

Needs assessment for Active and Assisted Living-concepts among the elderly

P. J. Mayer, A. Weghofer, M. Mut

University of Applied Sciences Burgenland, Burgenland, Austria

The European population is becoming older, due to many factors including healthcare improvements, medical improvements, increase in life expectancy and reduction of birth rate. At the same time, the profile of the elderly is changing. Therefore it is necessary to identify care and social needs of the older population in order to make appropriate strategic plans that will promote health and extend independency and quality of life. Active and Assisted Living-technologies (AAL-technologies) provide novel opportunities for meeting this needs.

Assessments of need often focus on a single parameter. With the usage of the "AAL-Welten-Model" several relevant aspects of life, living and environment are included. This novel needs assessment approach includes different parameter of daily activities and several living characteristics of the elderly population. With this approach good transferability of results is ensured into the different AAL categories. The most important benefit of the model is that the elderly population and their needs take the centre stage, which ensures hands-on AAL interventions.

1. INTRODUCTION

The ageing of population and the on-going demographic change started several years ago. In each European State, a large proportion of the population is over the age of 65. (Eurostat, 2018) This development has caused an increased need for health and social care. The aim of interventions among the elderly population is to prevent multiple diseases and disabilities and aims to increase the independence and improve the health of the elderly. (WHO, 2015)

Digitalization is omnipresent in private, business and professional life. On the one hand technological changes and digitization create issues for the health systems. Furthermore social changes such as demographic change and the aging population are challenges for the health sector. On the other hand all these factors provide opportunities. Digitalization in the health sector is currently an important social and political issue with a great potential. (Fischer, Aust & Kämer, 2016, p. 4) The WHO expects that the digital revolution in healthcare and the use of innovative technologies will revolutionize the knowledge, technologies and uses of health care for the elderly population. (WHO, 2017)

With increasing age the major burdens of disability arise from losses in hearing, seeing and moving, non-communicable diseases, cardio-vascular diseases, respiratory disorders, cancer and dementia. Due to great diversity in ageing and different presence of individual diseases or comorbidities, assessing the health and care needs of older person is important. There are several key issues that are important for elderly people, such as a role or identity, relationships, the possibility of enjoyment, autonomy (being independent and being able to make own decisions), security or the potential for personal growth. (WHO, 2015)

Early surveillance of health and social needs of elderly population is essential to provide cost-effective and integrated services, as well as to find new ways for elderly to remain active and

self-empowered as long as possible. At present, little is known about the health and social needs of the elderly. The assessment of need for assistance, and the active involvement of older and disabled people will help to identify appropriate AAL-solutions that contribute to independent living and quality of life.

2. OBJECTIVE

Identifying healthcare and social needs is the basis for developing an active and assisted living concept, because interventions that consider and manage the complex needs of older age in an integrated way have been shown to be more effective. The objective of the needs assessment is to evaluate the disability of elderly people, in relation to performing activities of daily life and more advanced activities of daily life and the associated level of disability. New technological and assistive solutions must meet the needs of older people and therefore need assessments and participatory user integration in development of AAL concepts are crucial. (Gudowsky & Sotoudeh, 2015)

The needs assessment is carried out in the framework of two research projects of the University of Applied Sciences Burgenland. The Interreg SI-AT Project "COOP4HEALTHCARE" aims to form strategic alliances for smart healthcare solutions. The outcome of this project is an innovative AAL concept for assisted living apartments. Interreg Central Europe Project "digitalLIFE4CE" is looking for novel solutions in the field of digital integrated healthcare solutions. The digitalLIFE4CE working group "digital health promotion and prevention" deals with the question: "What are the needs of elderly and how can elderly people be reached with new digital health promotion solutions?"

An innovative needs assessment approach was developed to answer this question and moreover the results of the needs assessment are the basis for the development of an AAL concept for assisted living apartments. The methods as well as the structure of the needs assessment and some relevant definitions are discussed into more detail in the following sections.

