



Older adults' experiences of ehealth in health and social care

Jukka Mielonen¹, Hanna Kuusisto^{1,2}, Ulla-Mari Kinnunen¹, Anssi Kemppi³, Kaija Saranto¹

¹ University of Eastern Finland, Department of Health and Social Management, Kuopio, Finland; ² Tampere University Hospital (TAUH), Department of Neurology and rehabilitation, Tampere, Finland; ³ Finnish Pensioners' Federation, Helsinki, Finland

Jukka Mielonen, University of Eastern Finland, Department of Health and Social Management, Yliopistonranta 1, FI-70210 Kuopio, FINLAND. Email: jukmi@student.uef.fi

Abstract

Using the Unified Theory of Technology Acceptance (UTAUT) model as a framework for this study, the aim was to describe how older adults assess digital services in terms of ease of use and quality in health and social care and how often those services are offered. Further, the aim was to describe how older adults receive support for service use, focusing on people aged 65 and over. A structured web-based questionnaire was used for data collection. The data (N=978) was analysed by quantitative statistical analysis. Most of the respondents found the digital services of health and social care easy to use. The function of the services was considered understandable. Respondents also felt that they could find the necessary information about the services. For the most part, they received service use help from their children or grand-children. However, the role of health and social services professionals was less important. According to our findings, older adults received minimal support from health and social care professionals or employees in third sector organizations. Although, most respondents (70 %) needed support when using digital services.

In the future, health and social care service providers should invest in increased digital services. In conclusion, we found that older citizens know how to use digital services in the health and social care context and they receive adequate help from their relatives in using them.

Keywords: technology personal health services, quality of health care, health, social behaviour

Introduction

The term "eHealth" refers to digital healthcare services. The European Union (EU) [1] has defined the term as the use of information and communication technologies in healthcare products, services, and processes. This term includes changes and new functions to improve health care by using information and communication technology [2] in

health systems. Based on the study context, here we use the term digital health care and social services instead of eHealth. In this study, digital services refer to, among other things, remote services via the internet, the Social Insurance Institution of Finland services and self-care services. Digital services in health and social care in Finland can cover, for example, online secure chats with healthcare

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professionals, renewing prescriptions, online appointments or access to medical information.

The need for services for older adults is growing in relation to the increasing life expectancy of the population. Digitalization enables the availability of services for the needs of a larger population. Health care and social services for older adults must be available, accessible, and adequate based on their needs. In addition, they must be easily informed, their guidance must be professional and the criteria for access coherent [3]. The above also applies to digital services. Digital health and social care services are intended to support well-being and coordinate care, as well as provide freedom of choice and control of a patient's own data [4]. From the older citizens perspective digitalization of health and social care services can pose challenges. The usability of digital services may be considered good from the point of view persons under the age of 65. However, reduced physical and cognitive function due to ageing can affect usability experiences [5,6]. A recent study shows that age and digital competence have a significant impact on the use of online services, with younger and more digitally competent individuals having a higher likelihood of using them. This highlights the need to develop online services that cater to the needs of older and less digitally literate individuals, as well as to provide training to improve digital literacy [7]. Although, according to some previous studies, older adults are satisfied with digital services and consider them useful when they are related to their care needs [8,9]. Thus, when designing services, consideration must be given to ageing issues [10].

According to the World Health Organization (WHO), by 2050 the world population will include 2 billion people aged 60 or older. For example, by 2025 30% or more of the Finnish population will be older than 60 [11]. When comparing different countries with

the largest number of older adults, Finland ranks 3rd in the top 50 [12]. Extended life expectancy can bring new opportunities for older adults themselves, their families, or society as long as the wellbeing of older adults is taken care of [13]. For example, older adults may work longer and participate in a society's decision-making. Thus, older adults may need support for digital services. According to previous studies, older adults may have challenges accessing the internet or difficulties using computers, or the use of the internet might be unfamiliar [14,15]. Thus, the existence of contact persons who can assist older adults with technical problems related to digital services has been identified as important [8]. According to an international literature review, when older adults received guidance from nursing staff on how to use a digital system, satisfaction with the usability of personal health records was improved [16]. A study by the Irizarry's research group [17] also shows the need for older adults to receive guidance on the use of electronic health services. Moreover, digital health services can improve communication between professionals and patients and help patients prepare better for appointments, which increases their engagement in their health and well-being [18,19]. Family members play an important role in assisting in the use of technology. A previous study has shown that many older adults want to give access to their own data to a person close to them and consent is preferably given to close relatives or their children [20].

