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ABSTRACT   *eHealth technologies are being promoted by government as an integral part of the future delivery of health and social care services. Demographic ageing is most pronounced in rural areas and eHealth technologies could support care models designed to help the growing number of rural older people living independently in their own homes. Successful deployment of eHealth technologies will depend on a number of factors, including older adults' receptiveness to and ability to use new technologies. Using a mixed-methods approach we report findings from a survey of Pain Association Scotland members, home visit observations, qualitative interviews with rural older adults with chronic pain and their health and social care providers. We report that rural older adults with chronic pain are receptive to eHealth technologies but caution that these technologies need to be designed and deployed with the needs of specific patient groups in mind. Patients and professionals do not think that opportunities for in-person interaction should be replaced by technology. We suggest that care needs to be taken to ensure that an appropriate balance between the use of eHealth technologies and in-person care is struck.*

1. Introduction

Demographic ageing is a worldwide phenomenon. In 2013 the United Nations observed that the global population aged 60 years or over had increased from 9.2% in 1990 to 11.7% in 2013 and that, by 2050, the proportion would reach 21.1% (United Nations 2013). It was also observed that the absolute number of older people is expected to increase from 841 million people in 2013 to more than 2 billion in 2050 and that the older population itself is ageing, with the increasing share of people aged 80 and over being of particular note

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(United Nations 2013). At the beginning of the twenty-first century, Europe was the world region with the highest proportion of older people and Europe is predicted to remain the most aged world region until 2050 (United Nations 2001) with 'about 37% of the European population is projected to be 60 or over in 2050, up from 20% in 2000' (United Nations 2001, p. 12). The UK Office for National Statistics (2011) projected that the proportion of people aged 65+ years will rise from 17.2% to 22.4% by 2032. 2008-based projections predicted that, by 2038, about one in three people in the UK would be aged over 60 years (Office for National Statistics 2009) and between 2012 and 2037 the numbers of those aged 80 years and over is projected to double, to 6 million (Office for National Statistics 2013b). Many older adults live active, independent lives but demographic ageing is increasing the absolute number of older adults requiring health and social care services. AgeUK (2013, p. 6) noted 'An estimated 4 million older people in the UK (36% of people aged 65–74 and 47% of those aged 75+) have a limiting longstanding illness'. It is reasonable to infer that a considerable proportion of these four million will make regular demands upon health and social care services.

There is considerable scope for eHealth technologies to be deployed to support active ageing, providing alternative means of delivering care to an ageing population. eHealth itself is a very broad concept that covers a multitude of themes with a variety of definitions (Oh *et al.* 2005). However, two key themes are *health* and *technology* and eHealth thus encompasses telehealth and telecare technologies, which we have described in more detail previously (Mort & Philip 2014). Such technologies – also termed devices of 'assisted living' – can be installed in patients' homes in order to enhance the monitoring of chronic conditions (e.g. blood oxygen saturation, blood glucose levels) and to alert carers to a deterioration/emergency situation. The Scottish Government is committed to eHealth: the budget of £72.2 million for 2008–2009 increased to £90 million in 2011–2012 (Scottish Government 2008b) and a national plan sets out contributions towards telehealth and telecare until 2015 (Scottish Government 2012). When adopted in an appropriate setting the value to patients and potential cost savings of eHealth technologies is demonstrable and the potential to save money, however slim, enhances their attractiveness, particularly in the current financial climate. As is common when any established model of care undergoes reform (Nimegeer *et al.* 2011), concerns have also been expressed that eHealth rollout may bring about negative effects, in particular the loss of opportunities for in-person social interaction between older patients and their care professionals. This has implications for wider well-being and should be considered alongside financial aspects of changes to care models.