3. DEFINITIONS

This section will provide a basic overview of some terms to create a common understanding.

3.1 ELDERLY

Getting older is a natural process, which presents a formidable challenge for today's and future societies. But who is considered to be old? The exact definition of an "old person" or "elderly" people is a controversial issue. However, most developed countries have defined the chronological age of 65 years and above. (WHO, 2018)

The beginning of old age is closely equivalent to retirement ages in many developed world countries. In addition to the chronological timeline, the change in social role (e.g. change in work patterns) and the change in capabilities (e.g. physical constraints) have importance in the meaning of old age. (WHO, 2018)

Within the elderly population, new age categories and terms related to the life time, like young-old (55+), old (65+), oldest old (80+), centenarian (100+) and even super-centenarian (110+), have been created. (SEARO WHO, 2018)

The ageing population tends to have a higher prevalence of health related problems coupled with changing needs that have to be identified. (Nedopil, Schaubert & Glende, 2013, pp. 10)

3.2 NEED ASSESSMENT

Needs of older people differ from those of other age groups, including needs such as housing. Within a needs assessment, requirements on assisted living facilities, that reflect the needs and preferences of their end-users, can be identified.

The need assessment is the process of collecting information about an expressed or implied need. A need can be defined as a desire to significantly improve the current situation or to correct a deficiency. The assessment process helps the residents as well as the service providers obtain a general sense of the level of assistance required. This process can be considered the first step in designing an innovative AAL-concept that is state-of-the-art. (Gebreyohannis & Kharel, 2012, p. 5)

3.3 ACTIVE ASSISTED LIVING (AAL)

Active and Assisted Living (AAL) is focused on providing assistance to people primarily in their natural environment. The AAL domain has developed at a fast pace in various directions in recent years. The stakeholders of AAL-solutions are not only limited to clients and patients, also relatives, caregivers, health professionals and others have to be included. (Calvares, Cesarini, Sernani, Marinoni, Dragoni & Sturm, 2017, pp. 239-240)

AAL aims at increasing the quality of life of all stakeholders with a holistic approach in the following main domains of AAL: communication, mobility, self-sufficiency and domestic life. Aspects such as lifestyle, quality of life, social inclusion and prevention are becoming increasingly more important. (Schön, Schneider, Wieden-Bischof & Willner, 2016, p. 7)

3.4 ACTIVITIES OF DAILY LIVING (ADL)

Improving the quality of life by monitoring the "Activities of Daily Living" (ADLs) of older people, with the objective of tracking their current health status and foreseeing the risks related to the process of ageing and living alone. (Calvares, Cesarini, Sernani, Marinoni, Dragoni & Sturm, 2017, pp. 239-240)

The Activities of Daily Living can be divided into basic, instrumental and advanced activities. Basic Activities of Daily Living (b-ADL) are essential skills necessary for mastering daily self-care. These activities include dressing, feeding, locomotion, movement in bed, personal hygiene and transfers. These abilities sometimes are limited for a short period of time or permanently, resulting from accidents, injuries, illnesses, disabilities or the natural aging process. (Amsters, Comans, Connelly, Nance & Scholtz, 2017, pp. 33-37)

Basic ADLs are categorized separately from the Instrumental Activities of Daily Living (i-ADLs), which include more complex activities of daily living related to the home, social environment and workplaces. (e.g. operation electronic appliances, budgeting) For each ADL, people can vary from needing just a little help to full dependency, which requires other personnel resources or innovative assistive technologies. (Mlinac & Feng, 2016, pp. 506- 516)

Advanced Activities of Daily Living (a-ADL) cover activities, like planning leisure time or social participation, which require higher levels of cognitive, physical, and social abilities. Having these skills allows individuals to develop multiple social roles and maintain good mental, physical and social health. (Dias, Andrade, Duarte, Santos & Lebrão, 2015)

