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OLDER PEOPLE AND THE INNOVATIVE FORMS OF LIVING AND CARE

Abstract: The problem of the ageing population has become an important political topic as well as an increasingly greater challenge for health, social and housing care services in the developed countries. The ageing population is, however, creating strongly growing financial needs to provide suitable healthcare, social care and housing for the elderly. Innovative forms of living and care for the elderly are, therefore, the reaction of the western countries to the increasing number of the older people in the society. One of such innovative systems, which is based on the information and communication technologies, is called remote home care or "telecare". It represents an applied form of an intelligent environment, by which users' home environments are arranged following the smart house concept, connected to a remote monitoring network, and through this to providers of care and other services. Although the governments try to implement such systems to reduce the costs, the findings of various authors suggest that elderly people have mostly negative attitudes towards such innovative form of living and care. But the research that was conducted in Slovenia has, surprisingly, shown the opposite. The article presents and discusses the results of this research.

Key words: older people, innovative systems, ICT, remote home care, telecare, health care, social care, housing care

Introduction

The number of elderly persons (over 60) increased by half in all European Union member states between 1960 and 1990, and currently this segment represents nearly one-fifth of the population. Projections indicate that this trend will continue if the birth-rate continues to fall and if there is no inflow of younger people through migration. According to information from the United Nations, by 2050 the share of people over 65 will represent 30% of the European population, of whom 18% will be over the age of 80. This age group represents the fastest-growing share of the elderly population. The process of ageing and the related problems of ensuring sustainable health, social and residential care of the elderly are posing increasing challenges to developed co-

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untries, including Slovenia. In Slovenia the share of people over 65 was 11% of the entire population in 1981; by the mid-1990s this had risen to 12.9%. By the end of 2003 it had exceeded 15% and in 2010 the share was 16.5%. With the continuation of the current trend, this share is expected to exceed 20% by 2020. According to predictions from the Statistical Office of the Republic of Slovenia, the structure of the population over 65 will also change substantially because the share of persons over 80 will double in the next 20 years.

The problem of the ageing population has become an important political topic as well as an increasingly greater challenge for health and social care services. The aging population is creating a strongly growing need for all kinds of health and social care. According to information from the European Commission, the percentage of GDP allocated to health and social care in the public sector sharply increases after age 65, which means that the most radical changes are necessary in this segment. In a growing consumer society, the elderly and the ill are demanding increasingly greater selection in healthcare and services. In Slovenia the costs of health and social care thus represent 25% of the state budget, and all trends indicate that in 10 years these will exceed 35%. Western countries are aware that the issue of ensuring agreed-upon health, social and housing care rights cannot be solved exclusively with the models used so far. Countries' financial capacities to ensure the current level and extent of health and social care services are decreasing, also due to economic uncertainty and the increasingly greater share of the nonworking population. Because we can expect that social conditions (especially economic ones) will continue to worsen, there will be an ever increasing number of individuals (especially elderly persons) that are unable to ensure minimum health and social care for themselves. On the other hand, because of increasingly limited financial means, countries will further restrict the criteria for the allocation of various forms of social and health care assistance and services.

Because existing models of health and social care are financially too demanding, developed countries are increasingly orienting themselves toward extending the lives of the elderly in their living environment. Along with the relocation of caretaking activities into the home environment, services must be carried out effectively and their quality must be ensured through adaptation of the built living environment, the introduction of new organizational procedures, and technical and technological solutions. According to Rudel (2007), the goal of transferring problem-solving to the home environment is to raise the quality of users' lives, lower the rising costs of providing these services, and thus reduce pressure on state funds for satisfying healthcare and social needs.

Moving care activities to the home environment and thus enabling elderly people to stay at home longer also matches their preferences. They wish to stay home in the same familiar living and social environment as long as they can. Moving elder-care activities to homes demands that effective service provision

and service quality should be adapted to the living environment as well as the implementation of new organisational procedures and technological solutions. The development of the information society makes this possible with the use of ICT, which can provide remote home care or "telecare". This is a system that remotely connects the homes of the elderly with the control centre and, via this centre, with healthcare centres and other care facilities. According to Barlow et al. (2005), research findings confirm that telecare enhances the psychophysical condition of the elderly and it has been proven that there have been fewer hospitalisations; however, if these occur, they are shorter than they would be for the population that has not been included in remote care. It is better, more efficient and cheaper care that is one of the possibilities for a more extensive reduction of the costs of healthcare and social services in societies with an ageing population.

