Experiences of using information and communication technology within the first year after stroke – a grounded theory study

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Experiences of using ICT after stroke

Research paper

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Declaration of interest

The authors report no declarations of interest.

Keywords

ICT, Stroke, Information and Communication Technology, activities of daily living and neurology.

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Abstract

PURPOSE: The purpose of this study was to identify how people 6-12 months after stroke were using and integrating information and communication technology (ICT) in their everyday life.

METHOD: To capture the participants' experiences, one focus group and 14 individual interviews were carried out in Sweden and Denmark regarding the use of ICT in everyday life. The participants comprised 11 men and seven women aged 41-79 years. A grounded theory approach was used throughout the study and a constant comparative method was used in the analysis.

RESULTS: Five categories were identified from the analysis of the interviews with the participants: *1) Using the mobile phone to feel safe, 2) Staying connected with others, 3) Recreating everyday life, 4) A tool for managing everyday life,* and *5) Overcoming obstacles for using ICT.* From these categories one core category emerged: *The drive to integrate ICT in everyday life after stroke.*

CONCLUSION: People with stroke had a strong drive to integrate ICT in order to manage and bring meaning to their everyday lives, although sometimes they needed support and adaptations. It is not only possible but also necessary to start using ICT in rehabilitation in order to support people's recovery and promote participation in everyday life after stroke.

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Introduction

Worldwide there is a growing use of Information and Communication Technology (ICT) including mobile phones, tablets and computers, which are being integrated into people's daily activities. There is a variety of applications on smartphones and tablets that can be used to carry out daily activities in new ways, like reading the newspaper, playing games and communicating with family and friends, and the demands from society to use ICT are also rapidly increasing [1]. In 2015, 89% of the Swedish population had access to Internet at home through a computer, tablet and/or mobile phone, and 77% were using the Internet on a daily basis. The use of Internet in older generations was noted to be almost as high; in 2015, 84% of people over the age of 76 years had access to the Internet and 58% used Internet almost every day [2].

Stroke is one of the major causes for disability in the world, and the incidence of stroke is expected to increase in the near future because of an aging population and lifestyle changes [3, 4]. When suffering a stroke it affects many aspects of the person's everyday life and this often leads to dependence and reduced participation in everyday activities [5, 6]. Rehabilitation after stroke is important to improve functions and increase independence in daily activities that are being carried out in different settings, both at hospitals and at different in-patient and out-patient settings [7]. Although functioning usually improves over time, people are still dissatisfied with life as a whole at one year after stroke and need more rehabilitation [6, 7, 8].

Some ICT solutions have been tested within stroke rehabilitation with good results and used for example to improve memory, speech, motor skills, and balance [1, 9, 10, 11, 12, 13]. ICT has also been used to increase an individual's independence and engagement in daily activities [14, 15], to improve communication with professionals, and to support family caregivers [16, 17].

However, there are studies showing that people with acquired brain injuries, including stroke, could have a variety of difficulties in managing technology [10, 18, 19], such as problems with handling, recognizing, and finding functions on the mobile phone or computer [18].

When developing stroke rehabilitation one needs to examine the possibilities and obstacles for using ICT after stroke, and there is a lack of knowledge regarding how ICT is currently being used by people with stroke in their everyday lives. This knowledge is necessary to be able to know in what way ICT could support or hinder the stroke rehabilitation process.

The purpose of this study was to identify how people 6-12 months after stroke were using and integrating ICT in their everyday lives.

Method

This study was performed within a collaboration between Karolinska Institutet in Sweden and the University of Southern Denmark, which was a part of a larger project aiming to develop a technology supported model for a person-centred stroke rehabilitation intervention to be used within different contexts nationally and internationally. To be able to capture the experiences of a variety of people with stroke and to gather rich data, interviews and the qualitative analysis were carried out using a grounded theory approach [20].

