ORIGINAL INVESTIGATION

Older family carers in rural areas: experiences from using caregiver support services based on Information and Communication Technology (ICT)

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Abstract The aim of this intervention study was to illuminate the meaning of ICT-based caregiver support as experienced by older family carers living in vast rural areas, caring for a spouse at home. In order to access, the support service participants were provided with a computer and high speed Internet in their homes. Semi structured webcam-interviews were carried out with 31 family carers. A strategy for webcam interviewing was developed to ensure quality and create a comfortable interview situation for the family carers. Interviews were analysed using content analyses, resulting in the themes: *Adopting new technology with help from others* and *Regaining social inclusion*. The results indicate that ICT-based support can be valuable for older family carers in rural areas as it contributes to improve quality in daily life in a number of ways. In order to fully experience the benefits, family carers need to be frequent users of the provided support. Adequate training and encouragement from others were essential in motivating family carers to use the support service. Access to Internet and webcamera contributed to reducing loneliness and isolation, strengthening relationships with relatives living far away and enabled access to services no longer available in the area. Use of the ICT-service had a positive influence on the relationship between the older carer and adult grandchildren. It also contributed to carer competence and promote feelings of regaining independence and a societal role.

Keywords Carer support · Family carer · Information and communication technology · Rural · Webcam interviews

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Background

Due to the changing demographic structure of the population in many countries, the proportion as well as the number of older people with care needs will continue to increase (European Commission 2009; Hoffmann and Rodrigues 2010). This development portends a growing need for long-term care services, a challenge for most countries due to limited resources (European Commission 2008). Family carers play a strategic role in providing long term care (Kröger 2003; Winqvist 2010). In Europe approximately 80 per cent of care hours for older people are provided by family carers (European Commission 2008; Marin et al. 2009; Hoffmann and Rodrigues 2010), and many of them are spouses, who care for impaired or disabled husbands or wives (McConaghy and Caltabiano 2005; Larsson 2006).

Despite the positive aspects inherent in care giving, there are several negative aspects as well. The intensity of caring tasks, often with need for constant presence at home, leads many carers to feelings of social isolation, anxiety, burdensome responsibilities or depression (Ekwall et al. 2004; McConaghy and Caltabiano 2005; Hoffmann and

Rodrigues 2010). Although interventions and support services for older family carers exist, there is still a need for more effective ways of supporting them (Schulz 2001; Lamura et al. 2008). Moreover, the means by which such support is offered does not always match the carers' needs. Caregiver support is often applied in standardized care activities and programmes, thereby being non-flexible and non-personalized (Clare 2002; Lauriks et al. 2007).

The use of information- and communication technology (ICT) as a tool to support the family carers of older people is increasing (Powell et al. 2008; Schmidt et al. 2011). ICT services may contribute to improve the flexibility of caregiver support, and is considered an important factor in meeting future care needs. These services also have the potential to help older family carers increase their quality of life, ease their burden, stay healthier and improve the quality of care provided. A key characteristics of ICT-based support is the ability to provide the help needed, when needed (Schmidt et al. 2011). A range of ICT-services are currently being used throughout Europe, including telecare (Jarrod and Yeandle 2009) online support groups, online training and monitoring systems (Schmidt et al. 2011).

ACTION (Assisting Carers using Telematics Interventions to meet Older peoples' Needs) is an example of a support system that offers a combination of multimedia programs and videophone. It was developed in collaboration between six European countries, aiming to support frail older people and their carers in their own homes, via ICT (Magnusson et al. 2002). Research has shown ACTION to be both user-friendly and beneficial. Frequent contact and support from staff and group meetings with fellow participants have been essential parts of the service. Evaluations have shown the group meetings to be valuable as they provide the opportunity to continuously meet with peer carers (Magnusson et al. 2002; Magnusson et al. 2005).

