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# Housing Design for All

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**Abstract.** Inclusion is important factor for life satisfaction and wellbeing at any age. Housing design and neighbourhood planning can enhance possibilities for social and physical activities of older persons who live in their own homes. Access to local services and walking friendly environment may promote integration and independent coping. This paper is introducing an ongoing doctoral thesis in the field of architecture focusing on the urban living environment from the viewpoint of older residents. The target of the study has been to gain further knowledge on age-friendly built environment applying Universal Design principles. The case study method was implemented in three scales, neighbourhood, immediate surroundings of apartment buildings, and shared spaces in housing. The case studies were carried out in Finland, in Helsinki area. Workshops and observational walking tours with residents as well as interviews and questionnaires targeted to persons aged 65 years old and over were used to assess the living environment and access to local services. Senior residents self-reported experiences revealed the challenges in the built environment. Access to local services, green areas and other spaces in shared use in the neighbourhood were reported to enhance general wellbeing and encourage cross-generational encounters. Intersectional collaboration for planning service infrastructure, transportation network, access to social activities is necessary when designing living environments that support independent and self-contained life at old age. Moreover, collaboration with relevant local stakeholders promote inclusion and age-friendly environment.

**Keywords.** Keyword, keyword Housing design, universal design, urban planning, age-friendly

## 1. Introduction

This paper is introducing an ongoing doctoral thesis in the field of architecture. Urban planning and architectural design need to anticipate the demographic change in cities. Therefore, focus of the study is on urban living environment and housing design from the point of view of older population. Previous research indicates that features of the urban environment, housing, public transportation [1], access to services [2], and to green environment [3] are enhancing mobility and general wellbeing of older people. All these features are recognised as important for Age-friendly cities [4]. The design of urban environment is important for creating an inclusive society. Moreover, urban renewal and refurbishment of old apartment buildings is a current topic especially in areas with high proportion of older age groups. Especially, neighbourhoods with both high percentage of older population and aging buildings and infrastructure need attention. Older population tend to reside longer periods in the same neighbourhood. Smith, Rayer and Smith observed that length of residence increased dramatically with

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age [5]. In consequence, the older people usually have long-term user knowledge of the quality of their own living environment. Therefore, future developments in existing neighbourhoods would profit of the involvement and local knowledge of older residents.

Urban environment can offer many advantages to older people. Housing solutions that support residents functioning capacities and the proximity of public transportation and local services, access to social and leisure activities are enhancing general wellbeing of people at all ages. Moreover, Buffel, De Donder, Phillipson, De Witte, Dury and Verté argue that location and access to services and social activities may increase the sense of integration within a community [6]. Therefore, not only accessibility of apartment buildings, but in addition, a comprehensive view of the neighbourhood planning is needed. Universal Design (UD) is a relevant tool for planning neighbourhoods for all people, regardless of their age, and functional or sensory abilities.