The objective of this study is to describe how persons aged 65 and over experience digital services in terms of ease of use and quality in health and social care. Furthermore, we aimed to evaluate how older adults receive support for the use of digital services. In addition, we tested how morbidity affect ease of use, received support, and offer to use digital services.

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The research questions are as follows:

- 1. How do older adults receive support for the use of digital services in health and social care?
- 2. How often are digital services offered to older adults?
- 3. How does morbidity affect ease of use, received support and offering to use digital services?
- 4. How do older adults experience digital services in terms of ease of use and quality in health and social care?

Methods

In this quantitative study, the used questionnaire was formed by operationalizing the variables of UTAUT (Unified Theory of Technology Acceptance, see Table 1) [21]. A structured web-based questionnaire containing 39 questions and statements using a five-step Likert scale was used for data collection. Before data collection the questionnaire was tested by 15 people. Half of the testgroup were over 65 years old and the rest were health care professionals. Only part of the data obtained from the questionnaire was used for this study [22,23]. The **Table 1.** Explanations of the core determinants.

UTAUT theory is based on eight acceptance and technology use models. The idea of this theory is that researchers do not have to select only one model and thus lose some significant factors of other models. Behavioural intentions are the main determinant influencing the use of technology, and four core determinants affect behavioural intentions and use behaviour: performance expectancy, effort expectancy, social influence and facilitating conditions. The explanations of these determinants are shown in Table 1. These determinants are influenced by gender, age, experience, and voluntariness of use based on the eight models behind the theory [21].

The model has been found to be a good tool for assessing the likelihood of introducing new technologies and for understanding the factors of acceptance. Understanding the factors of acceptance can help the target group, which includes those least likely to adopt and use new technologies, to identify the right actions (e.g., training) [24]. The UTAUT model has been studied and expanded (UTAUT2) and previous studies have shown that the model works well [21,24,25].

Core determinant	Explanation	Variable
Performance expectancy	How the use of the system will help to improve users' work performance. Gender and age affect this determinant.	Usefulness, understanda- bility, trust, willingness
Effort expectancy	The extent of the sense of ease of use. Gender, age and experience affect this determinant.	Ease of use
Social influence	The extent to which important people (to the user) expect that a new system will be used. Gender, age, voluntariness and experience affect this determinant.	Received support
Facilitating conditions	The extent to which the user believes that organizations and technical infrastructure support technology use. Age and experience affect this determinant.	Offered digital health care and social services

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In this study, usefulness, understandability, willingness and trust were used as dependent variables to define performance expectancy. In this study, performance expectations refer to the quality of services. Ease of use defined effort expectancy, received support defined social influence and offered (to electronic services) defined facilitating condition. The variables were compared with independent variables such as morbidity, age, ICT (Information and Communications Technology) skills and experience. In this study, quality is measured by the intelligibility of the service.

The target group was people aged 65 and over. The link for the questionnaire was distributed in collaboration with the Finnish Pension Association via email. The e-mail was sent to all members of the association, who had an e-mail address which is ca. 5000. It was possible to respond to the survey with assistance. The data was collected during a threemonth period in early 2019. The Finnish Association for the Welfare of Older People advertised the research on its own website and on the SeniorSurf website. The research was also advertised on social media, websites and various publishing sites (e.g., LinkedIn and Facebook). In addition to the information, the respondents were asked for their consent for inclusion in the study. If the respondent did not give his or her consent, the questionnaire would not open. According to Finnish legislation, Ethics Committee approval is not required in registry and guestionnaire surveys when no intervention is carried out and respondents remain anonymous. This study has been conducted in accordance with Finnish National Board on Research Integrity (TENK) guidelines [24]. The research material will be

permanently stored in The Finnish Social Science Data Archive (FSD), in compliance with General Data Protection Regulation (GDPR).

The research data was analysed using IBM SPSS Statistics 27. During the analysis phase, Likert-scale responses were reclassified by combining categories such as very often and often as one answer. The differences between the groups were compared using the Levene's T-test (significance level α = 0.05) and the Mann-Whitney and Kruskal-Wallis tests. The reliability of the study was measured by the Cronbach's alpha test. The alpha coefficient for the seven variables is .815 (see variables in Table 1).

Results

A total of 1,020 responses were received, of which 42 were rejected due to incorrect age (age under 65 or over 110 years) or missing age. The sample size thus consisted of 978 replies (N = 978). The calculation of the response rate was not feasible due to the distribution of the survey through various channels, including online pages. Socio-demographic and disease-related ratios were calculated from the data. These ratios have been studied in previous articles related to this article [25,26].