3.5 HEALTHY AGEING

"Healthy ageing is about optimising opportunities for good health, so that older people can take an active part in society and enjoy an independent and high quality of life". (EuroHealth-Net, 2018)

In this context, innovative assistive technologies have received a great deal of attention in the last years. Technologies can sustain and accelerate improvements in health, enhance the independence of persons with disabilities and increase the quality of life for the aging population and all other stakeholders. (WHO, 2015, pp. 136-137) New technologies can provide cognitive assistance, safety, monitoring, and social communication, thus simplifying life and optimizing home for many older adults as they age. (Horgas & Abowd, 2004)

4. NEEDS ASSESSMENT APPROACH

In this section the applied methodology as well as the design and structure of the needs assessment approach is described in more detail.

4.1 METHODOLOGY

Health research, especially in the health and social care, is a complex field and consists of different disciplines, each with specific research approaches. Therefore health science questions require the use of empirical methods. In order to explore subjective opinions, attitudes and behaviors of people, often social science methods are used. Qualitative or participative approaches are often used to identify and assess subjective opinions and complex social processes. Triangulation of several research approaches means a meaningful complement of qualitative and quantitative methods. (Mayring, 2017, p. 417). The selected needs assessment methodology involves systematic literature review, quantitative and qualitative surveys. The benefit of this approach is that the research subject is examined from different directions and thus the understanding is expanded.

4.2 NEEDS ASSESSMENT DESIGN

The design of the needs assessment is cross-sectional and includes different perspectives. A mixed-methods approach will be used for the assessment. The data will be collected through questionnaires, direct interviews and focus group interviews. Direct interview and verbal interviews are the most appropriate method to collect data about the needs of assistance and support in daily living. To include the most important aspects when piloting and assessing new AAL concepts, it is fundamental to use an assessment model which interrogates elderly people, their relatives and health professionals. (Ostensen, Svagard & Fossberg, 2014)

The process of data collection aims to include multiple perspectives and thus consists of three parts. The first part includes a questionnaire and will collect socio-demographic data (e.g. age, gender, marital status, education, income, occupational). Data is also collected on physical activity and needs of adaptation in the residence and living conditions of elderlies. The survey contains qualitative and quantitative questions about factors related to the health condition of elderly people. The second part aims to gather more information about the needs, specific requirements and personal demands. This part consists of qualitative interviews with elderly people, their relatives and nursing staff. In the third part of the assessment a focus group discussion is planned. The focus group is composed of representatives of elderly people, their relatives and health professionals. In the last phase of the needs assessment, the relevant target groups will consolidate the results with the aim to identify the main issues of AAL concepts for elderly homes. The following model sets up the structure for the applied questionnaire, interview guide and focus group discussion guide.

5. NEEDS ASSESSMENT MODEL "AAL-WELTEN MODELL"

The development of the needs assessment is, inter alia, based on existing models. Several relevant aspects of the following concepts are included and adapted into a new model for assessing AAL technologies for elderly. Some aspects of Katz b-ADL Scale are used to assess the Activities of Daily Living. Certain factors of Lawton i-ADL Scale are used to evaluate the instrumental Activities of Daily Living. Several points of the a-ADL Concept are used to evaluate the advanced Activities of Daily Living. Wide considerations and further aspects from the field of integrated healthcare and health promotion led to developing a new model. The novel model can be used for surveying the needs of elderly related to AAL technologies.

The "AAL-Welten Modell" (translated into English: "AAL-Worlds Model") aims to include different environments of the elderly population and consider important aspects for developing a concept for Active and Assisted Living concepts.

