

Resilient Housing and Care Services for Aging Municipalities

Ira Verma

Aalto University, Department of Architecture
ira.verma@aalto.fi

Abstract

The *Social welfare and health care reform* in Finland will have an impact on the services provided by the municipalities. The housing services, health promotion and wellbeing of residents will remain in charge of the local authorities. Environmental factors are important for independent coping of older people who live in their own homes assisted by peers or by home care staff. Therefore, architects need to anticipate the demographic change in housing design and urban planning.

The Government Key project *TÄYTY* (2017 – 2018) was a research and development project targeting at efficient and operational service network, combining housing, home care and remote care services. The objective was to provide a resilient service structure for small municipalities through resource efficiency, complementing the urban structure and sharing existing facilities and resources locally.

The multiple case study method was used to promote shared use of resources and spaces in local context. The project was carried out with cross-sectoral collaboration together with Aalto University, municipalities, health care service providers and local associations. As result, the project provided a model and a process of development for small municipalities. *TÄYTY* project was carried out in collaboration with the Ministry of the Social Affairs and Health and the Ministry of the Environment.

Keywords: shrinkage, ageing, resilience

Introduction

The population dependency ratio relates to the number of population under 15 years old and those 64 years old and older to the working age population (Sotkanet, 2017). The percentage of older population is growing rapidly, especially in some parts of the country, and at the same time, fewer children are born. The demographic change affects especially sparsely populated areas with high dependency ratio and decreasing economy. The development is due to long life expectancy as well as low birth rates. This development will have effect on the current social and health care service structure. In consequence, increasing number of frail older people will be taken care of with less human and economic resources than previously. As result, older persons living in these areas and having difficulties to manage independently may also need to relocate. The dependency ratio is a relevant tool to measure the population change in the municipalities. Currently, 74 to 80 percent of the Finnish population live in the cities and urbanised areas (Aro, 2016). According to Helminen et al. (2017), in Finland, majority of older people live in urbanised areas as well. They observed that the relocation of persons 75 years old and older in remote areas has been mainly to the neighbouring villages or towards



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the centre of municipalities. Their study indicated that little move had been taking place from remote areas to the big cities. The supply of affordable housing suitable for older population in these municipal centres is a challenge, however.

Long housing history and strong social ties may generate greater feeling of inclusion in small municipalities than in the city. The familiar social environment enhance place attachment. The strengths of the small municipalities are in the socially inclusive communities with high place attachment of residents. Kinossian (2017) points out, that non-core regions possess other characteristics, cultural and natural landscapes that can be related to health and wellbeing. Buffel, et al. (2001) argue that the physical layout, the geographical location, access to services and social activities increase the sense of integration within the community. Whereas, the environmental barriers and mobility limitations may diminish people's attachments to place. Older population with great place attachment may be less willing to relocate. Moreover, in sparsely populated areas, the value of land has not been increasing as fast as in the cities (Peltola and Väänänen, 2007, p. 5). Older population may have difficulties to sell their properties due to less demand. Therefore, some of them cannot afford to move to the cities even if they would like to do so.

When small municipalities provide housing solutions suitable for older population in their local centres and villages, residents are able to live in their homes. In this paper, ageing in place refers to the possibility to reside in the social community and in the neighbourhood of one's own choice (Wiles, et al. 2012). Ageing in place may enable residents to maintain their social identity and be integral part of the community. Moreover, housing options suitable for frail residents, located in the village centre enable to deliver home help and home care services in a more efficient way. Furthermore, according to Tedre and Pehkonen (2011) small scale sheltered housing or adult foster care in the village environment may provide job opportunities for local residents.

Innovation, user participation, co-design and co-delivery have been recognised as means to improve service delivery in rural regions (OECD, 2010). The resources of small municipalities are limited and therefore, new way of thinking of the service delivery is needed. Remote health care services and communication technology will increase the possibilities for older population to live safely in the home environment. The technology can improve the quality and the accessibility of services. Moreover, in rural areas, it can also help care professionals to maintain and develop their level of knowledge (Jennet, et al. 2005) and to assist the caregivers. Remote technology and telecommunication infrastructure will also provide remote work opportunities for the population living in sparsely populated areas.