Most of the respondents were female (66.7 %) and they replied to this questionnaire mainly independently. The age of the respondents was 65 to 90 years (std. deviation 4.67, mean 71.15 years). Over half of the respondents lived with someone, and they evaluated their own ICT skills to be good. The background information of respondents is given in Table 2.

Table 2. Patients' eHealth needs in a primary care management of symptomatic knee osteoarthritis with patient-related background factors.

Age group		65–74		75–84	8	85 and over	
	n	% *	n	% *	n	% *	
Age	765	78.2	207	21.2	6	0.6	
Gender							
Female	524	68.9	123	60.3	1	16.7	
Male	237	31.1	81	39.7	5	83.3	
Reply to the survey							
Independently	756	99.0	204	98.6	4	66.7	
Assisted	8	1.0	3	1.4	2	33.3	
- ()							
Form of residence	225	20.0	66	24.0		0.0	
Alone in own home	225	29.8	66	31.9	0	0.0	
Together with someone	529	70.1	140	67.6	6	100.0	
Service home/retirement home or similar	1	0.1	1	0.5	0	0.0	
Similar	1	0.1	1	0.5	U	0.0	
ICT* skills							
Good	487	63.7	93	44.9	1	16.7	
Fair	261	34.1	109	52.7	3	50.0	
Poor	17	2.2	5	2.4	2	33.3	
Disease							
Heart disease	141	18.4	72	34.8	4	66.7	
Musculoskeletal disorders	148	19.3	42	20.3	2	33.3	
Diabetes	95	12.4	27	13.0	3	50.0	
Rheumatic disease	40	5.2	6	2.9	0	0.0	
Psychiatric disorder	9	1.2	1	0.5	0	0.0	
Parkinson's disease	5	0.7	2	1.0	2	33.3	
Memory illness	2	0.3	4	1.9	0	0.0	

^{*}ICT = Self-assessed information and communication technology skills, %* = percent within age group



According to the survey, respondents received help with information technology mostly from their children or grandchildren (44.2 %), whereas the role of spouses (9.4 %), friends (6.4 %), organizations/associations (4.5 %) and health and social services professionals (0.9 %) was less important. 29.2 % of the respondents thought that they did not need any help and 4.9 % thought that opportunities for getting help with using information technology were insufficient. The answers by age group are presented in Table 3. Illness was not a relevant factor in experiencing insufficient help. The difference did not prove to be significant by the t-test of independent samples: t(889,828) = -1,547, p = 0,122.

Only 5.4 % of all respondents were very often or often offered to use digital services. 37.9 % of the respondents reported that they have sometimes or rarely been offered to use digital services. Slightly over half (56.8 %) of the respondents reported that they have never been offered to use digital services. The answers by age group are presented in Table 4. A person's health status does not appear to have a statistically significant impact on the experience of

offering to use digital services (p-value = 0.117 of the two-way Mann-Whitney U-test).

Most respondents (62.4 %) under the age of 85 found digital services to be easy to use. No differences were observed in the comparison between the age groups 65 to 74 and 75 to 84 years of age. Morbidity does not appear to have a statistically significant impact on perceived ease of use (p-value of the two-way Mann-Whitney U-test = 0.552).

The respondents (89.6 %) understood the function of digital services well in all age groups. In response to the statement, 'the contents have been presented on the service (site) understandably', 69.4 % fully or partially agreed. No differences were observed between the age groups. The respondents trusted their ability to find the necessary information when using digital services. Of all age groups, 72.6 % fully or partially agreed with the claim, 'when using the digital service, I trust that I will find the necessary information'.

In the future, 77 % of all respondents plan to use digital services more. The results of the future use of digital services are presented in Table 5.

Table 3. Source of help (the most suitable option) (N = 976).

	65–75			74–84		85 and over	
	n	%	n	%	n	%	
Spouse	75	9.8	15	7.2	2	33.3	
Children or grandchildren	318	41.7	109	52.7	4	66.7	
Friends	46	6.0	17	8.2	0	0	
Health and social care professionals	2	0.3	1	0.5	0	0	
Organizations/associations peer tutors	33	4.3	11	5.3	0	0	
Common service point	5	0.7	4	1.9	0	0	
I cannot get enough help	38	5.0	10	4.8	0	0	
I do not need help	246	32.2	40	19.3	0	0	
Total	763		207		6		







Table 4. Offering to use digital services by age groups (N = 891).