Older family carers living in rural areas may have difficulty participating in supportive activities and group meetings due to geographic issues and long distances. In many rural areas across Europe, the proportion of the population 65 years and older is greater than in the more densely populated areas (Goll 2010). Rural areas are also changing their social infrastructure with depopulation and loss of local facilities such as health- and social-care provision and public transportation. ICT-based support services have the potential to make support to family carers in rural areas more available, since it can be provided and accessed regardless of geographic distances (Schmidt et al. 2011). However, due to the current rural reality of limited services, it is likely that a support system like ACTION cannot be organised in the same way in rural areas as it functions in more populated areas or in those with shorter distances. Neither can family carers in rural areas expect the same intensity in group meetings or in personal contact with support staff. This raises the question as to whether ICT-based carer support, like the ACTION programme, can be equally successful for older family carers in rural areas.

Research with quantitative designs can be successful in exploring the prevalence of the use of ICT technology in informal care as well as in clarifying the different effects of using ICT as support for caregivers. There is, nonetheless, a lack of knowledge about the deeper meaning of ICT use among older caregivers in rural areas. For example, it is important to understand how such informal care providers perceive ICT support, and what it means for them. Such insight requires qualitative enquiry. The aim of the study described in this article, therefore, is to illuminate the meaning of ICT-based carer support as experienced by older family carers living in rural areas, by means of qualitative analysis,

Method

In this study a qualitative, descriptive design was used to obtain a starting point regarding older family carers' experiences of receiving ICT-based support in rural areas. The qualitative enquiry was part of a larger study based upon both quantitative and qualitative methodologies. According to Polit and Tatano Beck (2008), the open ended interviews that are employed in qualitative research can make it possible to obtain rich, detailed information about the phenomenon under study.

Setting and intervention

Older family carers living in 15 different local municipalities in vast rural areas in the northern parts of Sweden were invited to participate in an intervention, in which they would receive ICT-based caregiver support from their local authorities for a period of 3 years. These rural areas are mostly large tracts of mountains and forests where small villages and very few towns are situated. Public services are concentrated within the few towns, leading to long distances to such service for those living more remotely. The area also has long, cold, snowy winters (Nov–Apr) and public transportation is limited or non-existent.

The intervention consisted of a modified version of the ACTION-service (Magnusson et al. 2005) including the provision of a computer with Internet access, information and educational software, webcam, and access to a secure social community with other family carers as well as call centres. The technical equipment was given to the family carers through each local authority at no cost to the carer

during the project period. The information- and educational programmes covered such themes as caring in daily life, coping, planning, respite care, claims and benefits. Specific topics in the educational programmes regarding caring in daily life were incontinence, dementia, stroke, pressure sores, end of life care and emergency situations. The purpose of the internet-based secure social community was to enable safe and easily accessible contact with peer family carers as well as encouraging them to contact the call centre via internet and webcam. Each municipality had a call centre with professional support nurses. The call centres were located within existing municipal support service offices for family carers and were accessible during office hours. Prior to the start of the intervention, family carers were educated in using the technology. Training and education was given by support nurses in the family carers' homes.

Participants and recruitment

Participants were consecutively included in the study as they came in contact with support service offices. The larger study included a total of 63 family members who became users of the intervention. Inclusion criteria were: to be the primary family carer providing care to a co-habiting spouse, 65 years or older and living in a rural area. After 1 year of using ICT, 33 of the family carers were randomly selected and invited to be interviewed. The interviewees were evenly distributed over the 15 municipalities in the same proportions as the total number of participants. Two of the family carers declined being interviewed, because they had not used the support. Demographic data of participants are presented in Table 1. As shown, the 31 interviewees in the qualitative phase of the study did not differ from the 32 other study participants on the demographic variables.

Data collection

Background information was collected in a structured questionnaire handed out personally by the support nurse who recruited the participant, along with written information about the study and a stamped addressed envelope. Semi-structured interviews were conducted with the 31 family carers. A topic guide was used and the interviewees were encouraged to speak freely about the topics. The interviews were carried out over the internet, due to the large geographic area, using webcam.