Background

To anticipate the future demographic development, a major reform of social welfare and health care services is taking place in Finland. The target of the national reform is to assure equal quality of health care services and access to these services in the whole country. Traditionally, each municipality has been in charge of delivering social services and basic health care services locally. The reform aims to create a new structure, where all social affairs and health care services will be organized nationally by large autonomous care service areas (5 to 18), whereas the municipalities (totalling 311 in 2017) will focus on prevention, promotion of wellbeing and leisure activities of residents. Moreover, the area of responsibility of municipalities cover urban planning, building control and construction of buildings. Currently, municipalities own most of the local social and health care facilities located in their area and are in charge of the maintenance of the infrastructure. However, many of these facilities need major renovations. In municipalities with decreasing population and lower municipal tax revenues the investments in renovation or in new facilities is a considerable

risk. Therefore, careful evaluation of the potential and the quality of the existing infrastructure is needed.

The current care policy for older population is focusing on care at home. The aim is that people live at home for as long as possible (MSAH, 2017). The telecare, digital services as well as smart technology related to social activities and safety help people to manage at home. Moreover, communication technology connecting residents with health professionals, family and friends increase the wellbeing and feeling of safety. Furthermore, the technology is expected to reduce the workload of the home care personnel. The basis of independent coping remains, however, an apartment suitable for the resident's functioning capacities and access to local services. Small municipalities would need to provide age-friendly housing options and accessible local environment to enable people to live in the villages.

Local services and a variety of housing choices are important for municipalities to satisfy the needs of current residents, and to improve living conditions in these areas. In sparsely populated areas, many persons 75 years old and over live in apartments or private houses that do not support their functioning capacities and need renovation. According to a recent survey, 62 percent of persons 85 years and older live alone (Helminen et al., 2017). The physical and social environment of these older persons need to be improved. Short distances to local services, human scale environment that enhance wellbeing and a strong community can be an asset and an attraction for the residents in small municipal centres.

The walkability and access to services is one of the major issues when planning age-friendly environment (WHO, 2007). In the process of aging, the radius of daily circle is getting smaller. The 250 m radius from home is commonly considered a suitable walking distance for frail older population (Huttunen et al. 2012). The local groceries, nearest bus stop as well as green outdoor area should be situated within this circle to enhance resident's independence. Literature review by Yen, et al (2014) revealed that the improvements in aesthetics, land use, and connectivity may encourage mobility of older people. Moreover, several studies have shown that number of walking destinations (Wang and Lee, 2010) and the attractiveness of open spaces (Giles-Corti et al. 2005) in the neighbourhood increase the frequency and the time of walking. Therefore, the analyses of in this study regarding the municipal centres are focusing on the facilities and services within a walking distance from the centre. Finland has invested in optical fibre technology to enhance digitalization. In principle, each municipality has today access to fast broadband internet connection. However, the technology is not yet in efficient use in the home care services. It will enable better communication, remote sensing and health monitoring of older residents. A virtual local service platform can improve access to information and enhance networking and shared use of infrastructure, human resources and knowledge. In small municipalities, the close collaboration between public and private service providers as well as local associations may lead to a resilient service structure and add to the economical sustainability.

One of the Key projects launched by the Government focused on developing *Home care for older people and enhancing informal care in all age groups* (2016 -2018). During the project, municipality-level experiments were carried out (Government, 2016). Aalto University, City of Porvoo, Municipality of Lapinjärvi, Health Care District EKSOTE and the Service Centre Suvanto in Savitaipale municipality formed a consortium in one the sub-projects. Each participating area in this consortium TÄYTY had a different population age structure (Table 1).