Even though the innovative systems of care and living reduce cost, the findings of various authors on the other hand suggest that elderly people have mostly negative attitudes towards a remote home care. In order to determine the views of the elderly towards this service in Slovenia, a survey was conducted, the results of which are discussed in this article. Based on the findings of various researchers, the basic hypothesis was that the majority of the elderly have a negative attitude towards ICT and telecare. It can be believed that a good knowledge of various opinions and perceptions of innovative forms of living and care among the elderly could contribute to successful implementation of this service in Slovenia in the future.

Research background

Remote home care (known as telecare) is an innovative system that bases on the ICT and represents an applied form of an intelligent environment. Users' home environments are arranged following the smart house concept, connected to a remote monitoring network, and through this to providers of care and other services (Remagnino & Shapio, 2007; Pecora & Cesta, 2007). This telecare system functions using sensors that are discretely built into the user's home smart environment (e.g., on door handles, other handles, watches, etc.) and monitor the following: sudden changes in the room (e.g., falling, epileptic seizures, etc.), the user's life cycle (they measure/detect his physiological functions such as heartbeat, blood pressure, skin moisture, blood sugar levels, body weight, body temperature, carbon dioxide levels in exhaled air, murmurs in the body, etc.) and psychological functions (slow and permanent lifestyle changes); they evaluate the behavioural pattern of the person monitored (e.g., based on the number of times a person walks through a door, how often they open the refrigerator, the frequency of stepping onto the rug in front of their bed, frequency

of bed use, etc.). The devices also issue warnings to the user – these warnings are automatic reminders (e.g., the electronic pill dispenser warns the user that it is time to take their medication, etc.). All the information is transmitted and recorded by means of a remote information (control) system. In addition to these devices that monitor the user's condition, devices that determine any unusual conditions or unusual circumstances in the living environment are also built into the smart environment. These include a fire, smoke or gas detector, a water leakage detector, a movement detector and so on. If the system detects any changes that might deviate from the user's normal parameters, an alarm automatically goes off and is forwarded to the call (alarm) centre (to the remote caretaker). This centre appropriately responds in the user's home environment (Rudel & Premik, 2000). For this reason, this type of a telecare system is defined by Barlow et al. (2006) as response mode or r-mode. By its nature, the telecommunications alarm centre may be an information and coordination centre and assumes the role of a mediator between the users and assistance providers (as is the case with the safety-alarm system). It may perform the role of a combined mediator carrying out information and coordination as well as implementation activities, and may also include assistance providers in its work; for example, home nursing, social workers, emergency medical care, fire fighters, relatives or neighbours and so on. Depending on the type and scope of the problem(s), the person in charge at the call centre provides suitable instructions (or recommendations) to the user (e.g., to take medication, see a doctor, etc.) or informs the public service or service providers about the user's needs (Rudel, 2007). The operation of the call centre is also supported by a medical team that occasionally remotely accesses the data gathered in the information database of the clinic. Recognising various biophysical patterns offers relevant information during the early stages of discovering the deterioration of an individual's medical condition or can contribute to a more suitable adjustment of the recovery programme or to relieving a potential chronic condition. It enables not only automation of the routines but also better and more informative insight into the patients' condition and understanding of their needs. Users of a telecare service that wish to monitor the results of their efforts relating to their health may access their aggregate data at any time equipped with suitable recommendations or advice via ICT. This way, they may actively and effectively participate in the process of ensuring health, care and remote security (Jelenc, 2007). This form of telecare is defined by Barlow et al. (2006) as preventative mode or p-mode (some other authors do not define this form as telecare but as telehealth – they understand telecare only as the responsive aspect of such a system).