The Technology for Older Adults: Maximising Personal and Social Interaction (TOPS) project examined interactions between rural older adults with chronic pain and their health and social care providers and considered how technology could play a part in enhancing life experiences. The research was conducted by academics whose disciplinary backgrounds included human geography and applied health sciences, all who specialised in research that focused on rural places and rural communities. The Technology for Older Adults: Maximising Personal and Social Interaction project explored intersections between four themes, namely social isolation, chronic pain, health and social care and new (eHealth) technology. These themes are introduced below providing context for the empirical sections of the paper which follow. Drawing upon findings from a survey of members of Pain Association Scotland[1] and research undertaken in remote and rural Scotland (in the National Health Service, hereafter NHS, Highland and NHS Tayside areas[2]), our findings

focus on the receptiveness of older rural adults with chronic pain to eHealth technologies and the issues they might face in using these technologies, both research topics that have received little if any attention from a rural social science perspective to date. Some over-arching conclusions which have implications for future service planning and delivery bring this paper to a close.

2. Research Context

Across Europe many rural areas have older demographic profiles than urban areas and are forecast to age faster in the foreseeable future (Philip *et al*. 2012). To cater for an ageing population, public sector service delivery in rural, and especially the more remote rural areas, must overcome challenging demographic and settlement characteristics (low population numbers dispersed over large geographical areas, limited public transport provision, distance from major service centres, etc.). There is also the very pertinent additional challenge of attracting and retaining suitably qualified staff (British Medical Association 2005; Wilson *et al*. 2009; Cleland *et al.* 2012). eHealth is potentially very attractive to those who plan and manage rural health and social care services, as it could bring care to remote and dispersed populations in a more cost-effective manner. Research exploring the pilot use of such technologies in rural areas has been published (e.g. Roberts *et al*. 2012) and eHealth is referred to repeatedly in the Scottish Government's 2008 strategy document for remote and rural healthcare (Scottish Government 2008a). However, the current digital communications infrastructure in many rural areas is insufficient to allow eHealth applications, which commonly rely upon a fast, reliable broadband connection, to be deployed universally.

Chronic pain (continuous, long-term pain lasting for more than 12 weeks) is estimated to affect 14% of the UK population (Health Improvement Scotland 2012). The prevalence increases with age. It affects physical and psychological health, is associated with increased social isolation (Clarke & Iphofen 2008) and the incidence is reportedly higher in rural than urban areas (Hoffman *et al*. 2002; Day & Thorn 2010; Reitsma *et al*. 2012). Specialist pain services and patient self-help group meetings tend to be physically located in urban centres, presenting access challenges to rural patients. eHealth could improve accessibility to services for chronic pain patients and open up new opportunities for the management of their condition.

Maintaining social networks and promoting social interaction is important for active ageing. The social networks of older adults tend to contract with age (Lansford *et al*. 1998) and older people can experience loneliness and depression, particularly if friends and families live at a distance (Gierveld 1998) and are unable to visit them in-person. The dispersed settlement structure of many rural communities, accessibility challenges and long-term migration trends (e.g. out-migration means that close family members do not live nearby, in-migration brings neighbours who are not known to longer term residents) could increase the likelihood of older rural adults having small social networks, in particular small numbers in a social network that are seen, in-person, on a regular basis. This situation will be exacerbated for older rural adults living with chronic pain whose ability to get out and about and to maintain social contact is impeded by their medical condition. For many older rural adults the only regular in-person social interaction they have is with a health or social care provider (Farmer *et al*. 2005).

eHealth[3] has been posited as offering innovative and potentially cheaper means of delivering a range of health and social care services (e.g. the UK Government's 3millionlives initiative) which may lead to in-person contact between older adults and health and social-care providers being reduced or no longer being necessary for care to be delivered in a clinically effective manner. With a focus on those who live in remote rural areas, the TOPS project explores older adults with chronic pain's current use of technology, including eHealth technologies, their receptiveness to enhanced use of eHealth in the future and any challenges or barriers to the adoption of eHealth technologies that might be faced by older users. The TOPS project also explored the nature and perceived value of social interaction opportunities that home visits bring, from the perspective of both older adults and their health and social care providers. Fears that changes to current patterns of home visits resulting from the wider deployment of eHealth technologies could be detrimental to health and well being were explored to inform deliberations about what service delivery models would be optimal for older rural adults with chronic pain if eHealth technologies become more ubiquitous.