Webcam interviews with older people might appear to be an unusual method for gathering research data. In order to seek quality as well as avoiding unnecessary mishaps which could negatively affect the interview situation, a strategy for the interview procedure was developed (Fig. 1). The strategy was based on knowledge regarding techniques for telephone interviewing (Denscombe 2010) and reflections on communicating with older people (Eide and Eide 2009). Richness in detail in the strategy was considered relevant to make it replicable. The interviewer initiated the call from a computer using webcam, built-in microphone and speakers. Interviewees were located in their homes, at an equally equipped computer. The time for the interview was scheduled in advance by the interviewee. All interviews were audio recorded using a digital recorder and were transcribed verbatim. Some of the interviewees spoke with heavy local accents and in those cases transcriptions were made in standard Swedish (Malterud 2009).

Ethical considerations

The study was approved by the Research Ethics Committee of the Medical Faculty at Umeå University, Sweden (Dnr 2010-187-31). Participants were guaranteed confidentiality and informed of their right to withdraw their participation at any time without giving a reason. They were also assured, in writing, that withdrawal from the study would not exclude them from access to further support. Family carers were guaranteed that they would be allowed to keep the technical equipment and have full access to services included in the intervention for the full project period, at no cost even if they decided to withdraw from the interview study.

Data analysis

Data analysis was performed using qualitative content analysis inspired by Graneheim and Lundman (2004), in which the analysis is performed in several steps, starting with reading through every interview several times to get a sense of the text as a whole. The text was then divided into meaning units, containing one or more sentences that were condensed. These shorter sentences were abstracted and labelled with codes and grouped together in categories, which constitute the manifest content. During the process of analysis there was a movement back and forth between the whole and parts of the text. In order to ensure the reliability of the categories, their in-depth grounding in the text and a logical structure, the categories were constantly refined and rearranged until consensus among the authors was achieved (Patton, 2002). Through a process of reflection and discussion the latent content of the categories was formulated into two themes.

Results

The analysis resulted in the themes *Adopting new technology with help from others*, which consisted of three categories (*active use of ICT*, *carers need encouragement*

Table 1 Demographic variables of the family carers in the study

	Interviewees ($n = 31$)	Non interviewees ($n = 32$)	All participants ($n = 63$)
Carer age median (range)	75(65–85)	72(65–83)	73(65–85)
Care recipient age median (range)	79(55–97)	73(63–90	77(55–97)
Men/women	8/23	12/20	20/43
Cause for needing care			
Dementia	12	16	28
Stroke	9	0	9
Parkinson's disease	4	3	7
Multiple diseases, not dementia	2	6	8
Other conditions	4	7	11
Level of education			
Elementary school 6 years	14	13	27
Continuing school 1–3 years	12	16	28
University	4	4	8
Previous experience of using computer			
Very experienced	1	0	1
Moderately experienced	6	10	16
Very little experience	12	8	20
No previous experience	12	14	26

and support, and personal development), and *Regaining social inclusion,* which consisted of two categories (*increased security and recapturing a position in society*). For an overview of the themes and the categories, see Table 2.

Active use of ICT

Usability was considered to be good. Some carers had experienced technical problems in the beginning, but felt that support nurses had been quick to solve problems. A majority of carers used the computer frequently and felt it had given new meaning to everyday life. There was consensus that one must give it priority and actually use the technology, not just wait around for someone to call. Some carers stated that they had not yet experienced benefits from their ICT-support. The common denominator for not using the support was lack of use.

> Woman, 79 years: 'At first I was uncomfortable. I decided to do it anyway. I understood it wasn't going to work by itself'.

> Woman, 66 years: 'I only used it a few times and haven't figured it out yet. I really want to experience all those good things, but I still have friends and prefer to see them than sitting by the computer when I have time for myself'.