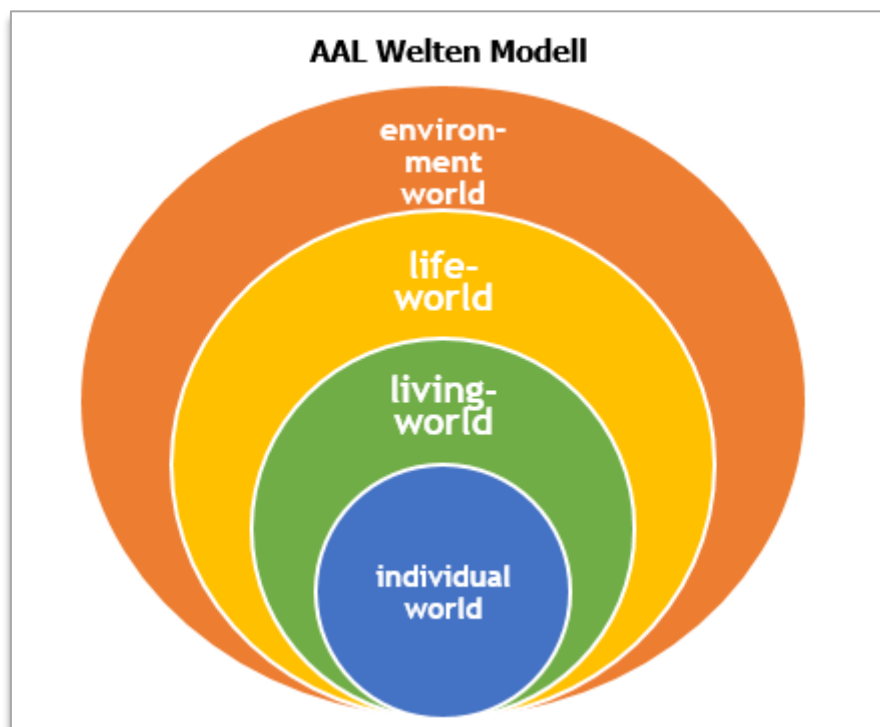


Figure 1: Illustration of the „AAL-Welten Modell“

The starting point of the "AAL-Welten Model" is the individual person and the so called "individual world". This area is centred on human values and acceptance within new AAL technologies, along with barriers against the use of new AAL applications. Moreover deployment and utilization of existing technologies are important topics in this area.

The next field covers the "living world" of the elderly population. This area includes all relevant aspects related to daily activities within the home, the building and living environment. For example, this includes housekeeping, food preparation, functional mobility, dressing, laundry and personal hygiene. Further important topics are health and well-being, such as, healthy diet, medication, medical treatments, mental health, social health and health promotion. Additionally this area covers lifestyle aspects like ambience, lighting, scenting, interior and colour

design. Another important factor is the communication within the living environment, which includes contact to neighbours and carers from the nursing home.

"Life world" covers all relevant aspects of participation. Social inclusion and participation in social life and family life are the key aspects in this area. Furthermore there are daily activities included, such as shopping, mode of transport and communication. The most important issue in this area are leisure activities, because meaningful hobbies, traveling, physical activities, cognitive and motor skills are crucial for normal life, and improving the independence of elderly people.

The widest area is the "environment world" which covers several topics. Transfer and mobility within the wider environment, as well as political and culture participation are included. Inspired by the concept of integrated healthcare the communication and coordination with the environment is part of this section. This includes contact and communication to self-help-groups, senior citizens associations, mobile health services, doctors and health professionals and pharmacies.

In conclusion, the novel "AAL-Welten Model" includes different aspects of daily activities and several settings of the elderly population into one model. Furthermore the approach to use different areas enables a good transferability of the results into the different AAL categories. The structure of the model ensures hands-on AAL interventions based on the needs of the elderly population. The most important benefit is that the human being and his or her needs as well as all relevant environments, are taking the centre stage.