Recruitment

The Swedish participants (n=8) in this study were identified through the Swedish Stroke Register [21] with assistance from a research nurse at a large university hospital. Furthermore,

participants (n=10) from two rural (i.e., a geographic area located outside towns and cities with low population density and small settlements) community rehabilitation centres in Denmark were selected, using two gatekeepers who identified eligible participants. Interviews were performed in Sweden by the first author and in Denmark by the third author.

Participants

The inclusion criteria were: 1) *6-12 months after stroke,* 2) *living at home,* 3) *being able to understand and answer interview questions,* 4) *having contact with an out-patient neurological rehabilitation,* and 5) *having used and owned a mobile phone before and after stroke.*

At first purposeful sampling was used in order to create a diversity regarding age, gender, living conditions, and severity of stroke, and along the way participants were added in a theoretical sampling to reach saturation (see Figure 1) [20, 22]. In total 23 people were invited to participate, three declined, one did not meet the inclusion criteria, and one was unreachable. Twelve individual interviews were performed in the participants' homes and two chose to be interviewed outside their homes. Additionally one focus group interview was performed with four participants in Denmark to enrich the material [20] and to capture the participants' joint experiences of using ICT after stroke [23]. A focus group interview increased the depth of the material through the group interaction in the discussions [24].

Participants' characteristics (e.g., age, gender, and living conditions) were gathered through health care records. Additionally, Stroke Impact Scale 3.0 (SIS) was used to describe the participants' perceived impact of stroke in their everyday lives [25]. The SIS measured the perceived impact of stroke within eight domains: strength, memory and thinking, emotion, communication, activities of daily living/instrumental activities of daily living (ADL/IADL), mobility, hand function, and social participation. Each of the domains contained 4-12 items (in total 59 items) that were scored on a scale from 1-5; the higher the score the less impact

(fewer problems in everyday life) was perceived. The domain scores were calculated using an algorithm to create a scale from 0-100 [26]. The domains' strength, ADL/IADL, mobility, and hand function have been put together to form one physical domain [26]. The SIS also included a separate question asking the individual to rate his/her overall perceived recovery on a scale from 0-100, with 100 representing full recovery [25]. The participants' characteristics are described in Table 1.

Insert Table 1 about here

Data collection

Based on the aim of the study and previous research [27], an interview guide with open-ended questions was developed as a framework for all the interviews and was used as a flexible tool [20] [see Table 2]. The individual interviews lasted for about 30-90 minutes and the focus group interview lasted for 135 minutes. To be able to gather rich data, the participants were asked to describe their experiences rather than just answering questions to allow the participants' stories to emerge [20]. When needed, the interviewer supported the communication with the participants by clarifying or repeating the questions [28]. To facilitate the discussion in the focus group interview, in addition to the interview guide, photos were used to embody and materialize the different ICT devices discussed such as smartphones and laptops [29]. The interviews were audio-recorded and transcribed verbatim by the first and third author, respectively [23].

All participants received written and verbal information about the study and gave their verbal and written consent to participate. Ethical approval was received from the Regional Ethics Committee in Stockholm regarding the Swedish part and by the Danish Data Protection Agency regarding the Danish participants. All names were altered in the results to ensure the participants' confidentiality.

Data analysis

The transcribed interviews were analysed by the first author with a grounded theory approach [20, 22], using a computer-based software, NVivo, to organize and code the data [30, 31]. The analysis process is described in Figure 1. The initial coding was performed to create an understanding of the data using both in-vivo and descriptive codes. The initial codes were kept very close to the text, aiming to create as many codes as possible to be used in the following analysis. The next phase in the analysis was to move on to focused coding using a constant comparative method, moving back and forth in the text, to analyse and categorize [22]. In this phase, additional interviews were added to reach saturation in the categories. Memos were written during the whole process and were increasingly analytic, first describing the initial reflections and results, the properties of the categories that emerged, and how they were linked together [20]. Throughout the entire process, the results were discussed and reviewed by the whole group of authors.