Extensive research and development activities as well as strategic and pilot projects are taking place abroad in remote home care. These usually involve an elderly person's living environment turned into a smart house as an experimental environment. Examples can be found in the Scandinavian countries, the Uni-

ted Kingdom, Japan, and the United States, and this area is also well supported in research programs of the Commission of the European Communities (e.g., in the sixth and especially the seventh framework programs). In the UK and US in particular, there already exist a number of providers of such systems that collect information about vital life functions and transfer this through the home network and broadband communications routes to special health and care centres; the British government has also worked out a strategic plan and started building a network to establish a telecare system. Given the rapid ICT development and trends elsewhere across the globe, where advanced forms of telecare systems have been introduced in great numbers in recent years, it can be expected that these kinds of innovations will also be introduced in Slovenia, but it is far behind other developed countries. It has developed only the basic form of safety-alarm system, technically simple devices based on a telephone connection. A special telephone set is installed at the user of the service and it is equipped with a wireless remote trigger that the person carries with him like a bracelet on his arm or a locket around his neck. This supervisory and communications platform enables the user to request assistance at any time from anywhere in his home by merely pressing the wireless trigger; he can call a relative, neighbour, acquaintance or the coordination and information centre, and talk to the operator concerning assistance (Doughty et al., 1996; Miskelly, 2001). The implementation of the safety-alarm system has (by now) not been very successful in Slovenia. In 2010, nearly 20 years since its first introduction (in 1992), only 343 individuals used this service in Slovenia (Smolej et al., 2010) or 0.1% of people older than 65, in which their number even decreased (there were 363 in 2008). From October 2011 onwards the service has been available throughout Slovenia. It can be accessed via a mobile phone or landline. It is expected that more elderly will use this form of care service. But, however, any successful implementation of this and any other innovation in a specific social environment demands that the capabilities offered by the new technology match the needs, demands and capabilities of users (Kerbler, 2012).

The disregard for the needs and demands of users in particular makes innovations unaccepted in society after their implementation (Rogers, 1962; Smixmith & Smixmith, 2000; Levy et al., 2003; Demiris et al., 2004; Hanson & Percival, 2006). Specifically, users are not interested in the technological aspects of innovations, but primarily in their applicability. Therefore, the service or the "service experience" is what they are interested in rather than the devices and systems per se. Thus the main question is what users like and what "works" for them (Saranummi et al., 2006). This is especially important with regard to innovative telecare systems that are based on more advanced ICT forms and are intended for the elderly. As shown by various studies (e.g., Hanson, 2001; Marquié et al., 2002; Richardson et al., 2005; Lee & Phippen, 2006; Richardson, 2006), elderly people are generally very suspicious of ICT as it is. For example,

Tetley et al. (2001) report that a general belief that most often makes the elderly uncomfortable is that living in an intelligent environment is too automated; in addition, they often think that technology replaces personal forms of care, protection and communication, which could result in reduced social interactions and isolation or, as Wyde and Valins (1996) point out, in creating societies of "high-tech hermits." According to Sponselee et al. (2008), this means that the elderly are "technophobic": they are afraid of innovations and new technologies. According to Pečjak (1998), this originates in the problems connected with using technologies, and Czaja et al. (2006) believe that this also has to do with a lack of self-confidence and doubts in their own abilities due to sensory and cognitive deficiencies. Cheverst et al. (2003) justify all of this with the fact that the elderly are more conservative and do not want their lives and habits to change too much, especially not due to external, less-familiar factors that can disturb their privacy. According to Fisk (2003) and Percival and Hanson (2006), the elderly are afraid of losing their privacy, especially when it comes to telecare, because they have the feeling they are constantly being watched (the big brother syndrome); this is also indicated by studies conducted by Redford & Whitten (1997), Glueckauf & Ketterson (2004) and Berther et al. (2007).