## **2. Background**

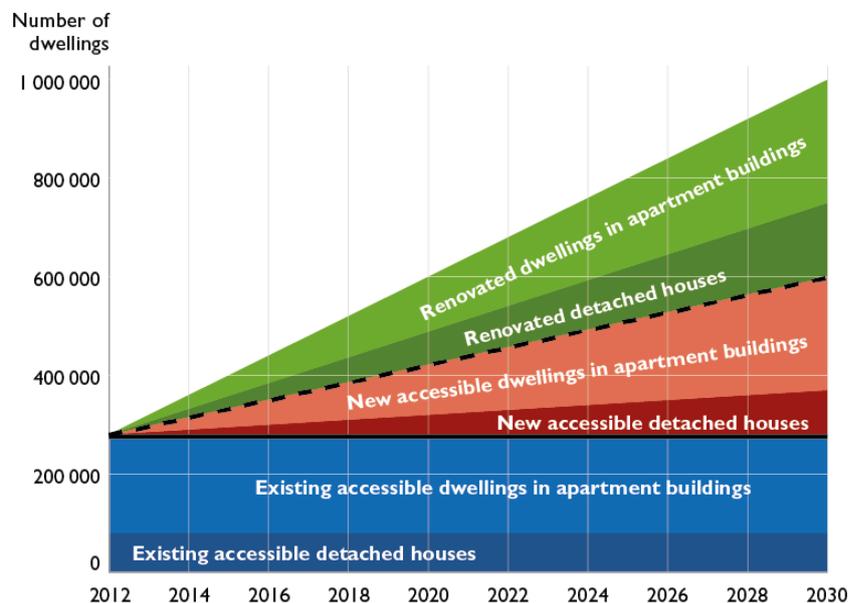
Urbanisation and population aging are global trends. The majority of people live in the cities. Older people are living in and moving to urban areas, as well [7]. In Europe, in recent years, the percentage of older population in the cities has been increasing 26 % compared to 2% in rural areas [8]. This development is going to shape our cities and communities. Smith, Rayer and Smith estimated that by 2050, the percentage of the population with limitations in performing daily activities, walking, climbing the stairs, or carrying groceries would reach 11.6 percent [4]. Therefore, it is important to provide housing areas, local services and outdoor spaces that promote daily coping of residents of all age groups. The WHO guidance for Age-friendly cities highlight the importance of urban planning in terms of housing and land use, as well as public transportation [3]. The demographic development represents a new challenge for architects and planners. It will have significant implications for the design of housing and planning of living environment. The architects need to anticipate this development with new design solutions. There is a demand for inclusive housing and living environments, which promote the use of residents' full potentials regardless of their functioning capacities. The location of the housing suitable for older people is one of the major factors for daily coping. Independence and control over one's own life is an important factor for life satisfaction also for older people [9]. The built environment can support independent coping and self-contained life. The social environment together with UD housing solutions may enhance inclusion and Aging in Place. It is the prevailing policy in care for older people in Europe.

In general, the economic situation of older population has improved, even though personal situation of people may vary. As an important consumer group, the needs and wishes of older population will have influence on the design, production, and marketing of goods and services [10]. A recent Finnish study revealed, that persons aged 75 years old and over preferred apartments in the walking zone of city centres and sub-centres near local services and public transportation [11]. Moreover, the older residents expressed the desire to spend more time in their own neighbourhood and in the immediate surroundings. Furthermore, the study by Oswald, Wahl, Schilling, Nygren, Fänge, Sixsmith and Iwarsson indicated that in the older age groups the oldest had tendency to spend more time at home and in the immediate outdoor environment

than younger residents did [12]. The courtyards, bus stops and local services become potential spaces for daily encounters. Gehl observed that the quality of outdoor spaces promoted optional and social activities, as people were spending longer periods in good quality environment [13]. Moreover, Kajita argues that design of accessible environments promote social inclusion and participation [14]. In the aging process, the social relations are getting fewer. To some older residents, the neighbour, local grocer's shop or coffee shop keeper and hairdresser may represent the only social contact.

In Finland, more than 90 percent of persons 75 years old and over live in their own home [15]. The home can be located in in an ordinary apartment building or in a sheltered housing scheme. The Finnish Government *Development program for housing for older people* (2013–2017) aimed at improving the older people's housing conditions, accessibility in existing apartment buildings and promoting age-friendly apartment developments [15]. The program targeted for one million accessible dwellings by 2030. This would cover 30 percent of Finnish housing stock. One million dwellings would include existing, renovated and new apartment buildings and single-family houses (Fig. 1).

Furthermore, the Ministry of social affairs and health have launched a new development program, *Home care for older people and enhancing informal care in all age groups*, to promote Aging in Place policy [16]. The remote care and home health care may enable more people to stay at home environment than previously. Assistance, home help and peer support enhance living at home. A housing environment remain, however, the bases of daily coping.



**Figure 1.** One million accessible homes include 1/3 of renovated housing, 1/3 of new developments and 1/3 of existing housing (Ministry of the Environment, 2013).