3. Methodology

Research undertaken in Scotland for the TOPS project explored personal and social interaction between health and social care providers and rural older adults with chronic pain during home visits, and the usage, impact and acceptance of eHealth.[4] The research comprised two distinct stages. The first stage was a postal survey of the entire membership of Pain Association Scotland and was administered on our behalf by the organisation to ensure that personal details remained confidential. Surveying the membership of this organisation represented adopting a purposive sampling approach to eliciting attitudes and opinions of adults who live with chronic pain. We acknowledge limitations of this approach, notably that the membership is self-selecting and thus might not be representative of the chronic pain population as a whole and given the urban–rural balance of the Scottish population the rural membership would, inevitably, comprise a minority of the membership and a minority of potential respondents. Given the fact that the incidence of chronic pain increases with age, we were confident that a considerable proportion of those sampled would be older people, the demographic group our study focused upon. On balance our sampling approach allowed us to target our population of interest effectively. The survey was sent out in January 2013 with a reminder being issued a month later. Information was elicited from respondents about their demographic attributes (e.g. age, gender, marital status, educational attainment, living arrangements, health and life satisfaction). The nature of respondents' interactions with health and social care providers and informal care and support arrangements with family and friends were queried. The survey concluded with a set of questions about the availability of and attitudes and acceptance towards technology. These included questions about respondents' use of commonly available technologies (mobile phone, email), the use of eHealth devices in the home and attitudes towards and preferences regarding use of communication technologies in the provision of healthcare now and in the future. Respondents were asked to report their postcode which allowed their location to be classified as urban or rural (using the Scottish Neighbourhood Statistics website, www.sns.gov.uk). A response rate of 40% (168 useable surveys) was achieved.

The second stage of the research comprised two distinct phases, both of which focused explicitly upon the experiences of older chronic pain patients who lived in rural areas. Phase

1, which was conducted in a very remote island community in late 2012 – early 2013, involved (i) older adults with chronic pain aged between 60 and 75 years who were living independently in their own homes, received regular home visits from health and/or social care professionals and who did not use any eHealth technology in the management of their chronic condition(s) or painful symptoms and (ii) the professionals who delivered care in the homes of those older adults. Home visits were observed and an observation schedule was devised to record the various types of social and personal interactions that took place. After the home visit older adults (sometimes with another adult present) and the health and social care professionals who visited the older adult were, separately, interviewed. Participants were recruited primarily through the community nursing and social care teams. Six home visits were observed and seven older adults and five professionals were interviewed. Three research questions structured this phase of data collection: what types of interaction may be observed between older adults with chronic pain and their health and social care providers during home visits?; what aspects of personal and social interaction do rural older adults with chronic pain value? and how might technology have a role to play in future delivery of health and social care services?

Phase 2 comprised semi-structured interviews conducted in the autumn of 2013 with a small number of older adults with chronic pain who lived in rural Scotland and who had completed an eHealth programme explicitly designed for chronic pain patients. Those interviewed had completed the online *Pathway Through Pain* programme (www.pathwaythroughpain.com) which is offered by eight NHS boards across the UK, including two in Scotland, one of which serves a predominantly rural region. Patients work through a 24-step programme that introduces them to a variety of techniques that can be used in the self-management of chronic pain. Of the six older adults eligible to participate in this phase of the research, four agreed to be interviewed, none of whom were as badly afflicted by chronic pain as those who participated in Phase 1 of this part of the study. Patients' experiences of participating in the *Pathway Through Pain* programme framed the interview.

4. Findings from Stage 1: Results from the Questionnaire Survey of Members of the Pain Association Scotland

Respondents ranged in age from 25 to 86 years. Only 20% were under 50; 54% were aged 60+. The age distribution reflects the fact that the incidence of chronic pain increases with age. 16.2% of respondents lived in a rural area (as defined by the Scottish Government's urban–rural classification), a proportion slightly lower than the figure reported for Scotland as a whole, 18% (Scottish Government 2013). The importance of formal care is illustrated by the fact that over a quarter of respondents, 27.4% ($n = 46$), received formal help in their homes. Of these, 45 had regular (most commonly once a month) home visits from health professionals, such as community nurses and General Practitioners (GPs), and 25 had a home help (most commonly once a week). The proportion of respondents who received informal help at home was much higher, 77.4% ($n = 130$). This assistance was most likely to come from a family member (68.5%, $n = 115$), most commonly the respondent's spouse, from friends or neighbours (26.8%, $n = 45$) or from local groups or organisations (11.3%, $n = 19$). Informal help included doing shopping, housework, personal-care activities and other household tasks (cooking, gardening, minor DIY, etc.): this illustrates the considerable importance of unpaid, informal care-giving which encompasses many activities that allow adults to remain living in their own homes. Those who received formal help