Insert Figure 1 about here

Results

Five categories were identified from the analysis of the interviews: *1) Using the mobile phone to feel safe, 2) Staying connected with others, 3) Recreating everyday life, 4) A tool for managing everyday life,* and *5) Overcoming obstacles for using ICT.* From these categories one core category emerged: The drive to integrate ICT in everyday life after stroke (see Figure 2).

Insert Figure 2 about here

The participants described what had driven them to gradually integrate different sorts of ICT in their everyday lives after stroke. The integration of ICT was an ongoing process and usually started with using simple functions on the mobile phone such as receiving calls and

text messages and then gradually learning to use more advanced functions, both on the mobile phone and the computer. All of the participants used ICT before their stroke and some of the participants had returned to how they earlier had used ICT after their stroke; others had been forced to adapt their use; and for some the use of ICT in everyday life provided a new meaning. Several also mentioned thoughts about how to further integrate and learn how to use different ICT in the future.

Using the mobile phone to feel safe

The mobile phone was used in daily life to make calls but specifically after the stroke the mobile phone had a new meaning for the person by contributing to feeling safe and thereby enabling the person to become more independent. The mobile phone was used to get in touch with significant others as well as to be able to call an emergency number; for example, if they fell or had another stroke.

Most of the participants had started to carry their mobile phone with them at all times after the stroke both inside and outside their homes, and they made sure it was charged at all times. This seemed to be important especially for those living in a rural setting who stayed at home alone during the day. One of the participants said:

"It (the mobile phone) is with me, because it's very important. It's my lifeline.… In case I fall or something". (Ejvind)

The participants expressed that their family members also were more concerned about their safety after their stroke and wanted the participants to have the mobile phone close by, as one participant expressed:

"I have got strict orders on that; I should have it on me all the time!" (Kurt).

Although most of the participants expressed that they were using the mobile phone to a greater extent after stroke to feel safe, there were a few that did not use the mobile phone as

much. Two participants, one living in an urban setting and the other one in a rural setting, did not express the need for using the mobile phone for this purpose since they always were together with their spouses, which made them feel safe.

Staying connected with others

Most of the participants spent a great deal of time at home after stroke since they were unable to work and had disabilities that made it more difficult to meet people outside their homes. ICT such as mobile phones and computers then substituted for face-to-face interaction and created possibilities for staying connected with others.

Several of the participants described that family and friends kept in touch more frequently through phone calls and text messages after the stroke. This was mostly seen as positive, although one of the participants expressed that he felt more controlled than connected because of the family's concern for his wellbeing and said:

"The greatest problem for me still… it's a bit silly… One loses the position! My wife and my son, they have calmed down, but they kept track of everything, what I ate, what I did. When I went out, after half an hour they started calling me". (Hassan)

Most of the participants were unable and/or not medically cleared to drive after stroke which affected their ability to leave their homes, especially for those who lived in rural settings where access to alternative transportation was limited. Because of this, being able to get in touch with family and friends was expressed as more important for the participants after stroke and was something that drove them to integrate ICT in their everyday lives. Text messages, phone calls, and social media were used by several of the participants as a substitute for meeting people in real life to a greater degree than before the stroke.

Several of the participants reconnected with old friends and found new ones through social media, such as Facebook and other social networks. One participant expressed the importance

of social media when not being able to get out of the house due to her disabilities after the stroke:

"Facebook. Well, it's like my connection with the surrounding world!" (Barbro)

The mobile phone enabled a feeling of being connected by sharing photos and videos with friends and family, for example, of people they loved, hobbies or something nice they had seen during the day. One participant could no longer take care of his carrier pigeons, but described how he used a video of them to enhance communication with friends and to keep up with his hobby:

"When I talk to others, then I show them the pigeons; that the one over there is the father to that one or something" (Ejvind)

Opportunities to meet and talk to others in the same situation were appreciated as they shared experiences, and a few participants on their own initiative joined Internet-based networks for stroke survivors. Overall, being connected with others was described as important in the participants' new situation after stroke.