Table 1. The total population and percentage of population over 65 years in 2016 and projections for 2040 (Statistics Finland)

<i>Municipality</i>	total population 2016*	percentage of persons over 64 years (2016*)	population projections for 2040**	projection of population over 64 years (2040**)
<i>Savitaipale</i>	3 529	36,3 %	2 801	44%
<i>Lapinjärvi</i>	2 715	27,9 %	2 539	33%
<i>Porvoo</i>	50 142	19,7 %	54 029	27%

The population in Savitaipale municipality was the oldest among the three areas. In 2016, over 36 percent of the population had reached the age of 64 years or over, and by 2040 almost 30 percent of the population will be 75 years old and over. Between 2010 and 2016, the expenses of the municipality had increased by 30 percent per inhabitant (Sotka.net, 2017). Moreover, the population projections show a decrease of the total population, which may challenge the economic situation of the municipality further. Lapinjärvi municipality is estimated to have a moderate increase of older population by 2040 (OSF, 2017). The percentage of persons 65 years and over will remain constant, around 30 percent. In the City of Porvoo, the dependency ratio is estimated to increase less than in other municipalities due to the age structure of the population as well as immigration. However, the anticipated increase of the number of persons 64 years old and over is 50 percent. This will increase the need for services and housing for older population.

Aim of the study

The objective of the TÄYTY project was to develop a model of integrated service structure for housing and care services for small municipalities. The model would result to housing solutions that are suitable for older population and a network of local service providers. Moreover, the project aimed at developing the capacity for sustainable change locally. The target was to manage increasing costs by using local potential. In order to develop and innovate their services, the three municipalities participating in the project decided to become test sites, collaborate and create strategical partnerships with local stakeholders. The local pilots aimed at improving cooperation between relevant actors.

The municipality of Savitaipale wanted to anticipate the demographic development through renovation and shared use of existing facilities. Networking with the residents, local service providers and municipal actors was enhanced. The aim was to strengthen the role of the Service Centre Suvanto and to concentrate all services for older population around it. The municipality of Lapinjärvi had the ambitious goal of becoming the most resident friendly municipality in Finland. The vision was to involve the local population in a community co-design process. The City of Porvoo was planning a new housing area in the district of Johannesburg. The housing area would provide housing options and local services for all age groups, including older population. The existing service infrastructure would be the bases of the new age-friendly residential area. The aim was to connect remote care services and information technology to the new housing area.

The overall aim of the project was to provide a model of resilient service platform for Finnish municipalities. Each municipality has its own challenges; therefore, the solutions need to be adaptable as well. However, shared use of existing resources and facilities can offer a sustainable solution for small municipalities. Moreover, the process of development of the municipal environment can be described, the urban area complemented and densified, if necessary, with new premises or housing for older people. All new spaces will be targeted for shared use of all age groups.

Method

The research and development project *TÄYTY* was using multiple case study method. The method enabled to have a holistic view of the current challenges in real life context. The housing options and need for services for older people were studied in each of the participating municipalities, in the local context. Statistical analyses on population projections and age structure for each municipality was carried out. The quality and usability of existing buildings was assessed together with local stakeholders. During the project, each municipality elaborated a long-term urban development plan, which will be realised after the project. The researchers acted as facilitators for multisector local teams including municipal actors, private and non-profit service providers and local people. The project team met regularly, once a month.

Local residents were active partners in the development process. Resident's participation is implemented through various methods. In Savitaipale, a survey on housing needs for people 55 years old and older was launched. Moreover, workshops focusing on an age-friendly municipality were organized in the Suvanto service centre. The municipality of Lapinjärvi has several age-friendly initiatives and a bottom-up approach. A resident panel, the Dream Team, elaborated together with invited experts a model of age-friendly municipality centre and an online service platform targeted to all residents. Moreover, in Porvoo city a survey on current housing conditions of people receiving home care was published. Further, the city is developing a new urban strategy in cross-sectoral collaboration within the municipal actors.

