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Magnus Rönn

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Photo on the front cover: Magnus Rönn.

The photo show artistic design from an introduction course for students in architecture, called A1, at Chalmers University of Technology.

DEBATE

**STUDY PROTOCOL:
THE PHYSICAL ENVIRONMENT AND
HOME HEALTHCARE SERVICES
*THE DEVELOPMENT AND CONTENT OF A
STUDY PROTOCOL TO EXPLORE ENABLERS AND
BARRIERS IN THE PHYSICAL ENVIRONMENT
FOR THE DELIVERY OF HOME HEALTHCARE
SERVICES***

**CECILIA PETTERSSON, INGA MALMQVIST,
STEN GROMARK AND HELLE WIJK**

Abstract

Whilst home healthcare services for an aging population currently living in ordinary housing are increasingly needed, physical environments do not adequately meet current levels of demand for such services. The present study protocol, which combines qualitative and quantitative methods, was developed in order to explore the impact of architectural design on enablers and barriers in the delivery of home healthcare services. An interdisciplinary research team, drawn from the fields of architecture, healthcare, and occupational sciences, will execute the forthcoming study. This study protocol describes the design of that study, which will explore the relation between residential design and the conditions for care in ordinary housing.

Keywords:

home services, home healthcare,
caregivers, architectural design,
ordinary housing, older people,
occupational therapy

Introduction

The development and content of a study protocol to explore enablers and barriers in the physical environment in the delivery of home healthcare services

We developed this study protocol with a view to addressing an identified gap between an expanding level of demand for home healthcare services for older people and a housing stock that has not been designed to meet the requirements of such services nor to respect personal privacy in their delivery. By 2050, more than 2 billion people globally will be 60 years or older, in comparison to 841 million people in 2013 (Chatterji, Byles, Cutler, Seeman & Verdes, 2015). Rapid demographic increases are also expected in the proportion of people that are aging with disabilities (Beard & Bloom, 2015). Together, these trends will have a great impact on planning and economics in the municipal sector, which will require new solutions in meeting the home healthcare services needs of older citizens. Healthcare technologies are becoming more developed, more specialised and more ubiquitous, and as a result care in hospitals is becoming more exclusive and hospital stays are becoming shorter. Ordinary housing is already, and will increasingly become, a “workplace” for staff employed in home healthcare services such as those delivered after surgery or after treatments, which will increasingly be delivered outside of hospital environments. Home healthcare can be expected to expand significantly as a result, increasingly permeating people’s private homes, despite the fact that those homes are not adapted for this type of care. For older people, the prospects of receiving care within or adjacent to their homes presents obvious benefits, including reduced medical travel and healthcare costs.

The majority of people over 65 prefer to live in ordinary housing compared to move to a nursing home (Haak, Fänge, Iwarsson & Dahlin-Ivanoff, 2011). People’s private homes can be meaningful in many ways, as they are places for intimacy, security, anchoring, self-determination and social life. The concept of *home* has been described as a practical, functional and emotionally-related identity (Lantz, 2007), which meets a range of practical needs (as a place for rest, meals and socialising) and emotional needs that are integral to human life. Thus, the home can be considered an extension and confirmation of a person’s identity. It is a private territory that allows people to take control of their lives, whilst they are within it. This control may help people to organise and bring order, predictability and stability into their lives. However, family members living with people in need of home healthcare services may feel that the introduction of medical equipment transforms their home into a healthcare facility (Borgstrand & Berg, 2009). Thus, to ensure both age-friendly ordinary housing for older people and their relatives, and a safe working place for staff in home healthcare services, a greater knowledge of desirable design features is required.

Ordinary housing is increasingly becoming a site for the performance of healthcare activities due to its ability to support a greater range of types of qualified treatments and care activities and to increase occasions for administering such services. In Sweden, where this study protocol was developed, almost 400,000 people, most of them 65 years or older, received care from municipal healthcare and medical care services in 2016 (National Board of Health and Welfare, 2016). The shortage of skilled staff in general home healthcare services is well-known, and home healthcare assignments are very unclear (National Board of Health and Welfare, 2008). It has been and remains difficult to satisfactorily staff in this type of service and to ensure that the design of ordinary housing can accommodate such services. If attention is not paid to the task of modifying home design to accommodate home healthcare services, municipalities run the risk of not being able to provide older people with the services that they need. Staff also need to be provided with a safe workplace and good working conditions, whilst the people receiving care – as well as the people who live with them – should also be able to continue to enjoy a “homely” atmosphere. This is especially crucial at the present moment, as working with healthcare for a municipality is becoming increasingly less attractive. Staff recruitment, like patient safety, relies on the ability to provide functioning conditions for conducting qualified home healthcare services.