Recreating everyday life.

The participants expressed that their everyday lives changed radically after the stroke, especially for those who had been working. They lost important roles and activities, recreated their everyday life, and had integrated ICT in their lives. These activities provided and aimed at recovery or was used for entertainment.

All of the participants used ICT for joy and entertainment such as listening to the radio, watching TV, playing games, and listening to music. These activities were seen as a source of inspirations for starting and continuing the use of ICT after stroke. Several of the participants also described that it was important for them to be able to keep-up-to date on news, weather and sports using play channels, teletext, digital newspapers, and Internet on their mobile

phone, tablet or computer. Being able to access the news on Internet was very important for Hassan, and he said: *"I am obsessed with the news almost, one could say".* (Hassan)

Some of the participants found new activities related to ICT that were both fun and beneficial for their wellbeing and recovery after stroke. It could be something that improved their ability to speak or helped them regain cognitive abilities like solving Sudoku, using computer programs, mobile applications, and games. Two of the participants described practicing their typewriting in order to be able to use their computers as efficiently as before their stroke. Others used mobile games and applications to improve their cognitive skills. One participant said:

"There are also different mind-games, mobile applications that I find really entertaining! And also these quizzes…to challenge my friends…. I had them before too, but now I choose different opponents [laughter]… so that I have a chance to win!" (Magda)

Several of the participants integrated rehabilitation in everyday life after stroke through regularly attending physiotherapist sessions, visiting the gym, and taking walks. Being able to monitor their own recovery progress was expressed by one participant as a motivating factor:

"*I have MyTrack (a mobile application) when I´m out walking that shows my track, time, speed…. Exercise is boring… if you find something fun, you use it more". (Ingvar)*

Besides their own initiative to use ICT for their recovery from stroke, a few persons were prescribed computer programs through rehabilitation professionals, mainly for training cognition and memory skills, which they thought were beneficial.

In the process of recreating everyday life after stroke by finding new activities and routines, the participants seemed to have a drive to integrate ICT in everyday activities.

A tool for managing everyday life.

Being able to manage everyday life independently despite the impact of stroke was expressed as a strong drive for using ICT in everyday life, such as time planning, seeking information, handling the economy, and other errands.

The computer was described by most of the participants as useful when managing their affairs, such as paying bills, contacting the authorities, and engaging in non-profit organizations. It was important for them to be able to be independent, especially after their stroke. One participant said regarding her computer:

"I use it for online banking, e-books… When I first came home (from the hospital), I didn´t use it, I simply couldn't, any more, I was so afraid that I wouldn´t be able to control it ever again, it took a long time, but now I can handle it". (Anna)

Some of the participants described needing to be able to handle a computer and different software in the near future, at the workplace or to search for jobs, and they were worried that the impact of stroke might hinder them.

Managing their everyday lives was important, especially for those who were at home alone during the majority of the day or had responsibilities towards their families. Most of the participants had received a great deal of help from significant others, especially in the acute stage after stroke to manage everyday life. Several of the participants used reminders and a calendar (digital or on paper) to be able to keep track of appointments and daily routines. One participant, being a single parent, described that in the first weeks after being discharged from the hospital she was unable to manage daily life due to cognitive and communication difficulties after her stroke. She received a great deal of help from her family and friends, but gradually as she recovered she was able to manage on her own, including using advanced ICT such as paying her bills online and aiming to return to work in the near future. She said:

"Regarding technology… from the beginning it was really challenging for me and then I hardly knew how to write an SMS and press send… I didn't pay my bills in the beginning and so on". (Monika).