Carers need encouragement and support

Those who were encouraged by friends, family members and fellow family carers used the ICT-service frequently and found it useful. In the beginning, many of the family carers were rather afraid of the technology and felt hesitant about using it. Receiving praise from others for being bold and modern worked as a motivator to continue even for those who struggled at first. Rewards, such as feeling less lonely, increased security, growing self-esteem and being considered 'cool' by the grandchildren made family carers take on new challenges and develop their technology skills to a wider use of ICT than what was included in the intervention. For example downloading public programmes for webcam communication and chat, buying printers, USB-sticks and digital cameras.

Technical support and follow ups from call centres were important to get started with regular use of the computer. Those who had neither continuous follow ups with support nurses, nor encouraging family members did not use their computers much. However, family carers who had one of these supports became frequent users. One participant who had looked forward very much to talking to people in the community encountered personal problems as the spouse turned out to be jealous and gave her a hard time when using the computer. She kept the computer hoping the situation would improve but ended up using it only a few times. Lack of support and motivation constituted obstacles to using ICT.

> Woman, 77 years: 'The support nurse is supposed to come here and show me more, but it keeps being postponed and I have a hard time getting to it on my own'.

Personal development

The majority of the participants had no previous computer experience and felt unsure before starting the intervention. Taking on the challenge to learn modern technology was sometimes disapproved of by grown children who tried to talk the old parent out of it. After learning how to handle the computer, and proving the doubters to be wrong, family carers experienced great satisfaction and increased self-esteem.

> Woman, 81 years: 'I feel like my life has come to a new level. Everybody speaks about computers. I didn't have a clue, but now I know, and it feels like I have risen from being a nobody to being equal'.

Fig. 1 Strategy to ensure quality while conducting web-camera interviews with older people

Preparing the interviewee (3-7 days before interview)
- Telephone contact with interviewees. General information about the interview and how it will be carried out
- Asking if they have any questions regarding the technology
- Asking them to have a telephone nearby at the time of interview, in case of technical malfunctioning with the computer

Setting up the environment
- Find a proper location for conducting the interviews
- Make sure there will be no disturbance from noise outside the room
- Have a "Don't disturb"-sign in handy to hang on the door during interviews
- Mind the lighting in the room to avoid shadows or bright light in your face
- Avoid disturbing and chaotic backgrounds, like a messy bookshelf or piles of papers lying around. A calm background is to be preferred. Decorations and paintings in view of the camera can be used as ice-breakers
- Wear proper clothing. Avoid intense patterns and strong colours as they make a stressful impression on camera
- Access to telephone in the room

Before establishing connection (1 hour before interview)
- Make sure your computer and equipment is working properly by testing communication program, microphone, speakers, screen, and webcam
- Test the webcam to see how you appear on the screen in order to create a pleasant atmosphere:
  - Mind your position on the screen so the interviewee can see you properly
  - Mind the lighting to avoid shadows or bright light in your face
  - Mind your clothing, avoiding bright colours or intense patterns
- Practice looking at the camera, this will give the interviewee the feeling you are looking at him/her. If your eyes are focused in the middle of the screen the interviewee may get a feeling that you are not looking at him/her

Establishing on-line connection with interviewee
- Interviewer makes the connection and greets the interviewee
- Checking function and quality of audio and video, making sure it works properly on both ends
- If problems with audio and/or video, such as bad quality or malfunctioning, interviewer makes sure own system works correctly, then helps interviewee check his/her system and guide him/her through correcting processes needed. Always have the interviewee's telephone number at hand in case technical support must be given over telephone
- Make sure interviewee is comfortable with the communication situation before starting the interview. Small talk as warm up may be needed

During interview
- Speak clearly
- Look into the camera
- Avoid disturbing behaviour such as rocking your chair
- Be aware that small sounds usually enlarge with use of microphone. Therefore avoid rustling with papers, tapping your pen, scraping shoes on the floor etc

End of interview
- Tell the interviewee that you will close the call
- Interviewer shut down the connection