Site visits and observations gave indication of the quality and usability of the existing facilities. The research group carried out an inventory and assessment of the services facilities for older people in each of the case study areas. The potentials of the existing infrastructure were identified through *A customer value index scale*, developed in Aalto University in the department of architecture (Suominen, 2019). It is a tool to evaluate qualities of buildings related to user experience and perceived customer value. The location, accessibility and visual openness of the spaces are part of the evaluation. Moreover, planning documents and architectural plans of local public facilities helped to assess the potential of existing infrastructure. The existing service structure (private or public services and other organizations) was evaluated together with the local stakeholders. The possibilities for shared use of facilities and infrastructure were studied for each municipality. Moreover, the availability of fire optic technology and the current use of the technological aids in elderly care are observed.

The analyses of existing service structure

The location of service facilities and other destinations in each case study area were analysed using a radius of 250 m walking distance. Lapinjärvi and Savitaipale municipalities had an existing urban and service structure, whereas Porvoo was in the process of developing a new housing area. The services for older population and other public infrastructure were all marked on the map. The commercial services in Lapinjärvi municipality were situated along the main street (Figure 1). The walking distance between the sheltered housing for older people and the commercial centre was approximately 400m long. The human scale and versatile environment of the municipal centre added to visual quality.

In Lapinjärvi, a demand for housing options for older population near the municipal centre was identified. There was a lack of small affordable apartments near local services, which could enable older people living in remote areas to move in. A model of private housing with access to remote care services and home health care would ensure that the older residents could maintain their quality of life.

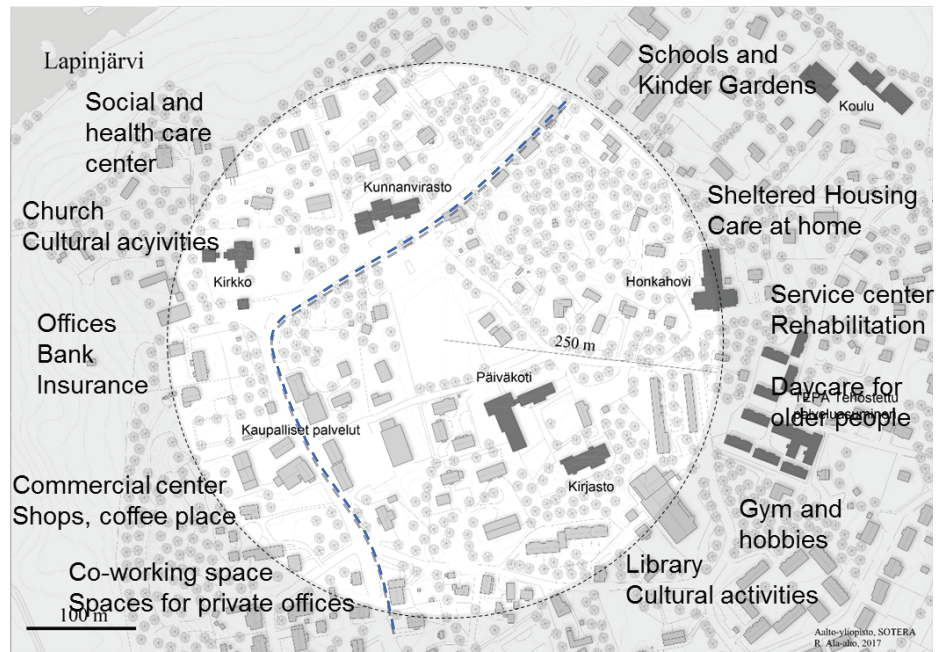


Figure 1. The services for elderly as well as public and private services situated within 250 m radius in Lapinjärvi municipality.

The strength of Savitaipale municipality was a compact urban and service structure. The Service Centre Suvanto acted as a base for the development of local services for older population. It was situated within the walking distance of other communal and commercial services (Figure 2). The service centre has 24 apartments and other wellbeing services targeted to all older people living independently in the area. The municipality has invested in fast fibre optic internet, which allows developing remote services and spreading widely information about the services. New digital services and innovative solutions can be tested in the municipal services, and further developed for remote areas. The service centre Suvanto will be the coordinator of local service networks.