Several of the participants mentioned that they still, six to twelve months after stroke, were unable to go grocery shopping by themselves because they were unable to drive, to carry heavy bags, and in one case a participant was ashamed of his disabilities and was afraid of bumping into someone he knew. Several of the participants used the Internet to search for information about different products and some bought groceries online to be able to be independent after stroke. Barbro used to do all the grocery shopping and cooking for the family before the stroke but was now unable to do so. She described:

"We thought that we should shop for groceries online, so now I try to find different options, because my husband thinks it's quite a lot of work to go shopping". (Barbro)

Some mentioned that they were more careful with writing down things they needed to remember after their stroke due to problems with memory and thinking, such as to-do lists, lists of phone numbers, as well as used reminders on the mobile phone. One participant had severe problems with his memory and explained how he managed his everyday life through taking notes and photos with his mobile phone, and then summarised each day. He said:

"I grieved a lot in the first months that the days just disappeared… I summarise… and I have made a little box…. I grieved that my days, I did not know what… but now I see the box and then I know that there they are!" (Sten)

ICTs were also used by several of the participants to seek information about diseases and symptoms, but also for contacting health care and rehabilitation through the Internet, whenever they felt the need for that. One participant described how the mobile phone could be useful in everyday life by managing appointments and contacting the rehabilitation centre:

"When I was going to call the rehabilitation centre to tell them I was late…. I think I Googled and ended up there". (Monika)

ICTs became a tool for managing everyday life, to keep up with their daily activities, and to compensate for disabilities after stroke.

Overcoming obstacles for using ICT.

Using ICT was not always experienced as easy. There were several challenges and obstacles described such as reduced fine motor skills, memory, cognition, perception, and speech that affected, for example, their use of the mobile phone or computer. Despite the different obstacles for using ICT that the participants experienced after stroke, they were all eager to continue their use of ICT and most of them expressed that using it was a necessity, something that was useful and an inevitable trend in today's society. Some activities cannot be performed or are more difficult without ICT, such as paying bills or finding phone numbers. Being able to handle ICT was described as important for their independence in everyday life.

The participants described stroke-related problems, for example, fine motor skills, reduced vision, and decreased concentration affected their use of ICT. To overcome these obstacles some described that they bought new hardware (such as a bigger computer screen or a tablet), accessories (for example a keyboard for the tablet), and started using new functions on the mobile phone or computer in order to be able to use them. One participant described the following with regard to his mobile phone:

"Small keys…. I felt it was very hard in the beginning, but then I do this (turns the phone sideways) and then it (the keyboard) is a little bit bigger". (Ingvar)

These kinds of solutions were something they usually came up with on their own, when seeking to solve some difficulties with ICT. They found solutions through trial and error, searching the Internet and with the help from relatives or friends.

Besides the challenges related to the stroke, there were also other obstacles described by the participants. A few described that they were resistant to ICT because they were afraid of being victims of Internet fraud, and others were generally concerned about how technology development in society affected people. One participant described how the rapid development within ICT created a feeling of being outside of the rest of society. He said:

"The first thing they say is: "Go to www... blah, blah and then you don´t understand anything! ... but if I did get one (computer) I think I would use it!" (Leif)

Some participants expressed how they felt insecure about the use of ICT because they did not have sufficient knowledge about how to handle, for example, smartphones and computers, especially when it came to buying and installing new devices and software. They expressed a need for support when learning to use and handle ICT and stated that they received assistance from family and friends, both before and especially after their stroke. This assistance involved purchasing the appropriate hardware, installing the software, learning how to log on to in/out e-mail, and getting support when a problem arose. One participant said:

"I have problems… if I can't fix it myself, if there is something wrong. But fortunately I have some good friends that, or one good friend, whose husband can fix things". (Anna)

The use of ICT in everyday life was expressed by the participants as something they all did, to a different extent, regardless of their disabilities after stroke and that solutions were found to overcome the obstacles that might appear.

Discussion

The purpose of this study was to identify how people 6-12 months after stroke used and integrated ICT in their everyday lives. The results described the participants' drive to integrate ICT in their everyday lives: to feel safe, to be able to stay connected, to recreate and manage everyday life, and finally to solve the obstacles and solutions for integrating ICT in daily activities. In this study ICT was described asa toolfor increasing participation and independence: for example, being able to take care of errands, seeking information, and being able to stay at home alone despite fear of falling or another stroke. Participation in daily activities was identified as an overall goal for rehabilitation [32] and being able to manage daily life independently promoted participation in everyday life.

