New and Emerging Issues for Technologies to Support Older Adults to Age in Place:
Findings From a Workshop of Experts

Dick Whiddett, Massey University, New Zealand

Inga Hunter, Massey University, New Zealand

Phoebe Elers, Massey University, New Zealand

Caroline A. Lockhart, Massey University, New Zealand

Hans W. Guesgen, Massey University, New Zealand

Amardeep Singh, Massey University, New Zealand

iD https://orcid.org/0000-0003-1916-3347

ABSTRACT

There is increasing interest in using emerging technologies, such as social media, digital devices, and smart home technologies, to distribute information throughout an older person's formal and informal support networks to assist them to live independently in their own home (to age in place). An open research workshop was conducted as part of a health informatics conference, 24 self-selected participants were organised into sub-groups to discuss four generic questions relating to the collection and distribution of an older person's health information. Thematic analysis of the discussions identified three major themes relating to roles and responsibilities of stakeholders, information collection and interpretation, system management and control. The findings emphasise the importance of taking a socio-technical perspective to understand the requirements of all stakeholder groups. A number of new and emerging research issues are identified, particularly in relating to the long-term management and adaptation of personal support networks and technologies.

KEYWORDS

Age in Place, Aged Care, E-Health, Pervasive Digital Technologies, Social Media, Technology Management, Telehealth

INTRODUCTION

Like other developed countries, New Zealand is experiencing an ageing population (OECD.Stat, 2019; Ministry of Social Development, 2019), and more people are spending longer in poor health (Ministry of Health, 2016), often with multiple health problems (Ministry of Health, 2016), challenging health systems to find ways to provide sustainable and affordable services (Ministry of Health, 2016a). The New Zealand Ministry of Health has strongly directed a move to new models of care, away from the traditional models based around hospital or residential care, to a more patient-focused integrated system within an expanded primary care where the person is supported to remain in their community (Ministry of Health, 2001; Ministry of Health, 2016; Ministry of Health, 2016a), otherwise known as 'ageing in place' (where 'place' is that which the older adults calls home) (Labour, Greens and

Grey Power, 2017; Boldy et al., 2011; Wiles et al., 2012). For the older person, this would usually be either in their own home, with family, or in supported community accommodation, which is often preferred by older people and their families (Labour, Greens and Grey Power, 2017; Boldy et al., 2011; Wiles et al., 2012). The use of enhanced information and communication technology (ICT) is often seen as a key enabler of these new models of care (Ministry of Social Development, 2019; Ministry of Health, 2016; MWNZ, 2011).

Smart home technologies, such as infra-red motion detectors, sensors built into beds and chairs and recording devices, can be used to create an intelligent environment that can monitor and control the environment, track activities of daily living (ADL) (Blackman et al., 2016; Peek et al., 2017), and recognise significant departures from normal behaviour by the occupants (Guesgen and Marsland, 2017; Loane et al., 2012; Rantz et al., 2015), an approach sometimes referred to as ambient assisted living (AAL). Common wearable technologies such as fitness trackers and watches as well as more specialist devices incorporated into clothing are increasingly used to monitor the health and activity of people by measuring activity and heart rate etc. (Lewis & Neider, 2017; Li et al., 2019). Smart home appliances such as televisions, fridges and cooking appliances can also monitor people's activities and ensure that they seem to be eating and looking after themselves and following their daily routines. Usually, these sensor technologies use wireless communications technologies to connect to a central hub where the data is stored and processed, and alerts are raised with caregivers when falls or anomalous behaviours are detected. An excellent summary of the various devices in use and issues relating to their deployment can be found in the paper by Booth et al. (2019).

Combinations of these various technologies have been the subject of much research and development for several years, but have not yet been adopted into new models of care (Ienca et al, 2018). This lack of uptake has been attributed to a range of causes by various studies. Some authors have suggested that it is caused by the lack of clear user-requirements of the various stakeholder groups (Ienca et al., 2018; Wang et al., 2019) and a poor fit between technologies and people's needs (Greenhalgh et al. 2015; Gutierrez et al. 2017). Poor interface design which does not take into account the physical and sensory limitation of older is also seen as a cause for concern (Pietrzak et al., 2014; Yusif et al., 2016). Furthermore, adoption has been impeded by uncertainty around many societal and economic issues surrounding their utilisation, such as privacy and confidentiality of information and concerns about the reimbursement for services (Loane et al, 2012; Ienca et al, 2018; Kapadia et al, 2015; Yusif et al, 2016).

Many existing telemonitoring systems for transferring data from patients to clinicians tend to support a one-to-one relationship, such as transferring blood pressure readings to a clinic nurse (Day & Johnson, 2016; Ruland et al., 2013) and use common communications techniques such as sending text messages from mobile phones (Hammett, Sasangohar, & Lawley, 2018). This dyadic approach does not cater for the complex nature of aged care, where older people frequently have co-morbidities, multiple health practitioners and informal carers (Carretero et al., 2012). We argue that the use of social media types of technologies would offer the option of many-to-many relationships between the older person, their informal support network of family and friends, as well as their formal support network of health providers, thus widening and individualising the support network of the older person.

Our conceptual model of the structure of the stakeholders who support an older person is presented in Figure 1. This model emphasises the concept of individualised care by placing the older person at the centre and surrounding them by two layers of support services; an inner informal support layer comprised of family, friends and other social organisations, who provide ongoing practical and emotional support such as personal care, household work, company and emotional assistance (Carretero et al., 2012), and an outer layer of more formal support from healthcare and social service providers. The inclusion of the informal support layer emphasises the increased complexity of these new models of care in comparison to the more traditional dyadic patient-professional situation. It explicitly recognises the changing roles and relationships and the arrows indicate the complex sets

11 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/new-and-emerging-issues-for-technologies-to-support-older-adults-to-age-in-place/267792

Related Content

Biochemic System of Medicine: Oldest Form of Nutraceutical Therapy
Srijan Goswami, Sagarika Mitra, Piyasee Paul, Dipjyoti Deyand Sankalan Das (2019).
Nutraceutical and Functional Foods in Disease Prevention (pp. 403-431).
www.irma-international.org/chapter/biochemic-system-of-medicine/207987

Environmental Phthalate Exposure in Relation to Reproductive Outcomes and Other Health Endpoints in Humans
 Sameena, Riyes Un Azizand Aubid Bashir (2020). *Handbook of Research on Environmental and Human Health Impacts of Plastic Pollution (pp. 314-339).*
www.irma-international.org/chapter/environmental-phthalate-exposure-in-relation-to-reproductive-outcomes-and-other-health-endpoints-in-humans/233361

Enhancing Disability Determination Decision Process Through Natural Language Processing
Eslam Amer (2019). *International Journal of Applied Research on Public Health Management (pp. 15-28).*
www.irma-international.org/article/enhancing-disability-determination-decision-process-through-natural-language-processing/232254

More than Pills and Beds: Contemporary Challenges in Social Work Practice and Mental Healthcare
Sebastian Rosenbergand Fiona McDermott (2015). *Evidence Discovery and Assessment in Social Work Practice (pp. 113-129).*
www.irma-international.org/chapter/more-than-pills-and-beds/119378

A Neurology Clinical History Management System
Antonio Sarasa (2020). *International Journal of Applied Research on Public Health Management (pp. 13-26).*
www.irma-international.org/article/a-neurology-clinical-history-management-system/255727