technology and need for older, adult-friendly technology, frustration with access issues, and increased ability to choose to dwell in rural and small town communities. Each theme is discussed in the following sections using examples from transcript excerpts.

Theme one: types of technology used

The majority of participants owned mobile phones ranging from flip phones to smart phones to hands-free vehicle phones. Commonly, participants also owned computers (either laptop or desktop) and some owned tablets, although tablets were less common than other devices. Devices of all types were frequently shared between spouses. One person only carried her mobile phone in the winter for emergencies. Owning emergency call devices and health-monitoring technology (such as blood pressure monitors) was not common, but these devices were a technology priority for participants who had existing health issues. Opportunities for videoconferencing such as tele-health and videoconferencing workshops where experts from urban centres were available to consult on health or other issues were common in one community.

Theme two: primary uses of technology for health-related purposes

Older adult participants used mobile phones, tablets, laptops and personal computers for several health-related purposes, including staying in touch with family and friends, researching health information and for self-care health advice. There was limited use of technology for medication reminders, heath parameter monitoring and recording, or health alerts. Each use is explored in more detail.

Staying in touch: the children and grandchildren factor

Devices of all types were primarily used for staying in touch with family and friends. This social purpose was the most frequent use of technology and the most common driver to purchase and learn to use technology. Literature links maintenance of strong social connections with good health, especially social-emotional well-being. For example, Cohen and Wills' (1985) stress and coping social support theory emphasizes the stress buffering effects of social support and correlates reduced stress with increased health.

One group of participants commented that 90 percent of their technology use is for "communication and sharing photographs." Facebook, email, texting, Skype and telephoning were methods used to make contact, share photos, arrange meeting times and places, share concerns, ask questions and offer and receive advice and support. Facebook was the least popular strategy; texting and Skype were most commonly used. Participants frequently relied on technology to stay in touch when traveling or when living apart from family and friends. They noted that using texting to stay in touch was "much cheaper than using the phone." Some also used two technologies synergistically (e.g., texting grandchildren before calling them on the phone to determine if it was a good time to call). Other participants noted they receive but do not send text messages, making texting one-way communication for them. One person had a Twitter account and no one mentioned blogging. One adult learning society affiliated with a participant community reported that the most frequent request they receive is for courses on email and social media as well as for help with downloading and uploading photographs.

Grandchildren, children and other younger friends played several important roles in the successful use of technology by participants. Specifically, they motivated older adults to use technology for social communication and often became teachers and tech support for older adults who used technology. Several participants noted "the kids do it" when talking about purchasing, setting up, troubleshooting and upgrading their technology. One participant commented that she had just bought a tablet but did not know how to use it so she invited a "young fellow to dinner and told him I'd feed him dinner if he would come and give me a lesson on how to use

it." Another noted, "kids are much more adept at using technology ... they grew up with it, we didn't."

Family and friends were also motivation for using technology for communication, connection and socialization. Participants commented that they wanted to stay in touch with children and grandchildren so felt it was effective to use their language/medium of communication. One woman said she learned to text because the kids do. Several noted that their children no longer have landline telephones, and, if they do have landlines, they do not answer the phone. Consequently, participants said they had to learn to text to be in touch with them. As one commented, "I had to learn to text to stay in touch with my daughter because you can never get a hold of her any other way." Another said of her adult children, "they don't actually talk on the phone ... they never answer a regular phone."

Some study participants reported wanting to see photos of grandchildren who lived far away and technology provided them a route to see their family members. For example, Skype was a way of watching a grandchild grow up without being physically present. One participant commented she learned to Skype to "see the kids." Another taught his grandson to speak German using Skype, facilitating a familial connection and "keeping his culture going." In another instance, the participant's granddaughter taught the grandmother to use her Blackberry through Skype. In sum, technology use was motivated and facilitated by family and friends and the resulting social connections older adult participants found to be health promoting.

Researching health information and self-care health advice

The second common use for devices was researching health information including drug information, diagnosis, symptoms and self-care health advice. Almost all participants used Google as their search engine. Even the people who admitted they were uneasy regarding using technology admitted they "Google."

Participants commented they used the Internet to supplement health information from healthcare practitioners. For example, following a doctor's visit, participants said they look up their condition or medications on the Internet to help them with unanswered questions and to enhance understanding. As one commented, "the doctor gives you a report with all these words on it and you don't have a clue what they mean and he doesn't have time to explain it ... I go to sites like Mayo Clinic or Rochester or Alberta Health Services to find out what he said." Participants said they preferred medical websites that provide health information "straight up and in plain language."