Using webcam and network media to meet with peers was an important feature. Besides the satisfaction of sharing experiences with someone in the same situation, family carers also found others asking them for advice. Being acknowledged as a competent carer gave a sense of satisfaction and boosted self-confidence. After learning to use the computers, family carers also became creative in finding ways to use it. They described how they used to keep themselves busy with caring- and household tasks, while the cared-for-spouse did not have much to do during

Table 2 Example of codes, sub-categories, categories and themes from content analysis of interviews with older family carers in rural areas about their experiences of receiving ICT-based caregiver support

Theme	Adopting new technology with help from others			Regaining social inclusion		
Category	Active use of ICT	Carers need encouragement and support	Personal development	Increased Security	Recapturing a position in society	
Sub-category	Receiving support is not enough	Conquering technology with help from others	Personal growth and increased self esteem	Increased security in being a carer	Reducing loneliness and strengthening relationships	Regaining inclusion
Codes	Learning by doing	Learning new technology	Being acknowledged as competent	Being confirmed as competent	Making new acquaintances	E-inclusion
	Give priority to using technology	Encouragement from others	Increased self esteem	On-demand accessibility	Strengthening relationships with children and grand-children	Easier access to lost services
	Usability	Education and technical support	Overcoming fear of technology	Easy access to professionals	Strengthening relationship with cared for spouse	Resuming leisure activities
			Increased self confidence	Sharing with peers		Social inclusion

the day. Now they were able to find innovative ways to use the computer, enriching life for themselves as well as for the spouse. For example, spouses suffering from stroke were able to express themselves through the computer and those with dementia used the computer to practice their cognitive abilities.

> Woman, 73 years: 'There has definitely been a change since he started doing those exercises on the computer. He still forgets things and all that, but it is different somehow, I think this is very good for him'.

> Man, 75 years: 'Now she can sit with the computer and it allows me to get some free time'.

Increased security

Knowing there were people close at hand, both professionals and others, available for webcam contact at the moment of need, contributed to increased feelings of security. This was particularly important as participants in this study lived in vastly remote areas, where they otherwise could not expect immediate help or support.

> Man, 75 years: 'If I worry, or something suddenly happens, I push a button and another person comes into my living room. It is such a security. Otherwise it takes them an hour to get here'.

A majority of the family carers had cared for their spouse for several years and were self-taught. Few had received education about the spouse's condition or how to handle daily life on these terms. The computer gave access

to information programmes, websites and streamed lectures, where family carers often found that their ways of handling matters were confirmed.

> Man, 77 years: 'I've been doing this for many years, without really knowing anything about how one should do. Now I found out I have been doing it right, it feels very good and relieving'.

Access to information programmes and websites with facts about specific conditions and illnesses helped provide family carers with a higher feeling of security-not so much for the current caring situation, but for broadening their knowledge about health issues in general and making them more prepared for what was to come. They also felt they could have been spared plenty of trouble throughout the years if they had this information earlier in their caring career. One thing pointed out as particularly beneficial was to virtually attend seminars by health professionals, which contributed to carer competence.

> Man, 81 years: 'I don't have to worry anymore about doing the wrong things. Not only do I feel competent, I know I am'.

> Woman, 78 years: 'If I didn't have the computer I would never have been able to learn all this, living out here everything is too far away'.

Recapturing a position in society

Apart from experiencing social- and e-inclusion through chat, e-mail and webcam-conversations with friends and

family, the family carers found that the internet provided them with a feeling of recapturing a position in society and 'being somebody'. Ordinary things like listening to radio and watching TV-programmes had previously contributed to the feeling of exclusion as programs often refer to websites for recipes and other detailed information. With Internet they became fully worthy radio-listeners. Over half of the interviewees read newspapers on the internet. Access to long gone services was described as very valuable. Besides facilitating everyday life, it also gave a sense of independence.