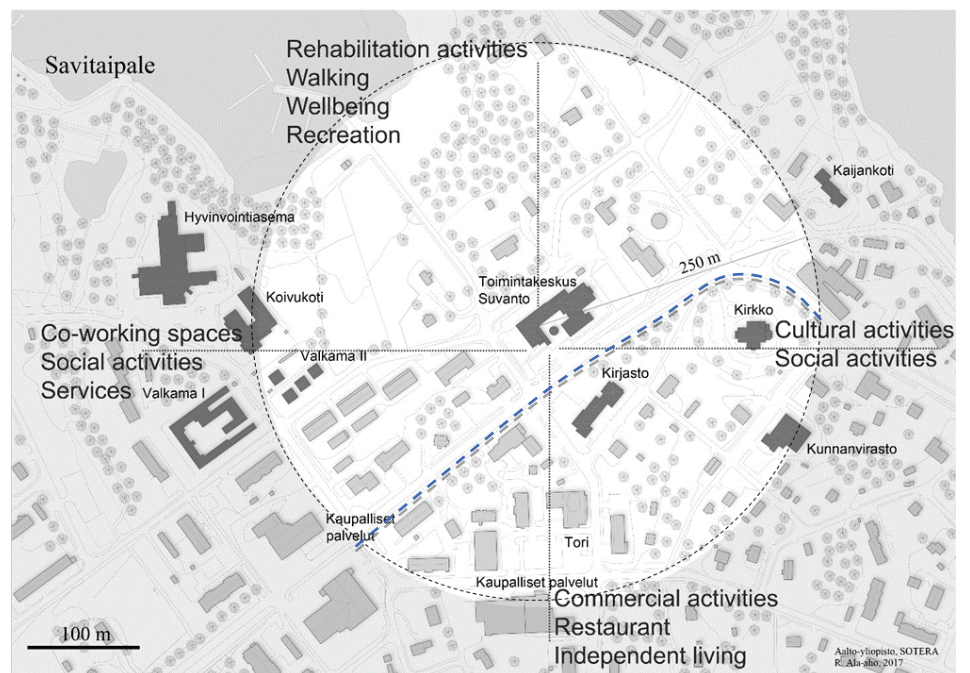


Figure 2. The services centre for elderly Suvanto and services situated within 250 m radius in Savitaipale municipality.

A new age-friendly housing area will be developed in the district of Johannesburg, in the City of Porvoo. The oldest buildings in the area targeted for care services for older population are under preservation. The site has high

visual quality and a beautiful garden but is located on a hilltop. Some of the buildings from the 1970's will be demolished or renovated. These buildings do not meet the current standards for care environments and do not support the functional capacities of the residents nor the work tasks of the staff members. Currently, lack of local services reduces possibilities for independent living in the area (Figure 3.). Therefore, the new urban development plan will include local services for all resident groups in the area. There is a need to reduce age segregation and mix housing solutions for different age groups locally. Therefore, new facilities, apartment buildings and local services are targeted to all age groups in the neighbourhood.



Figure 3. Johannesberg area in Porvoo will be developed as a new housing area with local services.

Preliminary results

The inventory of the existing infrastructure revealed that the quality of the facilities varies within a municipality. They are built during different decades and are designed with the best knowledge of that time. Previous observations in other municipalities have also revealed that approximately one third of the existing premises are functional and of good quality and one third can be refurbished or renovated. However, one third would need expensive and important modifications and are not currently suitable for effective care for older people. Remote location, institutional layout as well as lack of outdoor areas and spaces for rehabilitation are major problems (Verma et al. 2017).

