

**Technology in health and social care: a critical reflection
from across two continents**

PEDELL, Sonja and CRAIG, Claire <<http://orcid.org/0000-0002-3475-3292>>

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/17602/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

PEDELL, Sonja and CRAIG, Claire (2017). Technology in health and social care: a critical reflection from across two continents. In: BARRON, Deirdre and SEEMAN, Kurt, (eds.) Design4Health 2017. Proceedings of the 4th Conference in Design4Health, Melbourne, 4-7 December 2017. Sheffield, Sheffield Hallam University, 196-199.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

Technology in health and social care: a critical reflection from across two continents

Keywords: Technology design, older adults, health care, social care, meta-analysis, international study

Abstract summary

An ageing population, with pressure on health care and social care capacity, is driving demand for innovative solutions to support independence at home. Digital technologies have been proposed as a way to respond to these challenges, and as a consequence, the delivery of care is being transformed. However, in spite of technology being positioned as a panacea to meet the current challenges facing health and social care, a lack of critical discourse around technology use in this context is of concern. Issues regarding user acceptance, role of care technology and setting realistic expectations on what technology can contribute to these challenges have yet to be addressed.

Technology in health and social care

This paper shares research in the context of older people and technology undertaken across two continents (Australia and Europe) with comparable populations. Whilst some differences exist, the research highlights similarities: ways of introducing technologies, factors that influence technology use, and, most importantly, the broader ethical questions that digital technologies used in the context of health and social care pose. Early developments tended to focus on buzzers and pendants to raise alarms in case of falls (De San Miguel & Lewin, 2008; Lorence and Park, 2006). These technologies have gradually been augmented by devices concerned with remote monitoring of physiological data and sensors around the home to offer reassurance to families and carers (Steele et al, 2009; Vergados et al, 2008; Yan et al, 2010).

Given the potential of these technologies to increase autonomy, support communication, and ease care needs, significant investment in such devices have been made. Within the United Kingdom this has taken the form of the Whole Systems Demonstrator Trial to explore the efficacy of telehealth, and in North America this has manifested itself in the National Home Telehealth Programme.

In spite of this global investment, the evidence to date supporting the use of assistive technologies such as telecare and telehealth remains mixed (Bentley et al 2015). Whilst initial results from the UK Whole Demonstrator randomised controlled trial were extremely promising with 45% reduction in mortality rates and 20% reduction in emergency admissions, Steventon et al have emphasised the need for caution (2012). Criticism has highlighted the low uptake of the intervention and poor user acceptance (Gornall, 2012; Sanders et al, 2012). The UK Health Technology Strategy Board has emphasised the need for further research to build an understanding of the factors that prevent end-users from engaging fully in technology-driven health solutions.

The research undertaken by researchers in Australia and the United Kingdom has sought to build understanding of the issues end-users define as being important barriers to engaging in technology within the context of health and social care. By combining and comparing this data it becomes possible to gain insights across countries to create solutions that are more globally applicable.

The first researcher focuses on the development of socio-technical systems and design solutions for health and wellbeing with emphasis on older adults. Their research seeks to develop services and products for older people ensuring that their emotional and social needs are incorporated into every stage of the development process. The second researcher in UK is part of a trans-disciplinary group for design, health-care and creative practices, developing products, services and interventions that promote dignity and enhance quality of life. The group aims to engage people who are under-represented in telehealth/telecare research by their age, ethnicity or socio-economic status.

Results of meta-analysis

Comparing data from these two research strands in a qualitative meta-analysis (Hoon, 2013) across six studies (refs anonymised) the following themes evolved:

Meaningfulness and integration into life context

The relevance of the technology was central to whether or not technology was utilised. Older people described how technology needed to operate within the context of their life and to reflect personal values. The following quote reflects the challenges many individuals described:

“The computer sits in the corner watching what we do but it’s not a part of what we do.” (participant aged 72, UK).

Ease of use

Technologies that were not intuitive to the end-user were problematic. Inability to successfully master a device not only resulted in feelings of frustration but also in individuals questioning their own levels of competence and abilities more generally:

“When you can’t operate it you feel do helpless don’t you? I end up being dependent on my son to come around to explain things but he is busy and I seem to spend a lot of my time waiting ...”.(participant aged 65+,UK) and *“The green button? The green button is for silly questions –actually I have no idea.”* (participant aged 90, Australia).

Feeling included, part of society and connected

These feelings of loss of confidence could in the extreme be exacerbated to individuals not taking up technologies and consequently feeling they were missing out in some way and be excluded from the world:

“When you don’t have access to technology there is a feeling always that you are on the outside of society that you are missing out in some way” (participant aged 65+, UK).