were most likely to be older and living alone. Respondents who did not live alone appear to rely on other members of their household to meet their day-to-day care requirements.

Just over half of the respondents (52.4%, $n = 88$) reported that they used the Internet to monitor their health, seeking information about their condition online. A minority of respondents used telecare technology: 27 (16.1%) used fall alarms and/or motion sensors in their homes. Telehealth devices were used by more respondents ($n = 28$, 16.7%), the most common devices being blood pressure monitors and blood glucose monitors. Some respondents used more than one telehealth device – in total 52 health monitoring devices were being used by respondents. Twelve respondents (7.1%) used both a telecare and a telehealth device. Statistically significant relationships were found between use of eHealth technology and age (users were most likely to be older), being retired, living alone, and being in receipt of formal help. Respondents from rural areas were less likely to use an eHealth device in their care than urban respondents (this relationship was only statistically significant at the 90% level – $x^2 = 2.621$, df = 1, $p = 0.10$ – but given the small number of both rural respondents and eHealth users we consider this relationship worth noting here).

As noted above, new eHealth applications are being promoted by government as an integral part of the future delivery of health and social care services. eHealth is heralded as one way of keeping older people living independently in their own homes but how receptive are adults with chronic pain to the use of eHealth in their formal care? We first elicited information about respondents' current use of common information and communications technologies (ICT) such as mobile telephones and computers and then explored their attitudes towards the future use of technology in healthcare and whether or not they would accept the use of eHealth in formal care which could replace the need for some or (in some cases) all home visits by a health professional. Most respondents were technologically literate (79.2% used a mobile phone, 67% were computer users, 66.1% used the Internet and 63.7% used email). Although levels of Internet use are lower in our respondents than the rates reported in recent national studies (e.g. Dutton *et al* 2013; Office for National Statistics 2013a), the age profile of our respondents is likely to explain this variation. Despite ICT use in older age groups, especially the 60–74 group, having increased considerably in recent years it still lags behind use rates in younger cohorts.

A majority of respondents (63%) were happy to consider, in principle, the use of technology in future healthcare. There was no association between living in urban or rural areas or with age and receptiveness to using health-care technology. Differences were observed between happiness to use technology in the future and gender (men were more receptive to the idea than women, $x^2 = 7.321$, df = 2, $p = 0.03$) and whether or not relatives lived nearby (those with no relatives living locally were happier to consider using technology than those with family nearby, $x^2 = 4.924$, df = 4, $p = 0.05$). Those who were single and lived alone were more receptive to using technology than respondents with other living arrangements/civil status ($x^2 = 6.806$, df = 2, $p = 0.03$). Receptiveness by those living alone who were widowed or separated/divorced decreased with age. Interestingly we found that there was no association between current Internet use and happiness to consider the use of technology in future healthcare: respondent's familiarity with common, almost ubiquitous technology does not thus appear to influence attitudes towards the future use of technology as part of a health-care package.

When asked about whether they would accept the use of eHealth in formal care the responses were more ambiguous. Respondents who lived alone (regardless of their civil status) were less likely to accept the proposition than those whose household contained

at least one other person but the difference was only statistically significant at 90% (x^2 = 3.117, df = 1, p = 0.07). Respondents who lived with a spouse/partner as opposed to other household configurations were more accepting of ICT use, but again only statistically significant at 90% (x^2 = 3.117, df = 1, p = 0.08).