Methodological background

A survey was conducted about the attitudes towards a remote home care in Slovenia, presented in this article, was a part of a more extensive study of the living habits, desires and needs of the Slovenian elderly conducted in 2012. The sample included one hundred and sixteen people between fifty-five and ninety years. The data were collected using face-to-face interviews. Because it was presumed that the majority of the respondents were unfamiliar with the remote home care system, in which the users' home environment is organised following the smart home concept, the system was explained to them in a simple and comprehensive way before the interviews. The system's operation was presented to all the respondents in the same way: five short scenarios had been prepared in advance to demonstrate how the system works in everyday situations, how it can be used and what the role of its users is in relation to home environment technologies. After the presentation, the respondents had quite a few questions, and the administrators tried to provide the most realistic answers possible; if anything was unclear during the interviews, they could also ask additional questions. The respondents were most interested in whether all the things described were even possible and if the system truly exists rather than being something that could only be possible in the future. During the presentation and while providing answers to various questions, it turned out that the interviewer had to really know the research area well, had to be good at providing clear ex-

planations and had to have a strong sense of empathy. Because the interviewer in this survey was adequately qualified and had all the required skills and expertise, the respondents were able to obtain all the necessary information through the described methods of presenting innovative forms of telecare to objectively express their opinions. Regardless of the answers (positive or negative opinions), the respondents were also asked whether they wanted to have this type of service at home. Because it turned out that there were considerable differences in the answers according to the respondents' ages, in the analysis some results were presented and compared by individual age group.

Results and discussion

Although it was expected that elderly people have negative attitudes towards innovative forms of living and care based on ICT, the survey results surprisingly showed the opposite, which contradicted the author's assumption. Elderly people have a positive opinion about telecare, namely altogether, 78.4% of respondents replied that they would like to have this type of service at home even though they do not view it entirely positively. The majority of these respondents (85.7%) were "younger"; that is, 55 to 64 years old. The share decreases with age, but it is nonetheless relatively high – in the age group of 65 to 74, the share of respondent with the positive disere to telecare was 78.6%, but among the group of the eldest 71.8%. However, further analysis revealed that elderly people still have certain second thoughts regarding remote home care. More than half (55.2%) had at least one negative opinion. The fewest among these came from the younger age group (37.1%), and the majority came from the oldest age group (71.8%). 28.2% of the people aged over 74 year have only positive opinions about remote home care. Negative opinions regarding certain telecare features do not mean that people also oppose its implementation. It turned out that only those that did not have any positive opinions or that mostly had negative opinions about telecare would reject it. 84.2% of those whose opinions were 50% positive (a half of questions were answered positively) supported the introduction of a telecare system at their homes, the same did 95.8% of those who had three positive and one negative opinion (among four), and all of those who had only positive attitudes supported the introduction of the telecare.

The elderly mostly doubted the fact that they could stay longer at their homes and thus go to an institution at a later date. Half of them (exactly 50%) were not sure that the telecare system could really make that possible. A more detailed analysis showed that the share of those that believe telecare would not enable them to stay at home longer and go to an institution at a later date increases with age. The share of "younger" elderly people that think this way

is 31.4%, whereas among people aged between 65 to 74 this share increases to 45.2, but among elderly older than 74 to 71.8%. The reason for this could be the fact that elderly people base their assumptions on the experience of their peers whose health condition suddenly deteriorated and were thus no longer able to live independently. Hence they conclude that something similar could happen to them. On the other hand, people in the younger age group most likely do not think about sudden changes in their health condition that often, but rather about gradual changes, and so they think this type of service could ultimately help reduce various risks and solve their health problems while staying at home. In addition to reduced trust of the elderly in the opportunity to prolong their stay at home using telecare, more than a third of respondents (34.5%) are also afraid of losing their privacy. In this regard, there are no age differences among them. They generally believe that they would feel someone is constantly watching them: Even fewer negative opinions (22.4%) were expressed regarding safety and the opportunity to live independently, which telecare enables. Only 11.2% believe that this service would not make their relatives and friends visit them less frequently. The number of those that are afraid that this service would make them lonelier is a bit larger among the older age group (15.4% among age group over 74 years), which is understandable because older people in particular that have gradually lost their friends with whom they spent time in their home environment (either because they moved or died) often feel socially excluded. However, one should note that there are small differences in the shares of answers between individual age groups.