New housing solutions for residents with high care needs are required as well. The location of these housing solutions in the centre or in the sub-centre of cities in the proximity of good public transportation network promote inclusion. Central location enable residents to feel integrated in the society, and relatives and friends to make visits frequently. Moreover, the recruitment of staff members in the centre is easier than in a remote location.

### **3. Aim of the study**

The target of the study was to gain further knowledge on housing design supporting older people in their daily life. However, the older people are not a homogenous group of people. The physical condition and social situation of each person vary. The research question were, which features of the built environment promote daily coping and how urban planning and housing design can support older population? The knowledge and self-reported experiences of older people living at home, in sheltered housing and in group homes were gathered to gain further knowledge on housing design supporting independent coping in the life course. The aim was to gain information for future housing developments.

### **4. Method**

The case study method was chosen as it enabled to have a comprehensive view of the challenges in daily living environment, in real life context [17]. The case study method was implemented in three different scales: 1) neighbourhood level, 2) immediate surroundings of apartment buildings and 3) shared spaces in the sheltered housing scheme. Each of the case studies focused on living environment of older people in different stages of declining physical, sensory or mental functional capacities. The case studies were carried out in Helsinki sub-urban area, Finland during the period from 2010 to 2015.

The population statistics, topographical maps and other planning documents as well as architectural plans and public transportation network were analysed for each case study area. Mixed methods and observation on site enabled to recognize challenges in the daily environment. Workshops and observational walking tours with residents as well as interviews and questionnaires targeted to residents 65 years old and over were used to assess the current living environment. Residents were regarded as experts in their own living environment. Self-reported experiences of residents enabled to get in-depth understanding of the positive and negative features in the living environment.

The study sample was people living independently at home (N=64) and older residents living in sheltered housing (N=36). Moreover, few persons living in a group home for people with memory decline (N=4) were involved in the study. Their relatives (N=8) and care staff members (N=18) were asked to assess the shared spaces and outdoor environment of the group home. All participants were volunteers and the permission to interview residents with memory decline and make observations in sheltered housing was delivered by Helsinki city social services and health care division.

## 5. Results

The results of the study indicated that the access to local services, walkability of the environment and public transportation was enhancing daily coping. The access to public transportation network supported independence and use of local services of people living at home. The familiarity of the living environment encouraged residents to go for a walk and do their daily shopping alone even at very old age. The results indicated that older people chose the services that were the most accessible ones. However, the distance to the service was not always correlating with the accessibility. The topography, narrow pavements with slide slope and many renovation works in the neighbourhood were hindering walking with a walking aid (Fig. 2).



**Figure 2.** The renovation works create obstacles for frail pedestrians and poses a risk for visually impaired people (Photo Sotera).

Walking was the main activity promoting general wellbeing of older people. The familiar living environment was enhancing mobility. However, car and bicycle traffic was reducing the older residents feeling of safety. The residents self-reported to choose versatile and safe walking paths across parks when possible. The observation on site revealed that the accessibility alone did not enhance social activities. The green areas with various activities in the neighbourhood were spaces for cross-generational encounters. Older residents appreciated the sensory qualities and the stillness of these spaces. Moreover, the hierarchy of the streets, separation of pedestrian and car traffic increased their feeling of safety. Short and direct connections to local services and destinations, to the library, enhanced walking. However, a long walking distance to the seashore or steep climb to the church, made these meaningful places inaccessible.

The results of the questionnaire indicated, that residents living at home went to the to the grocer's alone. However, some persons with mild cognitive decline self-reported to be afraid of getting lost and having nobody to go with them. This may lead to

immobility, isolation and increasing feeling of loneliness. The main obstacles for going out self-reported by the older participants in the study were the fear of falling or physical pain. Visual access or guidance to local services and landmarks along the path may help wayfinding. Sheltered sitting places along walking paths may encourage walking. One of the major challenges in the Nordic countries was the winter conditions and the snow piled on the pavements. The snow and slippery conditions were reported to be a major risk factor and hindering the use of walking aids on pavements. Therefore, the participants in the workshop found the walking paths in the parks safer even in the winter conditions than narrow pavements. Winter maintenance and mechanical removal of snow made them walkable.

