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Identifying and Addressing the Main Obstacles to the Successful Implementation of Telecare for the Elderly

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ABSTRACT

Telecare is growing in prominence as the solution to the challenges posed by an ageing society, yet there are still widespread difficulties with its execution. The source of these challenges can be found in the complexity of telecare, as it encompasses technological and organisational innovations, which create many obstacles to implementation. On top of that, policy makers and health officials often forget that technology, such as telecare, is embedded in a much wider context than solely the technical artefact, as it also incorporates the socio-economic aspect. Using research on potential barriers to the successful implementation of telecare, this paper seeks to find the main hindrances to its execution in order to identify where the biggest problems lie. Based on these findings it then proceeds to analyse the ingredients of success that researchers are proposing. It concludes with the idea that the most important factor that has hitherto created severe impediments to the successful implementation of telecare is the lack of enough attention being given to hearing out the actual needs of the elderly and their thoughts about telecare.

Introduction

In the UK and Europe the proportion of older people in the population is increasing and will continue to increase for at least the next three decades. Some of the recent population projections for Europe show that the proportion of people aged over 60 is set to rise from 15.9% in 2005 to 27.6% in 2050 (Milligan et al., 2011). This data has sparked an enthusiasm amongst policy makers and health officials around e-health systems, which can help improve the quality and efficiency of care being delivered (Mair et al., 2012). One of such systems is telecare for the elderly. It is important to note at this point that a big problem for researchers in this field is the loose terminology as 'telecare', 'telehealth' or 'telemedicine' are often used interchangeably (Barlow et al., 2006). In this paper the word telecare is going to be used, which can be defined as the remote monitoring and delivery of health and social care to older people using ICT.

Telecare has been popular amongst policy makers as it addresses the preference of the elderly to live in their own house and choose their own lifestyle (Rocha et al., 2013) rather than unnecessarily spending time in hospitals (WSD Programme, 2011) or end up in care homes, which are increasingly seen as the *"option of last resort"* (Milligan et al., 2011). Moreover, this technology has become a desirable solution not only because the patient doesn't need to visit a clinic, but mainly for two policy reasons. Firstly, there is an expected growth in the percentage of people who are 65 and over (Heart & Kalderon, 2013), which will put an even greater strain on the healthcare system. Secondly, this is due to the average annual cost of health care for this segment (Heart & Kalderon, 2013). Nevertheless, although telecare has been around for some time, not much has changed with its adoption. Therefore, this paper aims to identify the main obstacles to the successful implementation of telecare for the elderly and to propose ways of addressing them.

The debate in the literature seems to revolve around two issues, whether such a system can be efficient and beneficial and whether it can be successfully implemented. The literature review part of this paper shows that telecare can be efficient and beneficial and that it can be implemented, yet in order for this to be done successfully two factors have to be given more weight - the socio-economic aspect of telecare and the complexity of this new technology. Keeping these two factors in mind, the paper then uses Fleuren's framework that outlines determinants central to innovation implementation (Postema et al., 2012) and uses it in the context of telecare; this analysis highlights the main obstacles to the successful implementation of telecare. Then an examination of the ingredients of success researchers are proposing

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is carried out. Next a discussion is provided that critically examines the research provided and makes future proposals. Finally, a conclusion is reached proposing that disregarding the socio-economic aspect of telecare is the critical factor that stands in the way of its successful implementation.

Literature Review

Can Telecare be Efficient and Beneficial?

Most ICT projects for the elderly remain at the state of research (Ludwig et al., 2012), because academics and professionals cannot agree on whether telecare for the elderly would produce efficient results - whether it would be cheaper in comparison to standard hospital care, and whether it would be more beneficial for the elderly. One of the ways in which cost-effectiveness is measured is by looking at the number of clinic visits. A number of research projects have found that using ICT to provide care for the elderly has led to time reduction in ambulatory visits and a reduction in hospitalization (Or et al., 2009; Steventon et al., 2012). However, due to the projects being conducted on small samples there was a lack of convincing evidence to support the claim that home telecare is efficient (Or et al., 2009). There have also been contentious discussions in determining whether telecare is beneficial for the elderly. The views ranged from asserting that it would not be beneficial, as the elderly are not yet ready to adopt health-related ICT (Heart & Kalderon, 2013) to the views that if only the human factors and ergonomic concerns surrounding ICT were resolved there would be a potential for success (Or et al., 2009). Thus for a period of time there was no clear and affirmative answer to whether telecare for the elderly can be efficient and beneficial. This contention changed with the introduction of the Whole System Demonstrator Programme (WSD).