Age group		65–75		74–84	85	85 and over	
	n	%	n	%	n	%	
Very often or often	42	5.9	6	3.4	0	0	
Sometimes or rarely	279	39.4	53	30.0	5	100.0	
never	388	54.7	118	66.6	0	0	
	709		177		5		

Table 5. Use of digital services in the future (N = 954).

Age group	65–75			74-84	85	85 and over	
	n	%	n	%	n	%	
Fully or partly agree	582	79.2	150	74.3	3	60.0	
Partly or completely disagree	104	14.1	25	12.4	2	40.0	
Cannot say	61	8.3	27	13.3	0	0	
	747		202		5		

Most of the respondents reported willingness to digital services in the future, especially people aged 65–74. Of the respondents in this age group, almost 80 % planned to use digital services more. 14 % of this age group answered that they are unsure about using digital services more in the future. Almost 75 % of 74- to 84-year-olds were planning to use digital services more and 25 % were unsure.

Reflections and conclusions

According to this study, people aged 65 to 84 were mainly satisfied with the usability of digital services, and they were willing to use them, and the respondents plan to use digital services more in the future. Although, according to some previous studies and this study, older adults are satisfied with digital services and consider them useful when they are related to their care needs [8,9]. In the future, health and social care service providers should invest in increased digital services together with third sector organizations.

Previous studies show that older adults might have difficulties with digitalization [14,15]. Our study shows that morbidity has no effect on perceived ease of use, received support or offered to use digital services. The function and the content of the services were well understood, and the respondents trusted their ability to find the necessary information easily. From the point of view of understandability and reliability, the quality of services was sufficient. Also, previous study shows the need to develop online services that address the requirements of older and less digitally literate individuals, as well as the need to provide training to improve digital literacy [7].

Assistance in the use of digital services has an impact on the experience of using the services, as shown also in previous studies. The respondents needed guidance on the use of digital services, and they were more satisfied with the usability of the system, having received guidance from medical staff [16-18]. According to our findings, older adults received minimal support from health and social care professionals or employees in third sector

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organizations. Although, most respondents (70 %) needed support when using digital services. On the other hand, 95 % of the respondents experienced that the received support was sufficient. In the future, it would therefore be justified to increase the role of the third sector, for example, in supporting the digital skills of older adults. Health and social service providers should also invest more in supporting the use of their digital services and guiding citizens and when designing services, consideration must be given to ageing issues [10].

We found that the respondents received help with information technology from their children or grandchildren. This also proved to be the main source of assistance for all age groups. Previous studies also confirm that close persons or family members play an important role in obtaining technical assistance and the contact person plays an important role in solving the technical problems of older citizens [9]. According to a previous study, close relatives or children are preferably given the authority to act on behalf of an older adult family member [21].

The UTAUT model was used in the study aims to predict the use of technology based on intention to use it. According to the model, performance expectancy, effort expectancy, social influence and facilitating conditions affect the intention to use technology [20]. The model used and the questionnaire derived from it were well suited to the study, as has been observed in previous studies [25,26]. One of the advantages of using the UTAUT model is that it can also be used in the context of health and social care.

The main limitation of this study is the restriction of the target group age, although older adults were eager to answer the questionnaire. Over forty answers had to be rejected because the respondents were under 65 years old, indicating that the retirement age is relatively low in Finland. A digital survey may distort the results of the study because the voice of people who do not use a computer or smart devices is not heard. Thus, the validity of the study may be affected based on the data collection method. However, it was possible to participate in the study with assistance and there was a relatively small number of these assisted responses (n=13). The most active age group participating in our study was people aged 65 to 74, as they represented most of the participants (78.2 %). This created some bias among participants. In the future, it will be necessary to study the part of the population that does not have access to digital channels.

Our study suggests that health and social care service providers can design more digital services for their service provision, as older adults are confident in such services and willing to use them. However, when making plans for digitalizing health and social care services, we must invest in supporting the use of digital services. Health and social care professionals should offer more older adults to use digital services and guide them in their use. The general population could also benefit from support from third sector organizations for training in the use of digital services and providing personal support.

In conclusion, we found that older citizens know how to use digital services in the health and social care context, and they receive adequate help in using those. It is also possible that the current aging population has not yet learned to use digital services adequately. In the future, the use of electronic services may be an established part of services. As today's young and middle-aged population is ageing, they have even better prerequisites skills for using digital and more of these services should be provided for older people in the future.

Conflict of interest statement







Authors declare no conflicts of interest.

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