> Man, 78 years: 'I can now go to the bank, the chemist's, and different shops for clothes and this and that, on the Internet. I never had such a selection before. For many years one place after the other has closed down. Now I can access all of this, from my home, when I have the time, without needing to arrange for a sitter for my spouse'.

All interviewees expressed feelings of loneliness and isolation of various extents. These feelings originated from difficulties in leaving the spouse, friends who had vanished over time and family members living far away. Using ICT gave new opportunities to break isolation and reduce feelings of loneliness.

> Woman, 83 years: 'Just having the computer here, knowing that if I would want to, I can just press a button and someone will practically be here with me in this room. It may sound silly, but it makes me feel less lonely'.

New acquaintances were made through the social community with peer carers. Knowing that everybody in the contact list had agreed to the conditions of the service encouraged family carers to make contact with persons they did not previously know. Those who felt too shy to initiate contact were happy when others contacted them. Picture quality was considered good and gave the feeling of actually meeting someone in their own home.

> Man, 76 years: 'One becomes rather isolated in this situation and this is an excellent way to be able to make contact and talk for a while, communicating with others in the same situation. They are right here on the list, and you know they want contact, too. I haven't had anyone to talk to before, so this has made a big difference'.

Keeping up a close relationship with children and grandchildren living far away had previously been seen as difficult. Computer with webcam enabled closer contact and strengthened relationships. In particular, grandchildren played an important role in that they encouraged their grandmother or grandfather after they had started using the

technology, giving them technical and emotional support. Communication between grandchildren and grandparents changed from making dutiful phone calls on birthdays to keeping in touch on a weekly or daily base, mostly through chatting. The family carers felt more valuable as the young ones asked them for advice regarding baking, stain removal and other household chores. The older persons appreciated grandchildren being online most of the day and felt secure when seeing the on-line symbol in the chat programme they used.

> Woman, 76: 'I turn the computer on first thing in the morning. Then I can see who is "home" or online as they call it. It's such a great company. When the little symbol is lit and I know they (my grandchildren) are there, I don't feel alone'.

Communication with children living far away took place mostly through e-mail and chatting. The family carers appreciated taking a greater part in the children's lives than earlier, as via webcam they could see their new haircuts, interiors from their homes and other things. Communication via webcam added a new dimension compared to phone calls and gave a feeling of actually being together. Using ICT-based carer support also strengthened the relationship with the cared for spouse. Couples who used the computer together found it to be a pleasing asset affecting their relationship in a positive way. Through the computer they experienced fun and joy together. They participated in sing-alongs, played games, explored the world through internet and used webcams to talk to other couples. Both family carers and cared for spouses said that daily life felt more meaningful since they started using ICT.

> Woman, 74 years: 'We have a lot of fun together these days, and keep ourselves busy here with the computer. Before, he sat in the TV-room and I spent most of my time in the kitchen, both of us sulking. We didn't talk much, because there wasn't much to talk about. Now we laugh a lot'.

Discussion

ICT-based carer support can be a valuable tool for older family carers in rural areas, as it contributes to improve quality in daily life in a variety of ways (Schmidt et al. 2011). The findings of this study suggests that to fully experience the benefits family carers must adopt the new technology and make the effort to use the ICT systematically and not only occasionally, since the mere access to ICT-based carer support cannot by itself have a positive influence on daily life of family carers. This condition must be kept in mind by providers of caregiver support, in order to avoid the misconception that ICT-based support is a solution for everyone. In this study, carers who were able

to get out of the house gave priority to that instead of using the ICT-based support.

Most participants in this rural study were unable to attend real life group meetings with peer carers and professionals. Nevertheless, the results suggest that online interaction and access to online services is of meaning for the interviewees and opens up a possibility to regain social inclusion. Suitable training along with encouragement and support from others (interaction) are known triggers motivating family carers to take on the challenge of technology (Magnusson et al. 2004; Schmidt et al. 2011). Participants in this study emphasized the significance of ICT, providing flexible, personalized support when they needed it. Previous research with informal caregivers in rural and remote settings has shown that use of formal support services is generally low, due to gaps in service provision, and that available services do not always meet the needs of rural family carers (Innes et al. 2011).