The WSD was set up to show what telecare is capable of (WSD Programme, 2011) and was conducted on a much bigger (in comparison to previous studies) sample of people. The WSD was launched in 2008 and is the largest randomised trial, involving 6.191 patients, of telecare in the world (WSD Programme, 2011). Early findings show that if used correctly, telecare can deliver a substantiate reduction in costs, such as a 15% reduction in Accident & Emergency visits and most strikingly a 45% reduction in mortality rates (WSD Programme, 2011). These results show that telecare has the potential of delivering both efficient and beneficial outcomes. Despite the WSD having played an important role in the progression of the implementation of telecare, it may be questioned whether it was a watershed moment for the rise of telecare. Although the benefits of telecare were finally formally acknowledged, concrete guidelines and solutions were not provided in key areas such as cost effectiveness (Henderson et al., 2013) or barriers to participation and adoption (Sanders et al., 2012), which might be one of the reasons why WSD's results did not coincide with a sudden rise in the adoption of telecare.

Can Telecare be Successfully Implemented?

The second part of the debate concerns the successful implementation of telecare. The first strong strand in the literature points to the complexity of telecare as one of the main obstacles to its successful implementation. It is a complex process as it involves a combination of technological and organisational innovations (Barlow et al., 2006) that result in a time consuming struggle of satisfying diverse stakeholders (Mair et al., 2012). Telecare involves a large number of stakeholders as the parties involved are from across health and social care services; there are divergent views in terms of perceptions of risk and value systems between different parts of the care system; often individual stakeholders have an incomplete understanding of the technology proposed; finally costs and benefits may prioritise some stakeholders over others (Barlow et al., 2006). Although this reasoning seems quite straightforward, the interesting fact is that the extent of complexity surrounding the implementation of telecare for the elderly proved to be much higher than initially anticipated (Watson, 2010).

The second strand in the literature derives from the Ensemble View of Technology. There is a tendency in the IT field for accepting the IT artefact for granted without considering its interdependence with the social context (Orlikowski & Iacono, 2001). This appears to be the case in the context of telecare as great weight is given to the technology itself, but not to the implementation process. The Ensemble View of Technology says that while the technical artefact may be the central element, in this case the health enabling technologies, one must not forget about applying the technical artefact to some socio-economic activity, in this case the needs of the elderly (Orlikowski & Iacono, 2001). Yet this is exactly what is being omitted as there is a lack of proper guidelines for implementation (Koch, 2006), which results in problems with information access, communication and patient self-management (Or et al., 2009).

These findings highlight that implementation of telecare for the elderly is a complex process, which requires paying attention not only to the technology involved, but more importantly getting a wider perspective on how this technology can change our perspective of care. Only by understanding what changes this technology will bring and what hindrances have to be tackled along the way can we think about successfully implementing telecare.

Analysis

1 The Main Obstacles to Implementation

Before going into a discussion and evaluation of the main obstacles to implementation, one must understand the context in which home telecare is placed. As identified above, home telecare is seen as a solution to the problem of the increasing proportion of the population aged over 60, which is why policy-makers and health officials are so eager to push it through. However, this eagerness to implement telecare as swiftly as possible has resulted

in the industry being dominated by suppliers that are driven by a technology-push rather than a demand-pull approach (Milligan et al., 2011). Such an approach completely opposes the valuable claims propagated by the Ensemble View of Technology by not even considering whether there is a demand for telecare by the elderly. This has resulted very often in an *"absence of a "clear set of users" who expressed a demand for the service"* (Barlow et al., 2006), which highlights the extent of ignorance of the socio-economic aspect of technology. If such attitudes were prevalent over the years, one should not be surprised that the implementation of telecare did not proceed as planned.