As older adults become increasingly well-educated consumers, taking ownership of their healthcare, they will want additional health information which the Internet and technology can provide. Participants reported that if a health issue was bothering them, they often looked up the symptoms

on the Internet before seeking medical advice. Further, they "Googled" side effects of medications to avoid calling the pharmacist. They reported a desire to look after their own health to remain in control of health matters and to achieve independent living for as long as possible.

A common concern among participants was how to determine if the health information they obtained on the Internet was credible and valid. They noted they have developed strategies for checking the quality of what they read on the Internet. One said, "I always look it up twice and see if I get the same meaning two times." Another participant agreed saying, "I find more than one site for sure," and then she described how she compares sites to ensure they are in agreement. If the content on sites was consistent, older adults in the study believed the information. However, they remained cautious regarding their ability to assess the quality of Internet sites.

Some participants commented that they often found different sites "say something different about the same health question" and they are left wondering "who to believe" and "how do you know which one is right." All participants expressed a sense of carefulness agreeing that "you can't believe everything you read on the Internet." Focus group participants noted that education regarding how to evaluate the quality of a health website would be of great interest to them.

Participants reported that their doctors were not always encouraging of their use of the Internet to look up health information. One disclosed her doctor said, "don't go on the computer!" when cautioning her about seeking outside information about her symptoms. Almost all participants said they proceed to use the Internet to seek health advice and check symptoms even when their healthcare professionals discourage it, although they are reluctant to admit this to their care providers.

Using technology to overcome limitations and remain independent

Some participants explained they used technology to overcome health-related limitations, such as reduced physical mobility or no longer being able to drive. For example, one 80 year old uses online banking. Her mobility was compromised due to physical changes. Online shopping was not common among participants, but some said it was within their range of possibilities for the future to obtain groceries and other daily needs. In these ways, technology was helping them remain independent and not relying on others for transportation. Participants reported psychological health benefits to independence.

More specific to health monitoring, a limited number of participants reported using home blood pressure (BP) monitors which allowed them to frequently screen these values without needing access to medical facilities. If abnormal values were detected at home they could seek medical help expediently, possibly avoiding morbidity. As one participant said of

mobile monitoring devices, "they allow me to monitor myself ... to look after myself." When the RA introduced the possibility of monitoring INRs at home using systems such as CoaguChek (CoaguChek, n.d.), participants who were taking anticoagulants were very interested in exploring the possibility of purchasing this technology. They commented that the main advantage of home monitoring was "staying healthy" so they could remain independent.

Theme three: enthusiasm regarding using technology for health-related purposes

Participants were clear that they want to continue to use technology and be involved in what is current in this field. They were positive about both current and potential benefits of technology for them. One primary benefit they perceived was increased opportunity to continue to live in their rural or small town community rather than moving to urban centres where health services are readily available. Participants seemed especially keen to learn more about using technology that would help them achieve the goal of remaining independent and community-dwelling. This strong desire seemed to fuel their enthusiasm for technology.

When the RA provided examples of various health technologies such as tele-health, smart phone medication reminders, mobile devices for monitoring vital signs and automatic transmission of abnormal findings to their healthcare team, participants commented that they were not very familiar with most of these uses of technology. However, they almost universally expressed interest in learning about these uses of technology and said they would use them if they were available. Participants brainstormed ideas during the focus groups regarding how they could find out more about available health-related technology and stressed they understood the need to become informed consumers. Some participants commented they planned to talk with their doctors about what health technology might be applicable to them, and others considered the possibility of planning a trade show in their community where vendors would showcase health technology products.

While participants were excited about meaningful uses of health-related technology, they expressed little patience for technology they did not deem useful. For example, when discussing Facebook one person said, "I'm not fond of it. Someone compared it to the old party line ... they put pictures on there and talk about what they are going to have for supper ... who cares?" There was general agreement among focus group attendees that sharing personal details with "strangers" was not their priority use of technology and that it did not contribute to their health.