Furthermore, geographical distance between themselves and other family members result in difficulties accessing wider family support (O'Reilly and Strong 1997). Family carers in our study pointed out how ICT helped to strengthen valuable relationships, for example with grandchildren. Contact with grandchildren brings pleasure and joy (Wenger and Burholt 2001). Contact frequency between grandparents and adult grandchildren is usually low, particularly when it comes to time-consuming face-to-face visits. The relationship often evolves into occasionally meeting at family events, such as birthdays (Geurts et al. 2009). Webcam contact with peer family carers provides a way of meeting people even when unable to physically leave the home or transportation is unavailable. Sharing experiences with someone who understands the situation of being a family carer helps in coping with one's own situation and builds self-confidence and self-esteem (Magnusson et al. 2002).

Interviewing older family carers through webcam was a challenge for the researchers but following the formed strategy helped in supporting the structure as well as the overall quality in the interviews. None of the family carers felt uncomfortable with the technological web-cam interview situation. The number of interviews was fairly large for being a qualitative interview study, but was decided upon to increase trustworthiness and transferability of data. After 20-25 interviews, saturation was obtained and the last interviews served to confirm the information of the others. Another way of enhancing the trustworthiness of the results was to have a constant and open discussion between the co-authors in the analysis of the data, until reaching consensus.

The results from this study are mostly positive, which may provoke questions about selection bias. We should clarify, therefore, that in order to participate in the study the participants only had to be willing to use the technique and to have

it installed in their homes. A majority of the participants had little or no previous experience of using computers (which could have lead to more practical problems than actually occurred). When technical problems were encountered, support nurses were quick to provide solutions.

The most serious limitation of the study is possibly its limited survival time. The rapid development of technical solutions related to ICT as well as increasing prevalence of computers with Internet access in older people's homes makes this a constantly changing arena. At the same time this is one of the strengths of the study too, since the results show that the participants do not only use the services of the intervention but also expand it by making use of the extended capabilities in relation to have access to high speed internet. In that sense the intervention itself expands.

From a rural perspective, moreover, access to internet, was expressed by the interviewees as a factor facilitating daily life. ICT-based caregiver support can be a way to introduce internet to older people who would not try it on their own, guiding them to make use of online services which may support them in daily life, with advantages both for the individual as well as the society. Health- and social-care provision has traditionally been weaker in rural areas and the ongoing changes may result in older people in rural areas becoming even more vulnerable due to increased loss of essential services (Phillipson and Scharf 2005). Internationally, the mean age of residents in rural areas goes up faster than in urban areas (Huber et al. 2008). The costs for provision of home care are higher in rural areas, partly attributed to greater transport costs (Wilson and Fernley 2007), which is likely to lead to an increased reliance on family caregivers providing support to those with dementia (Innes et al. 2011). One concern before the study was that it might be difficult for older family carers in rural areas to experience the same benefits from ICT-based caregiver support as in previous studies in more urban contexts. The results showed the opposite. A majority of family carers in the study had the ability to adapt and to self manage, in line with Huber et al. (2011) new definition of health. With mostly long-distance support from support nurses and without regular group meetings, the participants took initiatives of their own, finding ways to meet their individual needs. Instead of relying on support nurses as major support providers, family carers found peers and relatives to be supportive. Webcamera communication within the secure community was included in the intervention, but family carers extended the means of communication by also using chat- and video-communication programs available online, often initiated by their grandchildren. In doing so they were able to keep in regular contact with family members living far away, who did not have access to the secure community.

Summarising the results, we conclude that ICT-based carer support appears to be a way for older people living in

rural areas to learn to adopt new technology and to regain social inclusion. It is also a mean of contributing to improved quality in daily life.

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