Nevertheless, after 2007 research in this domain shifted from concentrating on mere organisational issues towards socio-technical issues (Mair et al., 2012), which suggests that policy makers must have recognised that their perspective was too narrow. A helpful way of evaluating healthcare implementation success in general has been proposed by Fleuren in her literature review, where she lists five domains that should be considered: innovation characteristics, the socio-political context, the characteristics of the adopting persons, the characteristics of the organization and the implementation strategy (Fleuren et al., 2004). Some scholars include more detailed dimensions. For example, Barlow et al. (2006) take into account the availability of a local support framework and top management support. There are also other approaches that may be adopted such as the Normalisation Process Theory, which "*assists in explaining the processes by which complex interventions become routinely embedded in health care practice*" (May, 2007) by looking at four key factors that can either promote or inhibit the embedding of a complex intervention, such as telecare, which are: interactional workability, relational integration, skill-set workability, and contextual integration. Nevertheless, having critically reviewed the literature on the topic of telecare for the elderly, the determinants that kept on being repeated from paper to paper and have been found to be central to innovation implementation are: the characteristics of the person adopting the innovation (user) (Fleuren et al., 2004) and the implementation strategy, the so-called stakeholder involvement (Postema et al., 2012).

1.1 The Characteristics of the Person Adopting Innovation

The characteristics of the person adopting innovation (user of the innovation), such as knowledge and skills (Fleuren et al., 2004) play a crucial role in implementation, as only by understanding the targeted demand group can an innovation be successfully implemented. As telecare offers a completely different experience of care from the ones previously known to elderly people, one of the main characteristics that create obstacles to implementation is the elderly's uneasiness and anxiety about technology (Sanders et al., 2012). This uneasiness and anxiety can produce a lot of impeding implications to the adoption intention such as discomfort with the technology of telecare, concerns about competency to operate the equipment (Sanders et al., 2012) or a reluctance to accept telecare (Rahimpour et al., 2008). Related to reluctance is a second characteristic that creates obstacles to implementation, which is resistance to change. Research has shown that some patients do not feel comfortable with the changes the new equipment might bring, such as time pressure and disruption to their daily activities (Sanders et al., 2012), as they may feel the aforementioned anxiety related to the new technology being offered and they may question their abilities to operate it. This is why working on the elderly's self-efficacy is such an important task, as it can broaden their knowledge on the topic of telecare and thus improve their beliefs in their own abilities. Furthermore, by targeting such fears with educational interventions (Barlow et al., 2006), even more personal concerns related to technology, such as threat to identity (Sanders et al., 2012) or security and safety concerns (Mair et al., 2012), can be tackled.

1.2 The Implementation Strategy

The implementation (innovation) strategy is perceived as a crucial component to innovation implementation (Postema et al., 2012), such as telecare, as it simultaneously acts as a bridge and a trigger between innovation determinants and the innovation process as seen below:

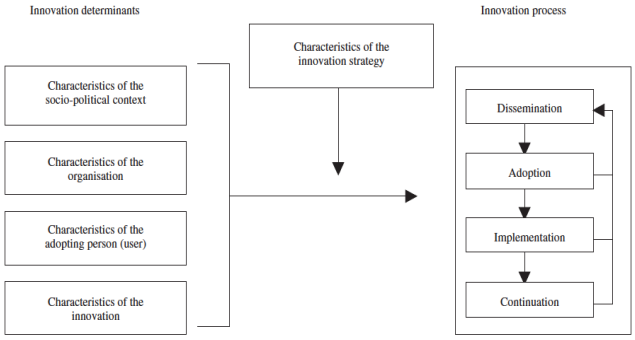

Figure 1. Framework Representing the Innovation Process and Related Categories of Determinants (Fleuren et al., 2004, p. 108)

The figure (Fleuren et al., 2004) highlights the significance of the implementation strategy as it shows that strategy facilitates the implementation process. Therefore, it should come as no surprise that one of the main obstacles to implementation is that implementation instruments are not being designed in alignment with goals (Kapsali, 2011). Different goals require different strategies, approaches, stakeholder involvement and structure (Van Offenbeek & Boonstra, 2010). This observation may serve as an explanation as to why many telecare projects have not been successfully implemented. In order to better understand implementation strategy, one should consider one of its key components - successful stakeholder involvement, which is especially true in the domain of telecare where there is a diverse stakeholder body involved. *"The more stakeholders there are, the harder the implementation will*

be" (Barlow et al., 2006) - as telecare involves many complex arrangements, the key to its successful implementation lies in diligently planning the innovation strategy and most importantly, aligning it with the goals set.