This could compound feelings of social isolation. In some instances where health technologies were suggested as an alternative to accessing mainstream services participants spoke of feeling that a form of social contact with their health-care practitioner had been taken away. Indeed, these practitioners did not only monitor health but fulfilled an important social role:

“I would much rather see a health practitioner than speak to a computer. I look forward to meeting with the nurse or the GP. It’s actually one of the few times I see anyone (participant, aged 70+, UK).

Shifting the balance of relationships (power/control/autonomy)

A similar picture emerged with relation to alarm technologies, which were meant to reassure family members, but ended up reducing face-to-face visits and social contact with family members. This led to pressure on relationships as older people expressed feelings of not being cared about, or at worse, being patronised. This, in

turn, could lead to a shift in the balance of relationships, impacting on individuals' sense of control and autonomy:

"She always would joke about her cowbell [alarm pendant], and complain about it. "Look at what my kids are making me do," kind of comment. A slight resentfulness about it. And it was kind of an area against her independence" (carer of participant, aged 92, Australia).

Alternatives to not using the technologies were framed as needing to move to a nursing home. Ironically the argument that technology can increase choice and autonomy could have the opposite effect as participants felt monitored and not able to leave their home. The feelings expressed by individuals and the relationship they had with technology was very much dependent on how and when it was introduced and the level of choice individuals felt they had in relation to it.

Concluding recommendations

This paper has highlighted main challenges identified across different projects and continents. These points of commonality highlight that bigger consideration of choice, training, how products are introduced, and the meanings that they carry are necessary and products need to be understood within the context of people's lives. Despite some differences in Australia and UK these broader themes emerged from both research teams.

Additionally, current products are telling us of the broader attitudes of society and how older people are perceived. We need to think about applications and scenarios and what they mean to human relationships. It is not enough just to manufacture products in response to perceived problems without taking a much broader view of the complexity of people's lives about how technology changes people's relationships. We suggest that a shift in these perceptions on ageing will also give way to innovative and enabling products in health and social care.

References

Bentley, M.W., Minstrell, M., Bucher, H., Sproule, L., Robinson, A. and Stirling, C. (2015). Aged care nurse practitioners working in general practice. *Journal of Clinical Nursing*, 24(23-24) pp. 3745-3747.

Chamberlain, P. Craig, C and Dexter, M (2016) InTacT: insights into telehealth and care technology in Langdon, P. Lazar, J. Heylighen, A and Dong, h. (eds.) Designing around People: CWUAAT 2016. Switzerland, Springer pp.85-94.

Craig, C. and Chamberlain P (2017) Designing health technology: the ethical dimension. In Dastbaz, M Arabnia, H and Akhgar, B (eds) Technology for smart futures. London, Springer.

De San Miguel, K. and Lewin, G. (2008). Personal emergency alarms: What impact do they have on older people's lives?. *Australasian Journal on Ageing*. 27 (2): pp. 103-105.

Gornall, J. (2012). TELEHEALTH Does telemedicine deserve the green light? *BMJ: British Medical Journal*, 14 July 2012, Vol.345(7865), pp.20-23

Hoon, C. (2013). Meta-Synthesis of Qualitative Case Studies An Approach to Theory Building. *Organizational Research Methods*. 16. 522-556.
10.1177/1094428113484969.

Sanders, C., Rogers, A., Bowen, R., Bower, P., Hirani, S., Cartwright, M., et al. (2012). Exploring barriers to participation and adoption of telehealth and telecare within the Whole System Demonstrator trial: a qualitative study. *BMC Health Services Research*, 12:220. doi.org/10.1186/1472-6963-12-220

Steele, R. Lo, A., Secombe, C. & Y.K. Wong (2009): Elderly persons' perception and acceptance of using wireless sensor networks to assist healthcare. *International journal of medical informatics*, 78(12):788-801.

Steventon A, Bardsley M, Billings J, Dixon J, Doll H, Hirani S, Cartwright M, Rixon L, Knapp M, Henderson C, Rogers A, Fitzpatrick R, Hendy J and Newman S (2012) 'Effect of telehealth on use of secondary care and mortality: findings from the Whole System Demonstrator cluster randomised trial', *British Medical Journal*344: e3874

Lorence, D., and Park, H., (2006): New technology and old habits: The role of age as a technology chasm, *Technology and Health Care*, 14(2):91-96.

Vergados, D., Alevizos A., Mariolis, A., & Caragiozidis, M., (2008): Intelligent Services for Assisting Independent Living of Elderly People at Home. Proceedings of PETRA '08, 79: ACM.

Yan, H., Hu, H., Xu, Y., & Gidlund, M., (2010): Wireless sensor network based E-health system implementation and experimental results. IEEE Transactions on Consumer Electronics, 56(4):2288-2295.

List of nine references of studies being part of meta-analysis anonymised for review.