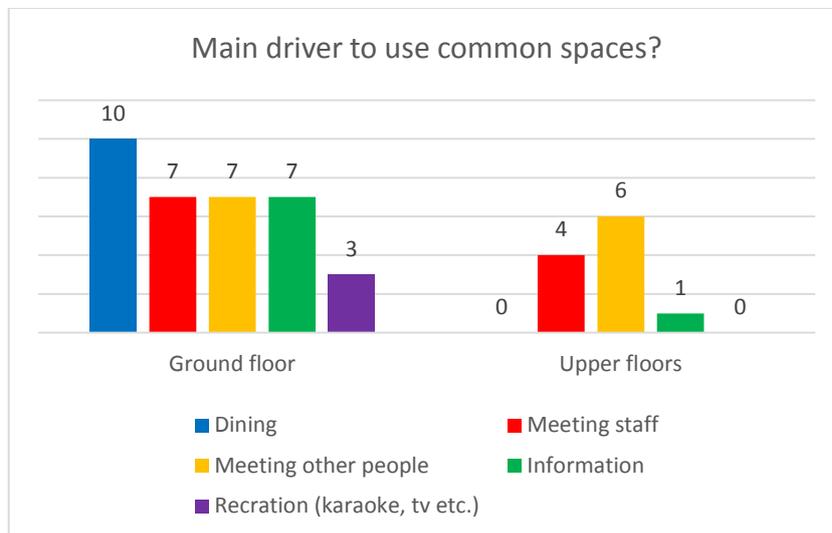
In sheltered housing environment people live independently in their own apartments. The residents were using local services and public transportation less frequently than older people living in ordinary housing. The frail residents were reluctant to go out alone because of fear of getting lost or losing their strength. However, the proximity of services and visual access to destination may encourage walking. Guided walking paths of different lengths in the courtyard and in the neighbourhood would provide a variety of choices. Some residents expressed the desire to go out more often and wished more activities, especially in the courtyard. The nature is important for the wellbeing and offers experiences for all senses. Moreover, courtyards are potential places for social activities. Many residents, however, in ordinary housing as well as in sheltered housing, remarked that there was not much to do in the courtyard. Flexibility and adaptability of outdoor spaces for various activities may enhance cross-generational encounters. In this study, older people living in ordinary housing self-reported to be interested in common activities, like urban farming and dining, which might enhance social contacts between neighbours of all age. The housing design should include accessible outdoor environment for shared use of residents.

In sheltered housing scheme, the residents self-reported that the view from their room to the courtyard invited them to join activities taking place outdoors. However, the observation on site revealed that the accessibility alone did not enhance the use of the courtyard. One of the sheltered housing schemes had two similar size courtyards. The residents were walking through the wheel-chair accessible “*stone courtyard*” with even surface. However, they did not spend time in that courtyard with no shelter from the sun. Instead, they were socialising in the “*green courtyard*” with sheltered sitting places (Fig. 3). Visual quality and versatile environment of that courtyard was more attractive to the residents. This confirms the earlier observations by Gehl, which indicated the importance of qualitative aspects of environment for social activities [18]. The design has to be appealing to the users. Furthermore, residents self-reported that gardening and outdoor games, as well as having afternoon coffee outdoors, were enjoyable social activities in the summertime.