At 6-12 months after stroke the participants in this study, despite the impact of stroke on memory and thinking and fine motor skills, incorporated ICT as a part of their everyday lives and returned to earlier use of ICT or found new ways of using ICT. This is in line with previous studies showing that older adults with mild cognitive impairment used everyday technology (including ICT) to support daily activities, and that the use of technology was retained, performed in a new way, and even updated [33].

Even introducing new technology was possible since studies have shown that, for example, tablet technology was perceived as easy to use by people within rehabilitation of all ages and regardless of earlier use [15, 17]. When using a new device, support was needed especially in the beginning after stroke [16]. Having support from family and friends was needed for the participants in this study, both when introducing something new and when something unexpected happened. If ICT becomes an integral part of rehabilitation after stroke, there is a need for assessing the persons' skills in using ICT and for developing interventions, which supported their skills within the context of daily activities in everyday lives. Assessments for the ability to use everyday technology (including mobile phones, tablets and computers) have been developed, such as Everyday Technology Use Questionnaire (ETUQ) [34] and

Management of Everyday Technology Assessment (META) [35], although they are not yet implemented in clinical stroke rehabilitation practice. These kinds of assessments could be used as systematic methods by the therapists to identify the needs and support in this area for the person with stroke.

In this study it was obvious that the drive to use ICT after stroke was strong regardless of earlier experiences and the effects of the stroke. Most of the participants were forced to reconstruct their habits regarding their use of ICT, which included learning how to do things in a new way and some were still in the process of accepting their new life situation [33]. The stroke also made them change roles for some it included that they had stopped working. Most of the participants received more help from family and friends in daily activities including the use of ICT.

The results showed that the mobile phone became an important part in creating a feeling of security after stroke, especially when being home alone, due to fear of falling or having another stroke. People after stroke are more likely to fall at home due to the effects of the stroke [36]. Experiencing a fear of falling was common after stroke, which led to limitations in daily activities [37]. Those who were not alone during the day did not use the mobile phone to the same extent. However, having the mobile always nearby and making sure it was ready to be used was perceived as important for their independence.

Mobile phones, computers and tablets are ordinary objects that the participants were familiar with since before their stroke, and they were not seen as special aids. Using familiar and normal objects promoted the sense of normality instead of being a symbol of being disabled [38]. The results showed that ICT can be used to practice cognitive and physical skills and participate in engaging activities, which can contribute to the recovery after stroke. Previous research showed that ICT can promote activity, counteract inactivity and boredom using

games and social networks [15]. Being engaged in activities during the day created meaning and promoted participation after stroke.

In this study both mobile phones and social networks seemed to be important ways of participating in social activities, especially since some activities outside of the home were hindered due to the effects of stroke. Providing opportunities to exchange experiences with others in the same situation seems to be an area where ICT could play an important part in peoples' everyday lives. ICT has the potential to break social isolation and become a valuable tool in rehabilitation. Creating opportunities for rehabilitation and communication with professionals are important and, in a previous study, the participants achieved their own rehabilitation goals to a greater extent by using different "off-the-shelf" applications. They were satisfied with using video conferences as an alternative to phone calls and/or home visits [17].

The results of this study showed that ICT has the potential to enable participation and independence in everyday life after stroke and inspired people with stroke to find new ways of performing daily activities. This knowledge was used in developing an ICT-based intervention within stroke rehabilitation that increased independence and participation in engaging activities in everyday life as well as supporting communication with health professionals. Future studies are needed to explore the possibilities to use ICT in stroke rehabilitation from the professionals' perspective.