2 Ingredients of Success that Researchers are Proposing

The analysis of the characteristics of the person adopting innovation and the implementation strategy have provided us with a clearer picture of the obstacles to implementation and the ways in which they can impede the implementation process. Leading on from these observations, it will now be considered how some of the impediments created by the characteristics of the person adopting the innovation and the implementation strategy can be resolved.

2.1 Training

As identified above (see 1.1), one of the main determinants that can impede implementation are the characteristics of the person adopting innovation (user) (Fleuren et al., 2004). In the case of telecare, one of the most important obstacles to implementation is anxiety about technology. Researchers have shown that technology anxiety does not necessarily remain constant over time (Sintonen & Immonen, 2013) and that such fears can be targeted by educational interventions (Barlow et al., 2006). These are promising observations, which show that such impediments can be tackled. The question that then follows is how to successfully do so. What has to be remembered is that the adoption intention differs amongst potential elderly telecare users, who can be broadly divided into two groups, the well-coping senior citizens and the frail senior citizens (Sintonen & Immonen, 2013). Therefore when considering how to alter the elderly's level of anxiety it should be remembered that training has to be targeted appropriately to an individual's level of knowledge, skills (Sintonen & Immonen, 2013) and their perception about technology in general. Moreover when aiming at the older segment of the population it should be acknowledged that in terms of technology their abilities will be inferior to those more accustomed with technology, and this insight should be considered as early as in the design phase of the service. Only with a design that is easy to learn, will it be possible to train the elderly to accept the new service being proposed to them and thus successfully implement it.

2.2 Consideration of Patients' Expectations and Perception

Another impediment that can be resolved with a little bit of work is the elderly's reluctance to change, which stems from their concern about the potential disruption that may be caused by telecare to their daily lives (Rahimpour et al., 2008). This concern can be resolved by considering the patients' expectations and perceptions about telecare. This conception is in line with the Ensemble View of Technology; when dealing with the implementation of telecare is should be held in mind that "as we shape technology, so we build society and that nothing is purely social or purely technical" (Hendy & Barlow, 2012). For this reason a good way of resolving the issue of reluctance to change is by involving older people from the outset in discussions around the way telecare could be developed (Milligan et al., 2011). The elderly should have the opportunity to discuss their expectations and perceptions of the forms of care proposed, which could then be used in the design and implementation stages (Sanders et al., 2012). The elderly themselves have pointed out in one study that those designing new technologies should take into account the older people's need for meaningful human interactions (Milligan et al., 2011). The extent to which human contact is valued by older people is exemplified by the findings of several researchers, where it was found that telecare should not act as "a replacement of physical care, but as an enhancement of quality of care" (Postema et al., 2012), or, even more strongly, that "technology has a part to play but it is not a substitute" of care (Milligan et al., 2011). These insights show how strongly older people value face-to-face contact, which indicates that when thinking about successful implementation of telecare human interactions should not be ignored, but should still play a part.

2.3 The Importance of Champions in Implementation

The second potential obstacle to implementation that has been considered in this paper was the implementation strategy. It was found that a good implementation strategy is imperative for implementation success, yet the question remains, how to achieve that. An extensive strategy analysis could go for pages, hence this paper is going to concentrate on the role of champions, which figures as an essential ingredient in the domain of telecare. In healthcare there is a general acceptance that 'champions' play a vital role in organisational change (Hendy & Barlow, 2012). Research has shown that *"the success of home telecare…is critically dependent on enthusiastic champions along the implementation trajectory"* (Postema et al., 2012). The reason for this can be found in the idea of recruiting local champions as a way of promoting telecare (Mair et al., 2012) in an environment of diverse stakeholders. Such champions become key figures not only in the promotion of telecare, but also in convincing all of the stakeholders to work for the same cause. This task is extremely difficult, but can be achieved more quickly if there is support from front-line staff and management (Hendy et al., 2012). Once this is achieved, the task of promoting a new innovation, such as telecare, becomes easier. However, the role of champions should be looked at with caution as, given the strength of their role, it could become a double-edged sword. The reason being that if a champion ends up having a negative attitude towards telecare, staff commitment could be jeopardized and this could significantly impede implementation (Mair et al., 2012). On this point some authors have found that organizational champions are effective in the first phase of adoption,

however when moving beyond local contexts their effectiveness can vary, with many becoming very reluctant to share their ideas outside their sphere of power (Hendy & Barlow, 2012). Such reluctance can create severe obstacles to implementation, which is why although champions can speed up the success of implementation, change should be cautiously placed in the hands of only a few individuals.