Findings from the survey of Pain Association Scotland members illustrated that a considerable proportion of individuals with chronic pain receive regular, formal help in their homes from social and health-care professionals. New models of care, such as those offered by eHealth technologies, may change how care is delivered to a large number of people. Responses to the survey hinted that while respondents were broadly accepting in principle of technology being used in future healthcare some were not receptive to the suggestion that technology might replace the in-person care they receive. Those receiving formal help were likely to be living alone with, consequently, less social contact than those respondents who lived in households with at least one other person. We infer that those least receptive to the use of technology in their care responded negatively to the suggestion that technology could be used in care packages in the future because they felt that the opportunities for personal and social interaction a home visit offered would be lost if technology was used in their care.

5. Findings from Stage 2: Exploring the Experiences of Older Rural Adults with Chronic Pain

As described in the methodology section above, this stage of the research had two phases. The first comprised interviews with rural older adults with chronic pain and the health and social care professionals who visited them at home in a remote island area of Scotland. These patients had no experience of using eHealth technologies in their home. The second phase comprised interviews with a group of older adults who had completed the only eHealth technology specifically designed for chronic pain patients, the *Pathway Through Pain* programme.

5.1. Observations of Home Visits and Interviews with Older Adults with Chronic Pain Who Did Not Have Experience of Using eHealth Technologies and Their Health and Social Care Professionals

Home visit observation records included descriptions of professional or clinical activities (e.g. taking blood pressure or changing a dressing, asking about symptoms, etc.), personal care (e.g. washing and dressing) and moving the patient (e.g. into or out of bed, into a chair, etc.). Although not part of a health or care professional's job description, and most commonly undertaken by another household member during the home visit, some household activities were also undertaken, out of goodwill, by the professional visiting the patient, such as taking in the post or doing the washing up. We also observed polite social interaction, light-hearted exchanges of news and gossip and verbal and physical expressions of compassion and companionship. The degree of pain the patient was in affected the social interactions that took place during the home visit but at all times health and care professionals were overtly friendly and engaged with the older person they were visiting.

The health or social care provider was the only person seen by the older adult on the day of the home visit apart from a spouse or family member (if they lived with other people). The home visit thus offers opportunities for social interaction that would not have occurred

otherwise. This is very important for individuals who find that opportunities to socialise are reduced by their limited mobility, levels of pain or tiredness. We were told that if friends still visited the home the reasons for visiting had often changed (e.g. friends popped in and did some household chores or dropped off a meal they had cooked) and that the nature of friendship relationships had changed. For example:

> Most of them. Most of them – I think it's embarrassment, I don't think they know what to say to me or how to act around me. (Patient 4)

Although an older adult may still have visitors, the social element of friendships may have diminished which leads to increased value being placed on personal contact with professionals who visit the home. Professionals bring news of the outside world and allow older adults to retain feelings of connection with and belonging to their community *as well as* monitoring the older adult's condition and being able to spot deterioration or improvements in health and adapt the care provided accordingly.

Some older adults we interviewed were using forms of ICT at home (e.g. email, Skype), but were not using it to manage their health and/or pain. They were receptive to the idea of using communicative technology to both maintain and sustain social connections and to make use of eHealth technologies but a number of challenges to their use – linked to digital connectivity, infrastructure, ergonomics and the attributes of individual patients – were discussed in the interviews conducted with patients and their health or social care professionals.

In many rural areas across the UK the broadband infrastructure is very poor and many rural households only receive a low-speed service (often not fast enough to, e.g. upload a photograph to a social networking site or to stream a TV service such as the BBC IPlayer). Two health professionals we interviewed talked independently about their experience of a telehealth trial in the island case study area. We were told:

> We have real difficulties getting it to work at [Mr Smith's]. [Mr Smith] is in a really isolated part of [the island] and I think there were problems with the phones and there was problems getting it to work effectively (Health Professional 1)
> and
> … but unfortunately it can't connect to the phone lines, although it can take the data, it can't transmit it back. (Health Professional 2)