**Figure 3.** The courtyard was a space for social activities (Photo Sotera)

The case study in the group home for people with memory decline indicated that residents were spending time in the shared spaces near staff members. Many of them were participating passively in the daily activities in the shared spaces. The observation indicated that residents preferred sitting places where the visual control over the space is the best. A sitting place near the window with visual access to outdoors, to common use spaces and to the connecting corridor was observed to be the most popular sitting place. A view to activities and to the neighbourhood may enhance the feeling of inclusion. One of the residents in our study expressed to enjoy watching people go back and forth. For privacy, she went to her own room. This confirms the findings of Barnes, who observed that an offer of series of private, semiprivate, and public spaces was in connection to well-being of residents [19]. In one of the sheltered housing, the residents (N=10) were self-reporting to use the shared spaces mainly for dining, meeting staff members and meeting other residents (Fig. 4). In addition to spaces for structured activity, the residents were pointing out the need to access intimate spaces for chatting and for spontaneous meetings. Flexible use of a variety of shared spaces would accommodate the residents' need for social activities. The staff members pointed out, that most residents entered in the dining room at the same time with their walking aid or wheelchair, which made the space crowded. The dimensioning and design of shared spaces in housing developments has to allow multiple use. They can accommodate various activities by residents, relatives and be open to other people from the neighbourhood. This would promote the inclusion of older people.



**Figure 4.** The residents self-reported to use the shared spaces in the ground floor more frequently than in their own floor (N=10)

Ryhl, Katjita and Sorensen point out that Universal Design is also about the physical quality of architecture as well as the sensory aspects of architectural experience [20]. Previous study by Piechniczek-Buczek, Riordan and Volicer found that the characteristics of the space, peaceful surroundings, cleanliness and opportunity to go out make the visit more pleasant [21]. In our study, relatives and staff members in a group home were asked to evaluate the quality of the common used spaces. The results of this study indicated that relatives' perception of all features of the premises was better than the perception of the staff members. The relatives reported higher satisfaction with the cosiness of the premises, lighting level, indoor air quality and acoustic qualities than the staff members did. The staff member spend longer periods in the premises daily, which may explain the results. This may affect willingness and the frequency of people to visit sheltered housing. Indoor air, lighting and temperature together with views outside are part of the quality of environment. They enhance the wellbeing of all users of the space, residents, staff members as well as relatives.

## 6. Discussion

Integral planning of housing, services and transportation network is necessary when designing living environments that support independence and self-contained life. Comprehensive design of housing solutions in the proximity of local services and public transportation enhance the daily coping of frail persons. The solutions for frail people with mobility limitations and sensory or cognitive decline should be integrated within the mainstream housing to avoid segregation. Moreover, shared spaces and outdoor environment may encourage social activities among residents. The architectural and sensory quality of the spaces influence the use of them. Appealing and versatile environment invites people to spend time in the shared spaces. Moreover,

ordinary sheltered housing schemes and group homes that are integrated in the neighbourhood urban tissue reduce segregation and enhance inclusion. Well indicated, short and safe walking paths to local services may encourage walking. Therefore, local services and leisure activities need to be at walking distance from housing.

Access to green areas and public transportation enhance mobility and inclusion of older people. Moreover, the use of green areas, local services and facilities enhance multigenerational contacts and feeling of inclusion. The infrastructure needs to be accessible and targeted to all resident groups. The design needs to take account the variety of user groups. It promotes the flexible use of the premises during the lifecycle of the buildings. Older persons and small children are both frequent users of the immediate surroundings. Spaces for social activities, sheltered sitting places, outdoor games and gardening in courtyards may enhance daily encounters with neighbours. Moreover, accessible walking paths of different lengths from 100 meters to one kilometre to different destinations in the living environment may enhance mobility and activity of the residents. All age groups profit of access to local services and facilities, safe walking environment and good public transportation networks. Separate lanes for pedestrians, bicycles and cars minimise the risk of accidents and enhance feeling of safety. Sitting benches along the walking paths support the frailest.

Universal Design of neighbourhoods is related to accessibility of services, safe walking environment, and a versatile outdoor environment. Shared spaces indoors and outdoors, which allow flexibility in the use, may enhance social and physical activities as well as cross-generational encounters. The challenge is to develop intersectional collaboration within the municipal actors and to sensitise the urban planners and architects. The fields of traffic planning, urban planning as well as social and health care services would need tools and facilitators to collaborate. Moreover, collaboration with relevant stakeholders in public sector and local private service providers, associations and resident groups in the neighbourhood planning would result to successful solutions. The design of housing and service infrastructure targeted for shared use of all age groups enhance sustainable development and Age-friendly cities.