Discussion

The first goal of this paper was to identify the main obstacles to the successful implementation of telecare for the elderly. This was carried out following Fleuren's framework, which outlines determinants central to innovation implementation. The conclusion reached is that the main obstacles in the domain of telecare are characteristics of the person adopting innovation, and the implementation strategy. Fleuren's approach was adopted because it coincided with other papers, on the topic of telecare for the elderly, in the identification of factors considered as hindering successful implementation of telecare. In order to strengthen the analysis of this paper, a more extensive and devised methodological approach could be adopted; such an approach could provide different or additional obstacles that could be considered in more depth and perhaps shed a different light on the issue of implementation.

Furthermore, as telecare is still dominated by small-scale trials and has not moved towards mainstream deployment, it is particularly challenging to conduct any research into telecare implementation. The complexity of telecare does not help either, creating further challenges for research. Once telecare moves beyond this 'pilot' stage, assessing the key ingredients for its successful implementation will be certainly easier and will provide more valuable insights.

The second goal of this paper was proposing ways of addressing the main obstacles to the successful implementation of telecare for the elderly; three main suggestions were considered: training, consideration of patients' expectations, and perceptions and the importance of champions. Having identified the main obstacles to be characteristics of the person adopting innovation and the implementation strategy, the suggestions were matched accordingly. A limitation of this paper may be the fact that it concentrated only on two main obstacles. If there had been more hindrances identified, there would have been more proposals made and perhaps the arguments of this paper would have been stronger. Therefore, a suggestion for further research would be to carry out a more comprehensive study.

Conclusion

The aim of this paper was to get a deeper understanding of the way the main obstacles act as a barrier to successful implementation and the way in which these impediments could be resolved. The paper identified that the main hindrances were the characteristics of the person adopting innovation and the implementation strategy. These findings emphasize the complexity of the implementation process of e-health systems, such as telecare. They indicate that in order to carry out successful implementation of telecare, we must firstly look back to the design phase and take account of the views of the target group (the characteristics of the person adopting innovation) and secondly put great emphasis on the implementation strategy due to the diverse body of stakeholders, which characterizes the domain of telecare.

The second part of the paper concentrated on evaluating the ingredients of success that researchers are proposing. The first two paragraphs concentrated on the 'human' aspect of technology and proposed that technological anxiety related to telecare could be resolved by training and taking into account patients' expectations and perceptions. This is a very significant finding as it gives weight to the need of applying the technical artefact to socio-economic activity (Orlikowski, 2011). Although it has been identified that human interaction should play a prominent role in telecare, the key task is finding the perfect balance between technology and human interactions, which is where policy-makers should divert their main attention.

Finally the role of champions was analysed as a way to speed up the process of telecare implementation. It was found that with eager and enthusiastic champions implementation might proceed much more swiftly and efficiently, yet it should be kept in mind that one should be cautious with giving too much power to just a few individuals. In conclusion, the implementation of telecare is an extremely complex process, which needs a lot of planning, patience and most importantly understanding the needs of the elderly, which hitherto has been a largely underestimated factor.

References

Barlow, J., Bayer, S., & Curry, R. 2006. Implementing complex innovations in fluid multi-stakeholder environments: experiences of 'telecare', Technovation, 26(3): 396-406.

Fleuren, M., Wiefferink, K., & Paulussen, T. 2004. Determinants of innovation within health care organizations Literature review and Delphi study, International journal for quality in health care, 16(2): 107-123.

GOV.UK (2011) Whole System Demonstrator Programme, Headline Findings- December 2011 [Online] Available from: https://www.gov.uk/government/publications/whole-system-demonstrator-programme-headline-findings-december-2011 [Accessed: 20 December 2014)

Heart, T., & Kalderon, E. 2013. Older adults: Are they ready to adopt health-related ICT? International Journal of Medical Informatics, 82(11): e209-e231

Henderson, C., Knapp, M., Fernndez, J.L., Beecham, J., Hirani, S.P., Cartwright, M., Rixon, L., Beynon, M., Rogers, A., Bower, P., Doll, H., Fitzpatrick, R., Steventon, A., Bardsley, M., Hendy, J., & Newman, S.P. 2013. Cost effectiveness of telehealth for patients with long term conditions (Whole Systems Demonstrator telehealth questionnaire study): nested economic evaluation in a pragmatic, cluster randomised controlled trial. BMJ: British Medical Journal, 346.