Both the Westminster and Scottish Governments are supportive of, and providing considerable sums of money to implement, schemes to improve rural broadband services. For example, in the Highlands of Scotland, an ambitious £146 million rural broadband project, led by Highlands and Islands Enterprise, will over the next three years bring fibre broadband services to around 84% of homes and business in the region (Highlands and Islands Enterprise 2013). However, the most difficult to reach communities, mainly found in the most remote and peripheral areas, will not be served by this or other digital infrastructure improvement schemes. Alternatives such as broadband by satellite, which does not require infrastructure development to function, are available across the UK. However, satellite Internet speeds, reported as being between 2Mbit/s and 20Mbit/s (Think-broadband 2014) are lower than the speeds available via the fibre and cable services supporting Superfast Broadband. Although the absolute numbers of households in the most difficult to reach areas is comparatively small (less than 10% of the Scottish population),

their homes are dispersed over large geographical areas and these communities are, argu-
ably, those that could benefit considerably from digital innovations in health and other
domains. Until the digital infrastructure improves, the use of eHealth technologies may
not be possible across much of rural Scotland.

Older adults can face ergonomic challenges when using common ICT devices. We were
told about difficulties holding a telephone receiver, typing or using a mouse or tracker pad
and one respondent reported that the touch screen format of a tablet computer was much
easier to use than a mouse or a touchpad on a laptop:

> ... because I can't do it with rolling the finger [on a tracker pad], I don't like that – the
> laptop. So I use the mouse of course but it's much, much easier on the iPad. (Patient 6)

Impaired hearing or vision may mean the way in which an application is delivered is unsui-
table, and can make participating in online, real-time group meetings such as patient self-
help groups challenging or impossible. For example:

> I find with my hearing it's very difficult. I couldn't do a group, it would have to be
> one or two at the most. (Patient 4)

Finally, although the health and social care professionals we interviewed were positive
about the use of eHealth some were keen to stress that they did not think that all patients
would benefit from or be suitable users of such technology. To get the most benefit from
eHealth in the home we were told that the older patient would need to be willing to
learn, IT literate, and be willing and able to take some responsibility for their care (e.g.
to remember to take regular readings of blood pressure and send them to the remote moni-
toring centre). Replacing face-to-face interaction between professionals and patients with
technology was viewed negatively, especially for older adults who lived alone and/or did
not see other people on a regular basis:

> ... but if it's somebody who is sitting on their own and have no family or people
> popping in on a regular basis then I don't think it's going to be of benefit ... I don't
> think that it'll reduce their pain levels because I think when you are [in pain] and
> tired and you've got nothing else to think about then .... (Health Professional 4)

We found that home visits provide opportunities for clinical, social and 'goodwill' activities
to take place. While some of our participants were already using ICT at home they raised
important ergonomic and infrastructure challenges that need to be overcome to ensure the
successful deployment of eHealth applications aimed at older adults with chronic pain. The
views of health professionals also need to be considered: they know their patients and could
usefully input into decisions around which patients should make use of eHealth and, impor-
tantly, who might not be a suitable user of new health-care technologies.

5.2. Experiences of Older Adults Who Had Completed the Pathway Through Pain
Programme

Although the impact chronic pain had on the lives of the group of older adults interviewed
in this phase of the study was not as debilitating as it was for those interviewed in Phase 1,

we were told how debilitating chronic pain was and how it impaired quality of life. Those we interviewed had made use of a variety of NHS and private health services (e.g. physiotherapist) but prior to their referral to the *Pathway Through Pain* programme none had used any eHealth technologies.

Two interviewees had attended group meetings held for an in-person *Pathway Through Pain* programme as well as completing the online programme while the other two only had personal experience of the latter. Both delivery modes were identified as having strengths and weaknesses, largely attributable to personal preferences: some people like doing things at their own pace while others prefer a very structured approach; some do not like group settings while others welcome the social opportunities such meetings present. None of the interviewees reported difficulties using the programme and their observations suggest that as long as the user has basic computing skills they would be able to use this eHealth technology.