While enthusiastic about using technology, participants agreed that it was often lack of confidence that prevented them from learning to use it. One woman said, "I don't have the confidence since my stroke ... I feel like I am not going to learn." Another supposed, "confidence is huge for

any of us … my daughter said, 'just push buttons Mom, you can't hurt it'" but another participant quickly suggested that "was not good advice." The older adult participants wanted to continue to learn to use technology to its full potential, and saw health benefits, but some needed support and encouragement to do so.

Participants reported they provide support to one another related to technology use. They were impressed by their peers who were competent with technology and expressed a desire to increase their own technology competence. One participant noted that a peer had his smart phone set with reminders for garbage pick-up dates, etc. As the participant said of this man, "he's got everything on his phone … he's got it beeping all the time." While the participants were impressed with peers who were using technology, and they admitted their own lack of skill in this area, they generally were not afraid to learn more and to start using technology for health-related purposes.

Interestingly, participants used humour to cover current lack of skill and knowledge regarding use of technology. Alongside their growing confidence in technology use, participants readily admitted their relative incompetence with some applications. During the focus groups they kibitzed among themselves and with the RA regarding their limitations with using their devices. For example, one said with excitement on being shown a Blackberry tablet by another person at the focus group, "that's a Blackberry too? Well for heaven's sake. I thought they were little things. That must be one of the newer ones then." The comment caused laughter in the group including the person who made the comment. Another participant noticed during the focus group that he had a message on his smart phone and announced with a smile, "oh, I have a message … you'd better stop the meeting so I can check it." The recipient then observed that the message had been sent many months earlier. Again the group laughed together at this admission. While they laughed at themselves regarding their technology knowledge deficit, they simultaneously expressed a desire to become competent.

Theme four: desire for easy to learn and need for older adult-friendly technology

Participants noted that they want technology that is simple to learn and to use. One woman expressed that her current smart phone was too complicated for her to ever learn to use. Specifically, she thought there were too many steps to making a call and too many uses in one device. Participants suggested that often the fonts are too small, making reading messages challenging. Others noted that the keys were too close together making texting awkward.

Participants viewed using technology as a good use of their time. As they said, "it occupies time and that's good … we are not just sitting in front of a TV … we are learning stuff when we are on the Internet. It is more

interactive. We are not just being force fed." In other words, the older adults valued the opportunity to choose topics, sources and format (written or video). They enjoyed asking questions and sharing what they were learning, making the online experience interactive.

Theme five: frustration with access issues

Some participants commented that living in rural areas and small towns meant that they had lack of choice of provider, inconsistency with reliability of access and limited Internet access, which they found frustrating. For example, only dial-up was available from one major provider in one small town setting in the study. Another provider in the same town did offer satellite and wireless options but access tended to be sporadic. Participants in one focus group reported that their Internet went "down" approximately three times per week and that they often got a "no signal" message. One participant said, "our calls keep getting dropped and we don't have good access." They reported one supplier recommended they not move to smart phones because they would not function reliably in their community. Participants reported that they did have reliable Internet in their local library and hospital but not at their homes. Although frustrated with limited Internet access and cell coverage, they were willing to accept this limitation to live their preferred rural and small town lifestyle. However, they noted that their adult children regarded the access issue as one reason they should consider moving to an urban centre.

Not all rural and small town communities have the same experience with Internet access and reliability. One of the communities in the study was also home to a post-secondary institution and an affiliated continuing education facility for adults, offering courses related to using technology and also offering videoconference workshops. This same community was home to eight churches that used technology. Participants from this community recognized that they were influenced by their connections with these community institutions and that, as a result, they were exposed to uses of technology and were "early adopters" of technology for their own purposes. Participants expressed that they experienced "less fear" in using technology as it was "more common" in their community. This example shows there is inconsistency with technology access among rural and small town communities.

Participants also commented that access was limited by a lack of financial resources for some older adults. As one said of technology, "cost can be prohibitive for those on fixed incomes." Additionally, participants pointed out that the cost of satellite Internet (which provided them with better delivery and more reliable service) was much more than other available Internet options (approximately $20.00/month more). Older adults reported making use of places in their towns where there was open access Internet because having it in their homes was "too big a chunk out of their income." Another

cost issue noted by participants was the cost of staying current, as well as the pressure to "keep up with the Joneses and have the latest technology," which resulted in an access issue for some. Further, although health monitoring devices such as CoaguChek were seen as helpful by participants, they noted that if the cost of such devices was not covered by health insurance, it could be too expensive for them.