The way of producing and delivering care services has undergone changes in recent years. Remote care services and online information are developed for people to take responsibility of their own care. Many older people living independently are frail and have multiple medical conditions. They may be unable to use new technologies. Moreover, the home care staff may have some resistance for using these technologies. There is need to invest time and human resources to implement the new technologies into practice. Over the time, people will opt for technology when it is useful and meaningful for them. According to Milligan, et al (2011) the technology that enables people to undertake more of the everyday tasks of daily living or which enhance the sense of security are widely accepted.

In small municipalities, the housing for older people, spaces for social activities and local services can all be located within a walking distance. In Lapinjärvi, the basic services: daily groceries, social and health care services, a restaurant,

bank and other commercial services are all situated along the main street within 200m distance. This compact urban structure increases the possibilities of aging in place. Moreover, in a small community, people know each other and have social control over the space. This may enhance the feeling of safety of the older residents. However, a lack of apartments suitable for older population in the centre of the municipality was identified.

The traditional way of living in sparsely populated areas favour private houses. The local resident panel brought up the idea of a small scale, affordable cottage suitable for older people located in the centre of the municipality. Therefore, an urban densification plan of the centre with small-scale single-family houses was proposed. Moreover, two students in architecture designed a model of an affordable small-scale modular accessible house suitable for older residents. The model will be used in the densification of the municipality.

Moreover, the urban plan included walking paths and increased access to daily services. The location of the new houses within walking distance from commercial services as well as from the existing sheltered housing would enhance ageing in place. The existing sheltered housing services will be able to provide home care services, monitor safety and communicate with residents remotely (Figure 4.) The GPS technology and remote monitoring may be used to help people with memory disease to continue daily life and walk safely in the familiar surroundings as long as possible. Furthermore, art and natural elements were proposed as visual landmarks that enhanced the navigation and wayfinding.

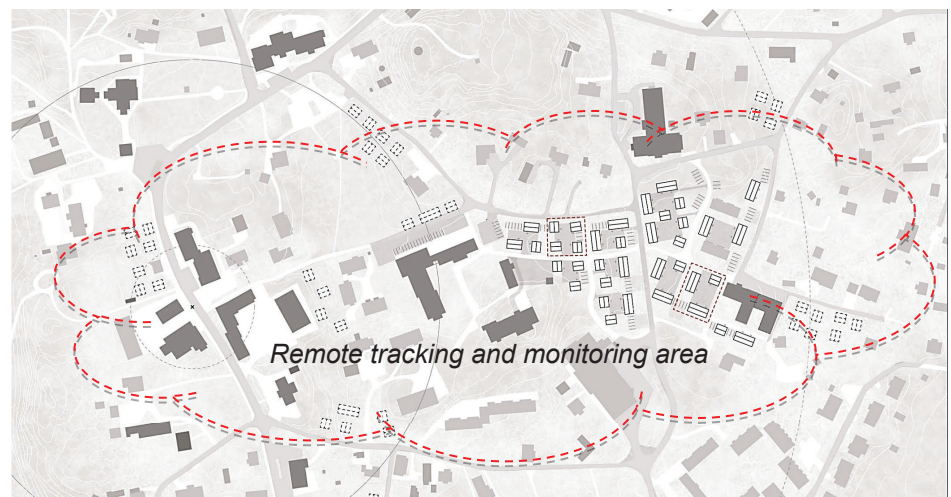


Figure 4. The new small-scale housing units can form a remote service area. (base map, Fraser, I. student in architecture).

In the same way, the city of Porvoo is planning the densification of the Johannesberg area with mixed housing solutions for various resident groups. Further, the area needs local services that can be targeted for the whole community. The existing care service structure can provide social activities, remote services, and home care for frail residents. The typology of apartments, the scale of courtyards, green areas and a network of walking routes in the new area are influenced by the old part of City of Porvoo (Figure 5.). The human scale, neighbourliness, and accessibility are in the bases of the urban plan.