The online *Pathway Through Pain* programme comprises modules ('steps') delivered by individuals from a variety of professions. Interviewees liked this mix of specialist input and it is a feature of the programme that would be of particular benefit to rural patients who, due to their physical distance from the large population centres where specialist health services tend to be based, do not have easy access to a range of specialists. We were told that relaxation techniques and exercises introduced in different steps of the programme were still being used and that it was helpful that resources such as videos and podcasts could be returned to repeatedly, even after a patient had completed the programme. Being introduced to exercises and then being able to remind oneself how to do them correctly is very useful, especially for chronic pain patients who live in an area without a physiotherapy service (such as those living in the island case study visited in this research).

6. Discussion and Conclusions

Findings from both stages of the research suggest that older adults with chronic pain are receptive to the use of new technologies in the provision of health-care services. Many were technologically and ICT literate and open to the idea of using eHealth in their own care. Those we interviewed in the island case study area had limited pain management options available to them locally. The nearest pain management clinic was a six-hour return journey away. Those who had completed the *Pathway Through Pain* programme also lived in rural communities which, although less remote, were not locations from which specialist services were delivered. The positive feedback from those who had used the online pain management programme suggests that there is considerable scope for technology to contribute to a flexible approach to pain management in the home. Physiotherapy services, pain clinics and self-management courses (cognitive behavioural therapy) could be offered remotely providing that the delivery method took into account the ergonomic and other practical needs of older rural adults and was adaptable to suit patients with varied causes of impairment and whose conditions varied in severity. However, this does raise questions around who assumes responsibility and ultimately pays for the technology, including individualised ergonomic solutions. Despite the policy rhetoric (from which it would be easy to assume – incorrectly – that eHealth is already used widely across the UK) the use of eHealth technology is still in its infancy, and the payment models are not fully matured or understood. It is conceivable,

although controversial, that patients may have to pay for the privilege of using such technology, if they can afford it.

This paper provides evidence about those in receipt or immediate delivery of eHealth and their receptiveness to it; opinions which have not previously been researched or understood. The interactions between older adults with chronic pain and their health and social care professionals during home visits are a powerful tool for maintaining feelings of social connection with the wider community. Home visits contribute to wider well-being: they provide social opportunities which are valued by patients whose opportunities to socialise can be limited due to pain, tiredness and shortened concentration spans, the changing nature of friendships and other personal relationships and the fact that many friends and family do not live nearby. Thus while older rural adults with chronic pain and health and social care providers are receptive to the use of eHealth as part of an overall care package – from which we cautiously imply that increased use of eHealth among the older population more generally would be received favourably – we caution, in the light of other findings from the TOPS project, that patient well-being supported and enhanced by the social interaction opportunities associated with in-person care mean that eHealth should not necessarily replace in-person care in service delivery restructuring. In other words, care needs to be taken to ensure that the benefits of eHealth are maximised while the potential associated disadvantages of reduced frequency of in-person care are considered.

Notwithstanding the fact that we have highlighted a number of issues that those charged with designing and delivering care based on eHealth should consider, if the findings reported are broadly reflective of the experience and attitudes held by older patients more generally, they bode well for the roll out of eHealth technologies as a routine element of health-care packages in the future.

Funding

Notes

[1] Pain Association Scotland is a voluntary organisation that provides self-management training for individuals with chronic pain. It addresses the non-medical aspects of living with chronic pain in an attempt to improve the quality of life of pain sufferers (see http://www.painassociation.com).

[2] Research was also undertaken in rural Wales, in the NHS Powys and NHS Betsi Cadwaladr areas, but is not referred to in this paper.

[3] 'eHealth' is an overarching terms that refers to health services and information delivered or enhanced through the Internet and related technologies. It includes two types of technology. 'Telecare' is the continuous, automatic and remote monitoring of those using the technology and is commonly associated with 'assisted living' systems such as fall alarms. 'Telehealth' refers to remote patient monitoring. Patients use devices to record clinically relevant information which are sent to a remote monitoring centre. Clinicians are alerted if readings do not follow the patient's 'normal' readings and interventions are initiated as appropriate.

[4] Ethical approval for Stage 1, the survey-based research, was awarded by the University of Aberdeen's College of Physical Sciences Ethical Review Committee. Ethical approval for the work undertaken in Stage 2 was awarded by the NHS Health Services Research Ethics Committee and locally at the level of NHS Highland's and NHS Angus's Research and Development Departments.

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