Theme six: technology enhances ability to choose to dwell in home communities

Participants expressed a desire to use technology to further their individual determination, choice over where they live and how they live their lives. They believed that technology could help them retain their rural and small town life, while giving them access to urban expertise and healthcare. Technology in their estimation could reduce the potential disparity between quality of healthcare in urban and other settings.

A difference in access and reliability of technology in rural and small town communities was a concern for the participants. They expressed a willingness to sacrifice access to technology for the rural and small town lifestyle but they wanted to become more self-sufficient in terms of technology. Tele-health was available to some to provide access to urban physicians without older adults having to leave their communities. Some participants had experienced tele-health (e.g., sending EKG strips from a pacemaker for interpretation in real-time during a cardiac assessment). One community had a local adult learning society that offered videoconferencing workshops, their local library had audio and e-books and their physicians used tele-health to connect with consultants from the city. In other communities, such use of technology was more limited. In sum, community-dwelling was their goal and technology was seen as a tool to help achieve this goal.

Discussion

The themes described above give rise to strategies and recommendations for enhancing the use of health-related technology by older adults living in rural and small town settings. These strategies and recommendations are as follows.

Develop and make available appropriate older, adult-friendly devices

While participants were keen to use technology, they also expressed a desire for simple-to-use devices. One group suggested devices with three or four functions instead of a menu of choices. Another called for devices with bigger keys commenting, "my fingers are just a little large sometimes." One participant owned a store that sells technological devices and he observed that he gets frequent requests from older adult customers who want "a basic

phone for basic communication." He concluded, "there is a need for simplification" of devices. Participants expressed enthusiasm for current devices that allow font size adjustment. Participants also noted that there is lack of education for older adults regarding what is available in terms of technology that meets their specific needs. Therefore, a market opportunity exists for developers to create more technological devices with fewer features and larger interfaces. Regular education about procurement and use of devices with special emphasis on devices that are available that are older adult friendly in design and function is suggested.

Beyond more streamlined devices in terms of functions and age appropriate fonts, etc., education related to what technology is available to help with issues encountered by some older adults is required. While participants were very interested in using technology, they noted they were not aware of some technologies available. For example, many did not know about technology that would allow them to monitor INR values at home. Regularly scheduled information sessions about new technological products and devices that might help them maintain their health and remain community-dwelling was suggested by participants.

Need for ongoing older adult education regarding credible health information and how to use this information effectively

One common concern expressed by study participants was assessing the credibility and validity of online health information. Participants noted they were interested in learning information assessment strategies. This finding alerts us to the need for older, adult-friendly education regarding assessment of health information found on the Internet. Ongoing education on this topic, using pedagogy appropriate for this age group, is recommended. Educational sessions should be offered at times and places convenient for older adult learners.

Further, study participants wanted to learn how to use the "good" information they find on the Internet to augment their interactions with healthcare providers. More specifically, they wanted to be informed consumers of healthcare information, working collaboratively with physicians, nurses, pharmacists and other healthcare providers to help themselves maintain optimum health. Participants believed that being well-informed by credible online health information prepared them to ask important questions and make informed health choices in discussion with health caregivers. Again, effective education, including collaboration strategies, could help older adults meet this goal.

Participants said they wanted healthcare professionals to help guide them in seeking credible health information online and they wanted these professionals to be receptive to discussing their findings. In sum, older adults in the study wanted their professional partners to be supportive and receptive to their uses of health-related technology.

Reduce cost or subsidy of Internet and data plans for older adults

In terms of access to online information and purchasing of devices and data plans, some older adults noted the financial cost was limiting. If access to health information and monitoring can reduce the need for institutionalization of older adults and help them maintain optional health-negating visits to healthcare providers and facilities, then it could be cost effective to the healthcare system to subsidize device purchase and Internet access fees. For example, if enhanced knowledge and monitoring and effective health reminders decrease morbidity in older adults, they will have fewer emergency room visits, may require less medication and might remain community-dwelling longer. These outcomes would all have a positive impact on healthcare costs as well as potentially on the well-being of the older adults.

Plan communities for older adults to include Internet access

Since older adults want to be technologically current and connected, communities where older adults reside should have Internet access addressed in community design and construction. For example, each older adult housing unit should have wireless Internet access. Public spaces in older adult communities should have community computers for use by residents. Libraries, coffee shops and other community spaces should encourage older adults to stay connected by providing free Internet access and perhaps computer hardware and educational sessions on use of technology as well.