Savitaipale has several service providers offering care and housing for the older population living in the proximity of the Suvanto service centre (Figure 6). The collaboration between these service providers locally would enable to offer a wider range of services related to daily living, wellbeing and health care for older residents. Moreover, the shared use of premises and a network of public, private, and non-profit organizations increase the resource efficiency. The most appropriate and most accessible spaces can be chosen for the shared use. Furthermore, some of the services of the Health Care Centre that is going to be

demolished can be organised in existing buildings. A new large-scale building for the Health Care Centre in a small municipality with shrinking population and decreasing resources may not be a sustainable solution. The fast fibre optic network in the municipality enhances the coordination the network. It is also a tool to communicate with older people living in remote areas. Moreover, persons with physical disabilities may participate in the activities of the centre remotely.



Figure 5. The schemas for outdoor spaces, walking routes, green areas and various housing typology in the new housing area. (UKI Architects)

The nature is important source of wellbeing and enhance mobility and physical exercise of people. It is a potential strength for small municipalities. In September 2017 in Savitaipale, a new outdoor fitness area suitable for older population opened next to Suvanto centre. Moreover, walking paths to local services help to maintain physical functioning capacities.

The network model for services

The core services for older people can be identified as 1) housing, 2) social activities, 3) health care services and 4) maintenance. In the new model for small municipalities developed in this study, the core services are located in the community (Fig. 6). Instead of having all services under the same roof, they can be located within the community. Some of the information and care services can be offered online. However, local knowledge is needed to recognize the personal situation and need for care of each person. A comprehensive evaluation of the housing situation, social contacts and care needs is required to enhance one's independence and wellbeing.

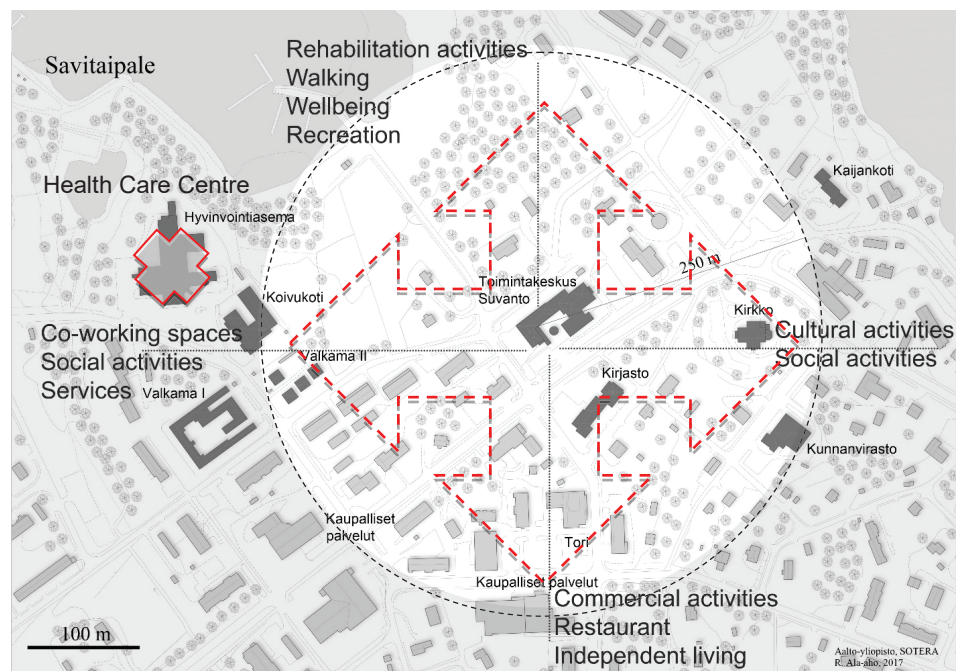


Figure 6. The commercial, social and cultural services as well as nature are at walking distance from Suvanto service centre in Savitaipale.