Strengths and limitations of the study

To use an inductive approach was suitable, since the aim was to reach an understanding of how ICT was used after stroke based on the material and not based on a predetermined hypothesis [23]. Using a grounded theory approach made it possible to capture the process of integrating ICT after stroke and to be able to add more data until saturation in the categories

was reached. The focus group interview contributed with an in-depth discussion about the use of ICT in addition to the descriptions of the individuals' use of ICT [24].

Using data from two different countries made the material rich and substantive to serve as a valuable base in order to develop a model for stroke rehabilitation to be used within different contexts and cultures. Although Swedish and Danish are quite similar in spoken and written text, the use of data in two different languages made the analysis somewhat more complex. To secure the validity of the interpretation, the results were discussed with the third author who performed the Danish interviews.

Conclusion

Based on the results that described the drive to integrate ICT after stroke, we concluded that it is not only possible but necessary to start using ICT in stroke rehabilitation, since people who had a stroke already were using mobile phones, tablets and computers to manage and bring meaning to their everyday lives.

Declaration of interest

The authors declare that there is no conflict of interest.

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Figure 1. Flow chart describing the analysis process

Figure 2. Overview of the core category and the five categories in the results

Implications for rehabilitation

- People with stroke have a strong drive for using Information and Communication Technology in their everyday lives, although support and adaptations are needed.
- The recovery process of people with stroke could benefit from the use of ICT in the rehabilitation and ICT could possibly contribute to independence and promote participation in everyday life.
- Knowledge from this study can be used in the development of an ICT-based stroke rehabilitation model.

TABLE 1: *Characteristics of participants 6-12 months after stroke*

Name *	Age	Gender	Living condition †	SIS ‡ physical domain	SIS ‡ memory and thinking	SIS ‡ emotion	SIS ‡ communication	SIS ‡ participation	SIS ‡ recovery
Ingvar	74	Male	Urban	95.54	96.43	80.56	100	87.5	80
Hassan	56	Male	Urban	49.11	71.43	86.11	64.29	37.5	30
Leif	68	Male	Urban	66.07	85.71	38.89	71.43	71.88	80
Rosa	79	Female	Urban	81.25	96.43	91.67	92.86	96.88	80
Magda	56	Female	Urban	81.25	64.29	86.11	71.43	59.38	45
Monika	52	Female	Urban	95.54	89.29	77.78	89.29	90.63	85
Sven	67	Male	Urban	78.57	46.43	61.11	53.57	50	55
Barbro	55	Female	Urban	21.43	93.86	88.89	96.43	37.5	20
Börje	59	Male	Rural	42.86	89.29	80.56	100	28.13	50
Eskil	71	Male	Rural	96.43	100	100	100	100	80
Ejvind	64	Male	Rural	41.07	100	94.44	100	62.5	65
Kurt	41	Male	Rural	48.21	39.29	86.11	75	21.86	25
Eva	54	Female	Rural	67.85	50	58.33	64.29	21.86	75
Line	64	Female	Rural	87.5	75	80.56	75	84.38	85
Focus group									
Jens	61	Male	Rural	91.96	100	77.78	96.43	100	80
Johan	68	Male	Rural	49.11	32.14	52.78	78.57	75	70
Anna	72	Female	Rural	98.21	96.43	88.89	92.86	84.38	80
Brian	51	Male	Rural	91.07	89.29	69.44	85.71	59.38	80

* Altered names † Rural area i.e. a geographic area located outside town and cities with low population density and small settlements ‡ Stroke Impact Scale (SIS) domain scores (the physical domain includes strength, ADL/IADL, mobility and hand function).

TABLE 2: *Interview guide*

The stroke rehabilitation

What happened when you had your stroke?

Tell me about the rehabilitation you have received?

What kind of interventions have you been offered?

Everyday life

Can you tell me about your situation today?

What activities do you perform that engage you?

ICT use after stroke

What kind of technology (such as mobile phones, tablets

or computers) do you use in your everyday life?

How do you use your…? For what purpose?

Is there any difference from how you used the technology before your stroke?

Have you used any technology within the rehabilitation after stroke?