More research related to effective pedagogy for teaching technology to older adults

As increasing numbers of older adults seek to learn to use technology, educational strategies focused on effective teaching for this group will need to be designed. Participants in this study noted that for them, 1:1 learning was the most effective. They preferred to learn about one use of each device per instruction session and then to have a chance to practice that skill before moving to a different use of technology. Further, participants commented that timing of instruction was important. That is, learning something that they had a current need to use was more effective than learning a skill they would not use until sometime in the future. Educators specialized in teaching older adults might be the most skilled at coaching this group as they would be sensitive to assessing educational needs, learning styles and readiness to learn, as well as to creating educational programing that would facilitate learning. Further research is needed focused on creating educational programs for supporting older adults who want to use technology so that they can do so confidently.

Conclusion

Older adults desire to be informed health consumers remaining in control of their health and living independently in their chosen locations. Technology may play a role in helping them secure reliable health information, stay connected to significant supports and remain independent. Indeed, the roles for technology in health maintenance of older adults will likely continue to expand. The study participants already saw the value of technology for good health saying, "we are not afraid of technology for health. There are immediate benefits."

The major outcome of this study is knowledge related to uses of health-related technology to enhance the health, well-being and independence of older adults living in rural and small town communities. Focus group participants provided examples of how they use technology to stay connected with others, research health information and self-care advice, and overcome barriers to living independently in locations of their choice. Participants expressed concerns regarding access issues. Older adults in this study articulated interest in using technology for health-related outcomes and expressed a desire to become increasingly technologically savvy. Strategies for enhancing the use of health-related technologies with this population are detailed.

Further research related to health-related technology use by older adults in rural and small town communities is needed to expand the study findings. This descriptive exploratory study provides foci for further investigation. Investigations related to effective pedagogy for older adults and studies evaluating form and function of technological devices and programs that enhance usability from the older adult perspective could inform technology development. Research-based assessment of the health benefits of using health-related technology in this population could help justify financial investment in devices, education and support, and related infrastructure.

The research reported in this chapter adds to existing knowledge in gerontology in several ways. First, it details ways that older adults living in rural and small town situations use health-related technology to assist them in remaining healthy, independent and community-dwelling. It notes the barriers that these older adults face in using health-related technologies and it provides strategies and recommendations for enhancing the use of health-related technology by older adults living in rural and small town situations. With respect to practice and the nursing care of older people, our findings suggest that many older adults want to use technology for health-related purposes and many need the encouragement and support of nurses to do so. Nurses and other care providers may contribute to helping inform older adults who use technology and can assist them in finding health information regarding how to assess the quality of Internet references and resources. Nurses should learn to collaborate with older adults who want to use technology to become informed healthcare consumers.

This study also provides a foundation for further research and policy, addressing questions related to effective use of technology for improving health self-care self-efficacy and maintaining the ability of older adults to live independently in rural and small town communities. Findings support need for further development of health-related technologies, specifically for older adults. Research focused on the use of technology by older adults could help to address the educational, social support and health monitoring needs of this vulnerable population.

References

Chang, M., Heh, J.S. and Lin, H.N. (2012). Tele-physical examination and tele-care systems for elderly people. *Journal of Community Informatics*, *8*(1). Retrieved from http://ci-journal.net/index.php/ciej/article/view/762/900.

Clark, K. (2007). *The Influence of Social Support on Health for Chronically-Ill Urban and Rural Seniors from Three Canadian Provinces* (unpublished Master's thesis). University of Western Ontario, Canada.

CoaguChek (n.d.). *CoaguChek System Website*. Retrieved from www.coaguchek.com.

Cohen, S. and Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357.

Collen, M.F. (2000). Historical evolution of preventive medical informatics in the USA. *Methods of Information in Medicine*, *39*(3), 204–207.

Elo, S. and Kyngas, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115.

Free, C., Phillips, G., Watson, L., Galli, L., Felix, L., Edwards, P., Patel, V. and Haines, A. (2013). The effectiveness of mobile-health technologies to improve health care service delivery processes: A systematic review and meta-analysis. *PLOS Medicine*, *10*(1), 1–26.