The local coffee shop, library or parish centre can be a space for social and cultural activities. The rehabilitation can take place in the local gym or in outdoor environment. Wellbeing services and office spaces can be located in premises that are suitable for those activities. Moreover, the older residents will be able to live in their own accessible homes in walking distance of all the local services. In the heart of the service network model is a low threshold space with information and coordination activities. It is targeted for both the residents and other stakeholders of the local network. In the model, the public facilities and other resources are in shared use. The residents' associations or local organizations can have access to the shared spaces.

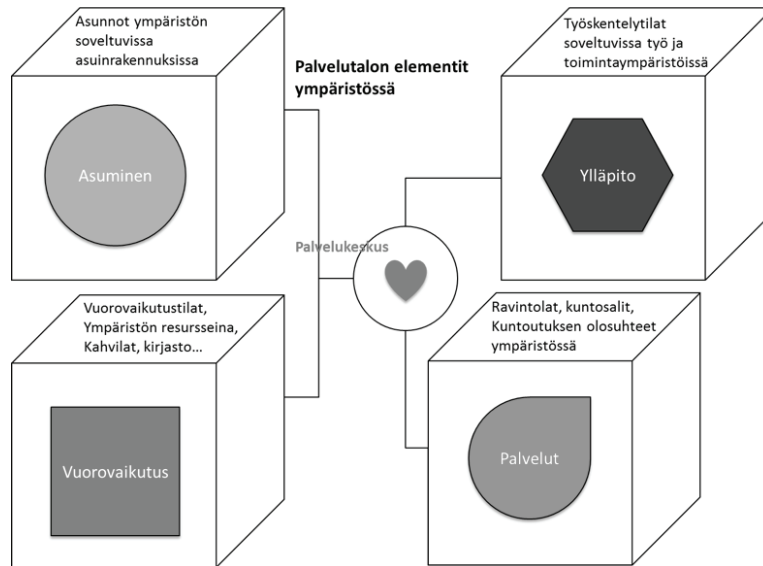


Figure 7. The different services related to housing for elderly can be situated in various facilities the small municipality. (Suominen, 2019, p. 58).

Conclusions and discussion

According to the population projections, the number of people 85 years old and over will increase during the coming decades. In the future, however, the number of older people in sparsely populated areas will grow slower than in the big cities. The need for new housing services is not increasing in the same speed with population aging. The population structure will lead to high dependency ratio especially in small municipalities. Home care and remote services will enable people stay at home longer. The care at home is the first option for older resident and housing modifications may enhance independent coping. The changes in home environment and home health care services may influence the feeling of home. Milligan et al. (2011) point out that the home modifications, home care and telecare may transform the home environment into a site of work, inhabited by both formal and informal careers. Therefore, relocation is an option when the home environment does no longer support the resident's needs.

The preparedness for one's own aging is only possible if there is a supply of suitable housing solutions available. Need for accessible housing, owner-occupied and rental apartments in the centre of the municipalities will increase in small municipalities. The densification of these municipalities with affordable housing will enable people to age in place. A recent study about co-housing for older people found that the residents appreciated the reciprocity of *social support, having someone to talk to, someone to go for a walk with, or someone to ask for help with shopping and daily chores* (Jolanki and Viikko 2015). According to the study, emotions and shared experiences generated the sense of community. The social support and collective experiences may become the strength of small villages, where people know each other. Further, the remote

monitoring may enable residents with memory decline to continue their life in the community, in the familiar surroundings without fear of getting lost.

Each of the municipalities is different. They have their own strengths and weaknesses. Therefore, a resilient and sustainable solution has to be based on the local context. The participation of municipal actors is important to implement and to assess the feasibility of the urban plans. The location of existing housing, outdoor spaces and shared spaces in the community influence the independence and the residential satisfaction of older population. Most activities and services can be organized in these spaces. The bases of any possible new construction needs to be the accessibility, flexibility and multiuse. Especially, in small municipalities all new services and facilities need to be targeted for all resident groups and used by local stakeholders. The potential of the strong community in small municipalities is a good basis for the sustainable development.

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