Hendy, J., & Barlow, J. 2012. The role of the organizational champion in achieving health system change. Social science & Medicine, 74(3): 348-355.

Hendy, J., Chrysanthaki, T., Barlow, J., Knapp, M., Rogers, A., Sanders, C., Bower, P., Bowen, R., Fitzpatrick, R., Bardsley, M., & Newman, S. 2012. An organisational analysis of the implementation of telecare and telehealth: the whole systems demonstrator. BMC health services research, 12(1): 403.

Kapsali, M. 2011. How to implement innovation policies through projects successfully. Technovation, 31(12): 615-626.

Koch, S. 2006. Home telehealth—current state and future trends. International journal of medical informatics, 75(8): 565-576.

Ludwig W., Wolf, K.-H., Duwenkamp C., Gusew N., Hellrung N., Marschollek M., Wagner M., Haux, R. 2012. Health-enabling technologies for the elderly - An overview of services based on a literature review. Computer Methods and Programs in Biomedicine, 106(2): 70-78

Mair, F. S., May, C., O'Donnell, C., Finch, T., Sullivan, F., & Murray, E. 2012. Factors that promote or inhibit the implementation of e-health systems: An explanatory systematic review. Bulletin of the World Health Organization, 90(5): 357-364.

May, C., Finch, T., Mair, F., Ballini, L., Dowrick, C., Eccles, M., Gask, L., MacFarlane, A., Murray, E., Rapley, T., Rogers, A., Treweek, S., Wallace, P., Anderson, G., Burns, J., & Heaven, B. 2007. Understanding the implementation of complex interventions in health care: the normalization process model. BMC Health Services Research, 7(1): 148.

Milligan, C., Roberts, C., & Mort, M. 2011. Telecare and older people: Who cares where?. Social Science & Medicine, 72(3): 347-354.

Van Offenbeek, M. & Boonstra, A. 2010. Does telehomeconsultation lead to substitution of home visits? Analysis and implications of a telehomecare program. Studies in Health Technology and Informatics, 157: 148-153

Or, C.K., Valdez, R.S., Casper, G.R., Carayon, P., Burke, L.J., Brennan, P.F., & Karsh, B.T. 2009. Human factors and ergonomics in home care: Current concerns and future considerations for health information technology. Work: A Journal of Prevention, Assessment and Rehabilitation. 33(2): 201-210

Orlikowski W. J., & Iacono, C. S. 2001. Research commentary: Desperately seeking the "IT" in IT research—A call to theorizing the IT artifact. Information systems research, 12(2): 121-134

Postema, T. R. F., Peeters, J. M., & Friele, R. D. 2012. Key factors influencing the implementation success of a home telecare application. International journal of medical informatics, 81(6): 415-423.

Rahimpour, M., Lovell, N. H., Celler, B. G., & McCormick, J. 2008. Patients' perceptions of a home telecare system. International journal of medical informatics, 77(7): 486-498.

Rocha, A., Martins, A., Freire Junior, J. C., Kamel Boulos, M. N., Vicente, M. E., Feld, R., van de Ven, P., Nelson, J., Bourke, A., OLaighin, G., Sdogati, C., Jobes, A., Narvaiza, L. & Rodríguez-Molinero, A. 2013. Innovations in health care services: The CAALYX system. International journal of medical informatics, 82(11): e307-e320.

Sanders, C., Rogers, A., Bowen, R., Bower, P., Hirani, S., Cartwright, M., Fitzpatrick, R., Knapp, M., Barlow, J., Hendy, J., Chrysanthaki, T., Bardsley, M., & Newman, S. P. 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(1): 220.

Sintonen, S., & Immonen, M. 2013. Telecare services for aging people: Assessment of critical factors influencing the adoption intention. Computers in Human Behavior, 29(4): 1307-1317.

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., & Newman, S. 2012. Effect of telehealth on use of secondary care and mortality: findings from the Whole System Demonstrator cluster randomised trial. BMJ: British Medical Journal, 344.

Watson, R. 2010. European Union leads way on e-health, but obstacles remain. BMJ, 341.