Gao, J. and Koronios, A. (2010). *Mobile Application Development for Senior Citizens*. Pacific Asia Conference on Information Systems (PACIS) 2010 Proceedings. Paper 65. Taipei, Taiwan, July 9–12.

Ghose, T. (2012). Canada needs (and can afford) complete national health care. *CCPA Monitor*, *19*(7), 18–20.

Heckerman, D. (2009). Healthcare delivery in developing countries: Challenges and potential solutions. In T. Hey, S. Tansley and K. Tolle (eds). *The Fourth Paradigm*. Redmond, WA: Microsoft Research.

Innes, A., Morgan, D. and Kosteniuk, J. (2011). Dementia care in rural and remote settings: A systematic review of informal/family caregiving. *Maturitas*, *69*(2), 34–46.

Kinsella, K., Beard, J. and Suzman, R. (2013). Can populations age better, not just live longer? *Generations*, *37*(1), 19–26.

Koch, S. (2005). Home telehealth: Current state and future trends. *International Journal of Medical Informatics*, *75*(8), 565–576.

Mori, K. and Harada, E. (2010). Is learning a family matter? Experimental study of the influence of social environment on learning by older adults in the use of mobile phones. *Japanese Psychological Research*, *52*(3), 244–255.

Park, E., Do, S., Shin, H. and Nam, H.S. (2009). *An Adaptive Streaming Technique for Interactive Medical Systems in Mobile Environment.* Proceedings of the 6th International Conference on Mobile Technology, Application & Systems, Nice, France, September 2–4.

Public Health Agency of Canada (2010). Retrieved from www.phac-aspc.gc.ca/cphorsphc-respcacsp/2010/fr-rc/cphorsphc-respcacsp-06-eng.php

Rosenberg, T. (2012). Acute hospital use, nursing home placement, and mortality in a frail community-dwelling cohort managed with primary integrated interdisciplinary elder care at home. *Journal of the American Geriatrics Society*, *60*(7), 1340–1346.

Seto, E., Leonard, K.J., Masino, C., Cafazzo, J.A., Barnsley, J. and Ross, H.J. (2010). Attitudes of heart failure patients and health care providers towards mobile phone-based remote monitoring. *Journal of Medical Internet Research*, *12*(4). Retrieved from www.jmir.org/2010/4/e55

Sherman, A.M., Shumaker, S.A., Rejeski, W.J., Morgan, T., Applegate, W.B. and Ettinger, W. (2006). Social support, social integration, and health-related quality of life over time: Results from the fitness and arthritis in seniors trial (FAST). *Psychology & Health*, *21*(4), 463–480.

Soderstrom, L., Tousignant, P. and Kaufman, T. (2001). Acute? Care at home: The health and cost effects of substituting home care for inpatient acute care: A review of the evidence. *Journal of the American Geriatrics Society*, *49*(8), 1123–1126.

Spinsante, S., Antonicelli, R., Mazzanti, I. amd Gambi, E. (2012). Technological approaches to remote monitoring of elderly people in cardiology: A usability perspective. *International Journal of Telemedicine & Applications*, *2012*, 1–10.

Stall, N., Nowaczynski, M. and Sinha, S.K. (2013). Back to the future: Home-based primary care for older homebound Canadians: Part 2: Where we are going? *Canadian Family Physician*, *59*, 243–245.

Statistics Canada. (2001). *Rural and Small Town Canada Analysis Bulletin*, 3(3). Catalogue no. 21-006-XIE. Retrieved from www.statcan.gc.ca/pub/21-006-x/21-006-x2001003-eng.pdf.

Terry, M. (2010). Medical apps for smartphones. *Telemedicine and e-Health*, *16*(1), 17–22.

Tryssenaar, J. and Tremblay, M. (2002). Aging with a serious mental disability in rural Northern Ontario: Family members' experiences. *Psychiatric Rehabilitation Journal*, *25*(2), 255–265.

Tseng, C.H., Lin, H.N., Cheng, S.Y., Heh, J.S. and Lo, W.M. (2007). *Clinical Alert Mechanism Based on X-Chart in Physical Signal Examination System.* Proceedings of the 14th International Congress of Oriental Medicine, (ICOM 2007), Taipei, Taiwan, December 2–4, No. 0081.

World Health Organization. (2011). *Definition of an Older or Elderly Person.* Retrieved from www.who.int/healthinfo/survey/ageingdefnolder/en/index.html.