LITERATURE

- Amsters, D., Comans, T., Connelly, C., Nance, J. & Scholtz, S. (2017). Community Rehabilitation Learner Guide: Support daily living requirements in a community rehabilitation context. Queensland Health, publisher). Brisbane. Available at: https://www.health.qld.gov.au/data/assets/pdf_file/0028/650593/LG-support-daily-living-reqs.pdf [02.10.2018].
- Calvaresi, D., Cesarini, D., Sernani, P., Marinoni, M., Dragoni, A. F. & Sturm, A. (2017). Exploring the ambient assisted living domain: a systematic review. *Journal of Ambient Intelligence and Humanized Computing*, 8 (2), pp. 239-240.
- Dias, E. G., Andrade, F., Duarte, Y., Santos, J. L. F., & Lebrão, M. L. (2015). Advanced activities of daily living and incidence of cognitive decline in the elderly: the SABE Study. *Cadernos de Saúde Pública*, 31(8), pp. 1623-1635.
- EuroHealthNet. (2018). *Healthy Ageing*. Available at: <http://www.healthyageing.eu/> [05.10.2018].
- Eurostat. *Population structure and ageing*. http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing [30.09.2018].
- Fischer F. & Krämer A. (Hrsg.). (2016). *eHealth in Deutschland: Anforderungen und Potenziale innovativer Versorgungsstrukturen*. Berlin Heidelberg: Springer-Verlag.
- Gebreyohannis, B. & Kharel, K. (2012). *Needs Assessment for Assisted Living facilities among elderly population*. Centria University of Applied Sciences. Finland.
- Gudowsky, N. & Sotoudeh, M. (2015). Citizens' Visions on Active Assisted Living. *eHealth2015 – Health Informatics Meets eHealth*. Doi:10.3233/978-1-61499-524-1-43
- Horgas, A. & Abowd, G. (2004). *The Impact of Technology on Living Environments for Older Adults*. In: National Research Council (US) Steering Committee for the Workshop on Technology for Adaptive Aging. Washington (DC): National Academies Press (US); 2004. 9.
-

- Mayring, P. (2017). Evidenztriangulation in der Gesundheitsforschung: Kombination von experimentellen, deskriptiven und inhaltsanalytischen Ansätzen. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*. 69:415–434.
- Mlinac, M. E. & Feng, M. C. (2016). Assessment of Activities of Daily Living, Self-Care, and Independence. *Archives of Clinical Neuropsychology*, 31 (6), pp. 506-516.
- Nedopil, C., Schaubert, C. & Glende, S. (2013). *AAL Stakeholders and their requirements*. (Ambient Assisted Living Association, publisher). Brussels. Available at: http://www.aal-europe.eu/wp-content/uploads/2015/02/AALA_Knowledge-Base_YOUSE_online.pdf [05.10.2018].
- Ostensen, E., Svagard, I., Fossberg, A.B, & Moen A. (2014). Evaluation of Ambient Assisted Living Interventions – Which Tool to Choose? *Nursing Informatics 2014*. Doi: 10.3233/978-1-61499-415-2-160.
- Schön, S., Schneider, C., Wieden-Bischof, D. & Willner, V. (2016). *Das Potential verfügbarer Daten – für Forschung und Entwicklung im Kontext von Active and Assisted Living (AAL) bzw. Ambient Assisted Living (AAL)*. Norderstedt: BoD Verlag.
- SEARO WHO. (2018). *Elderly population*. Available at: http://www.searo.who.int/entity/health_situation_trends/data/chi/elderly-population/en/ [05.10.2018].
- WHO. (2015). *World Report on Ageing and Health*. Available at: <http://www.who.int/ageing/events/world-report-2015-launch/en/> [01.10.2018].
- WHO. (2017). *Promoting health in the SDG*. Available at: <http://apps.who.int/iris/bitstream/10665/259183/1/WHO-NMH-PND-17.5-eng.pdf> [03.10.2018].
- WHO. (2018). *Proposed working definition of an older person in Africa for the MDS Project*. Available at: <http://www.who.int/healthinfo/survey/ageingdefnolder/en/> [05.10.2018].

Contact Author:

Prof.(FH) Ing. Mag. Peter J. Mayer, MAS MSc MBA
University of Applied Sciences Burgenland
Steinamangerstraße 21
A-7423 Pinkafeld
Email: peter.mayer@fh-burgenland.at