In order to determine whether other researchers also arrived at similar findings, studies were analysed in which elderly people were asked about their views on telecare. The analysis showed that studies like these do exist. Three of them are presented here in greater detail. In the one conducted by Julianne Hanson et al. (2007) in the British towns of Barnsley, Plymouth and South Bucks, 64% of elderly people reported they wanted to have telecare service available in their homes; the highest share (81%) was attested in Barnsley. A full 98% of respondents believed that telecare would enable them to stay at home longer, and all of the respondents in Barnsley and 96% of respondents in South Bucks would feel safer using this service. The British respondents had more second thoughts about the control because only half (51%) replied that did not bother them. Concerns about telecare invading their privacy were also shown in the U.S. survey conducted by Bertera et al. (2007). Nearly two-thirds of respondents would not allow their homes to be video-monitored. They widely supported all other services provided by telecare: more than 90% supported the transfer of information on the users' health condition to the control centre, the automatic alarm when needed and reminders to take medicine; more than 80% supported monitoring unusual changes indoors (e.g., detecting falls), monitoring the users' life cycle (measuring physiological functions) and

their daily behaviour patterns, and the opportunity for telecare users to monitor their aggregate data online, while being provided with suitable recommendations and advice. Rahimpour et al. (2008) also report very positive views of elderly people on the telecare system in Australia. The majority of respondents included in the survey stated they would be prepared to accept this service because they found it useful. They believed it could help users lead a quality and independent life in their home environment (listing peace of mind and comfort), improve their access to health services, empower them to participate in managing their own health and reduce the ratio of admittance to institutional care facilities (prolong the users' stay at home). However, they stressed that the relationship between users and caretakers (i.e., medical staff, doctors and others) should not be based only on a virtual exchange of information, but that they should maintain personal contact (at least occasionally and in more important cases) through visits because this should have positive psychological effects on people's health and wellbeing.

The reason that this study also led to the same results (i.e., that elderly people generally have a positive opinion about telecare) is ascribed to the fact that the service was presented to the respondents in great detail and as comprehensively as possible before the interviews. In the studies described above, respondents were unfamiliar with telecare or had only heard about it, but did not know what it meant, and so before they started collecting information the interviewers clearly described the service (e.g., in the British study they used scenarios and in the Australian they used a video presentation). Hence it can be concluded that giving appropriate information to potential telecare users and educating them as well as the subsequent understanding of how this service works and what it can be used for are key to this service being accepted by users; this, in turn, can significantly contribute to successful implementation in society. This is also confirmed by the results of the attempted implementation of advanced forms of ICT-based remote home care in Scotland. From 2007 to 2010, 25% of new users (compared to the initial state) there decided to integrate smart technologies into their home environment and integrate their homes into the remote control network and thus connect them with care and other service providers. Before that, the Scottish government had spent a lot of time and money on informing potential users about the importance and features of telecare (see Joint Improvement Team, 2010). In this it turned out that the user experience had an important effect on raising awareness and understanding, and the subsequent acceptance of this innovation. As reported by Beale et al. (2010), the data on user satisfaction, which were available in Scotland while giving out information, were obviously sufficiently informative to motivate a wide circle of addressees: 60.5% of users believed that their quality of life improved through the reorganisation of their homes into a smart environment and their inclusion in the remote care and protection system; 93.3%

of users believed this made them safer, 69.7% thought they were more independent and 87.2% reported that other family members had less work with them. The Scottish case is also confirmed by the U.S. survey described above: the most positive views were expressed by respondents that had already had some experience with assisted technologies.

Even though the study focused on establishing how elderly people feel about ICT-based remote care, one needs to note that formal and informal caretakers also use this service. The statements of relatives reported by Beale et al. (2010) also confirm that these new technologies can also help caretakers: 74.3% of relatives felt less burdened thanks to their use. In the future it would thus make sense to also include relatives in this study because their views also have an important effect on how telecare is accepted, supported and used in society. However, in order to realistically evaluate it, the remote home care system should also be appropriately presented to them because, as the results of other studies show, the views of caretakers can also often be distorted due to various reasons. Perceptions connected with telecare that may be present among the caretakers include fear/resistance to the service and excessive excitement over it. They primarily resist the service because ICT-assisted care of the elderly seems impersonal to them and also because, as Raappana et al. (2007) report, they are afraid they would have to (partially or fully) give up their role of caretakers, which formal caretakers in particular feel called to do. According to researchers, this fear often results from the fact that caretakers have insufficient knowledge of the use of these technologies and regard training as an additional, unnecessary and stressful obligation. Thus, if caretakers understood how these technologies work, got to know their advantages and benefits, and learned how to use them, the fear would be gone and they would therefore also accept them as part of their lives and work. In addition to resisting these technologies, caretakers can also be overly excited over them, which also prevents objective evaluation of telecare and keeps it from being successfully implemented. Raappani et al. (2007) report that these perceptions can most often be ascribed to informal caretakers (i.e., relatives). The modern rhythm and way of life increasingly limits the opportunities for family home care of elderly family members, which is why "it seems that in Slovenia and elsewhere in Europe in recent years the main provider of elder care to date (i.e., the family) has been failing to perform this role" (Ministry ..., 2007: 9). Therefore, family caretakers expect innovative ICT to replace or completely disburden them, which is a utopia and dangerous both to the elderly, who might actually become socially isolated, and to successful implementation of telecare because the disappointment following the realisation that ultimately technology cannot replace people might lead to resistance and spreading negative views of remote home care in society. Therefore, caretakers should be informed in detail what the actual capabilities of telecare are and have realistic expectations about it.