## References

- [1] D. Metz, Mobility of older people and their quality of life. *Transport Policy*, 7(2000), 149–152.
- [2] L. Richard, L. Gauvin, C. Gosselin & S. Laforest, Staying connected: neighbourhood correlates of social participation among older adults living in an urban environment in Montreal, Quebec. *Health Promotion International*, 24(2009), 46–57
- [3] A. Kemperman & H. Timmermans, Green spaces in the direct living environment and social contacts of the aging population. *Landscape and Urban Planning*, 129 (2014), 44–54.
- [4] WHO, *Global age-friendly cities: a guide*. World Health Organization, 2007.
- [5] Smith, S. Rayer, S. & Smith, E. Aging and Disability. Implications for the Housing Industry and Housing Policy in the United States, *Journal of American Planning Association*, 74(2008), 289–306.
- [6] T. Buffel, L. De Donder, C. Phillipson, N. De Witte, S. Dury, & D. Verté, Place Attachment Among Older Adults Living in Four Communities in Flanders, Belgium, *Housing Studies*, 29(2014), 800-822.
- [7] UN, *World Urbanization Prospects*. Highlights. United Nations, New York, 2014, ST/ESA/SER.A/352.
- [8] UN, *World Population Ageing*, United Nations Department of Economic and Social Affairs, Population Division, 2015. [e-publication:  
[http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015\\_Report.pdf](http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf);

- [9] K. Carr, P.L. Weir, D. Azar & N.R. Azar, Universal design: A step toward successful aging, *Journal of aging research*, 2013, 324624. [e-journal: <http://doi.org/10.1155/2013/324624>]
- [10] J. Healy, *The Benefits of an Aging Population*. The Australia Institute. Discussion Paper Number 63, 2004.
- [11] M. Ristimäki, M. Tiitu, V. Kalenoja & P. Söderström, *Travel-related Urban Zones in Finland – the development of pedestrian, transit and car-oriented zones from 1985 to 2010*, Reports of the Finnish Environment Institute 32/2013, Finnish Environment Institute, SYKE, 2013.
- [12] F. Oswald, H.W. Wahl, O. Schilling, C. Nygren, A. Fänge, A. Sixsmith & S. Iwarsson, (2007). Relationships between housing and healthy aging in very old age. *The Gerontologist*, **47**(2007), 96 - 107.
- [13] J. Gehl, *Life Between Buildings*, Island Press, 2011.
- [14] M. Kajita, *Spatial Dimensions of Accessibility. Inclusive urban dwellings*. The Royal Danish Academy of Fine Arts, Doctoral dissertation, 2014.
- [15] Ministry of the Environment, *Housing development programme for older population for 2013–2017*, Government Resolution, 18 April 2013.
- [16] Ministry of Social Affairs and Health, *Improved home care for older persons and enhanced informal care in all age groups*, MSAH, 2016. [web page: <https://stm.fi/en/improved-home-care-for-older-persons-and-enhanced-support-for-all-aged-informal-carers>]
- [17] R. Yin, *Case study research. Design and methods*, Sage publication, 2nd edition, London, 1994.
- [18] J. Gehl, *Life between buildings*, Island Press, Washington, 2011
- [19] S. Barnes, Space, Choice and Control, and Quality of Life in Care Settings for Older People. *Environment and behavior*, **38**(2006), 589-604.
- [20] C. Ryhl, M. Katjita & R. Sorensen, Qualitative description of spatial quality in inclusive architecture, In: H. Petrie (Ed), *Universal Design 2016: Learning from the Past, Designing for the Future*, IOSpress, 2016.
- [21] J. Piechniczek-Buczek, M.E. Riordan & L. Volicer, Family member perception of quality of their visits with relatives with dementia: a pilot study. *Journal of the American Medical Directors Association*, **8**(2007), 166-172.