Conclusion

Contrary to our assumption, it turned out that elderly people have positive attitudes towards remote home care. This was attributed to effectively informing respondents and increasing their understanding of the operation and usability of the service. Elderly people mostly do not trust and accept innovative forms of care and living if they do not know them or understand how they work and what their effects are. Hence it can be concluded that better and more effective dissemination of information, especially if potential users have the opportunity to hear all of the positive opinions of those already using this service, would contribute to a better understanding of how this service works, decrease the negative opinions in general and controversial questions surrounding it and, of course, increase its use. Raising the awareness of potential users is therefore crucial for its acceptance in a society. According to our opinion, therefore, unsuccessful implementation of safety-alarm system in Slovenia in the last twenty years was not only due to the unified technical system, limited geographical scope and price, but mainly because of the low level of public awareness and inefficient information campaign about this service. However, this is a poor starting point for implementing more complex forms of ICT-based remote home care in the future. Also the new service in Slovenia, which is supposed to eliminate the deficiencies that were established to be the main reason why the innovation failed (i.e., unify the technical system, the price and the geographical coverage of the service), will not receive the desired acceptance and popularity without effectively educating the potential users. Nonetheless it should be noted that even positive views on telecare and its acceptance among users do not guarantee that it will be successfully introduced in society. A positive attitude of users is important for the idea to come through in society but the entire process of implementing telecare involves a combination of technological and organisational planning and in addition to users also includes others stakeholders that have various perceptions regarding risks and various value systems that need to be satisfied.

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STARIJI LJUDI I INOVATIVNI OBLICI ŽIVOTA I NEGE

Problem demografskog starenja je postao važna politička tema kao i sve veći izazov za zdravstvo, socijalnu zaštitu i usluge stanovanja u razvijenim zemljama

ma. Međutim, demografsko starenje intenzivno stvara narastajuće finansijske potrebe zarad obezbeđivanja odgovarajuće zdravstvene i socijalne nege i udjeljivanja starih. Inovativni oblici života i brige o starima su, dakle, reakcija zapadnih zemalja na povišeni broj starijih ljudi u društvu. Jedan od takvih inovativnih sistema, koji je zasnovan na informacionim i komunikacionim tehnologijama, naziva se daljinska kućna nega ili "tele – nega". Ona predstavlja primenjeni oblik inteligentnog okruženja, putem kog se kućno okruženje korisnika usluge uređuje prateći koncept pametne kuće, povezane sa daljinskom nadzornom mrežom, a preko nje, sa obezbeđivačem nege i drugih usluga. Iako vlade ovih zemalja pokušavaju da implementiraju ovakve sisteme zarad smanjenja troškova, nalazi različitih autora ukazuju da stari ljudi uglavnom imaju negativan stav prema tom inovativnom obliku života i nege. Ali, istraživanje koje je sprovedeno u Sloveniji, dalo je iznenađujuće suprotne rezultate. Ovaj tekst predstavlja i razmatra rezultate ovog istraživanja.

Ključne reči: stariji ljudi, inovativni sistemi, IKT, daljinska kućna nega, tele–nega, zdravstvena nega, socijalna nega, stambeno zbrinjavanje