The physical environment exerts a significant impact on health and safety, especially in healthcare facilities. Empirical evidence shows that 30% of older people’s falls in a hospital in the US are related to the layout of bedrooms and bathrooms and occur when patients try to use the toilet (Alcee, 2000). In another study from the US, Reiling (2006) put forward a list of safety design features that can help to create a safe, high-quality, patient-centred environment in the patient’s room. One suggestion was to have a handrail between the bed and the bathroom to guide and support the patient and reduce the risk of falls, a solution that has also been raised in the Swedish context. Just as difficulty in navigating from a bed to the bathroom results in fall risks for older people, it is also important to note that such difficulties can also put staff providing home healthcare services at risk of injury. Evidence-based knowledge about health and safety for older people in home physical environments seems surprisingly scarce. The results of a recent scoping review based on a final sample of eight publications revealed three recurring themes: safety, accessibility, and technology and products (Pettersson, Malmqvist & Wijk, 2019). *Safety* was reported on in relation to transferring older people from shower or bathtub during home rehabilitation. Caregivers also mentioned that narrow working spaces and physical obstacles in ordinary homes hindered the use of safe work techniques and assistive devices and equipment. *Accessibility* was highlighted in terms of lack of space in ordinary homes for walkers and wheelchairs to turn around, and the need for toilet seats and hand basins at home that are adaptable

in height. Similarly, *technology and products* such as shower seats and grab bars in the shower and near the toilet were mentioned as important additions to a safe home.

Wipfli, Olson, Wright, Garrigues and Lees called in 2012 for more research to be undertaken into effective strategies to improve safety and injury prevention for home healthcare services. Markkanen et al. (2014) suggested that installing or allowing for supportive equipment in the home should be dealt with at the architectural design stage. They also claimed that designing safe ordinary housing should not be considered a challenge but an opportunity to address and eliminate hazards before they become actual dangers. Ongoing research shows the crucial relation between the physical environment in healthcare architecture and medical and care outcomes. However, existing research has tended to focus on the physical environments of hospitals and residential care facilities, not on apartments in ordinary residential buildings. Due to the strong trend that people “age in place”, it is important that architects of ordinary housing are aware of the needs and experiences of older people and healthcare staff with respect to receiving and providing home healthcare services in ordinary housing.

In summary, it is a fact that aging in place with support from home healthcare services is an increasing trend in society. As such, society has much to gain from research about the positive effects of efforts to improve care for those who have chosen to remain living in ordinary housing. However, when someone’s home also becomes a workplace for home healthcare services staff, it creates a complex context and a range of possible conflicts. This study protocol has thus been developed in order to plan for and enable research that focuses specifically on the obstacles and opportunities presented in the physical environment when home healthcare services is performed in ordinary housing situations.

Specific research questions we plan to explore are the following:

- What are the enablers and barriers when home healthcare services for older people is performed in ordinary housing?
- How can, as a part of a long-term strategy, ordinary housing be designed to fulfil the double purpose of being both a home and a place for care?
- What kind of improvements can be made to the existing physical environment to support home healthcare services in ordinary housing?

Methods

Study design

The study protocol presented here takes a qualitative approach, although one part of the empirical material, namely the registration and annotation of layouts of the studied ordinary apartments, is quantitative. Thus, quantitative and qualitative methods will be combined (Groat & Wang, 2002; Patton, 2002) and these mixed methods will be executed as follows (Freshwater, 2007):

Qualitative methods:

- Participant observations through accompanying staff working in home healthcare services for older people living in ordinary housing.
- Interviews with older people receiving home healthcare services.
- Focus group interviews with staff working in home healthcare services.

Quantitative methods:

- Document studies of the layout plans of the ordinary homes considered within the study.

Study context

The forthcoming study described in this study protocol will be hosted by the Center for Healthcare Architecture (CVA) at Chalmers University of Technology in Gothenburg, Sweden. CVA is a national arena for the creation, translation, exchange and dissemination of knowledge about healthcare architecture. CVA's research focus is on healthcare buildings and the physical environment as a support and a part of the interaction between healthcare, patients and architecture. The forthcoming study is part of the five-year environmental research project *Architectural Inventions for Dwelling, Ageing and Healthcare* (AIDAH), integrating the activities of CVA with the title *Integrative Ways of Residing: Health and Quality of Residence. Architectural Inventions for Dwelling, Ageing and Healthcare*. The AIDAH environment, supported by Formas, is intended to generate cross-disciplinary research and implementation projects for a sustainable built environment, that help us to confronting an aging society among other related challenges (Gromark et al., 2014).

Recruitment process and data collection

The participants in the forthcoming study will be recruited from different areas in Gothenburg, Sweden, with the aim of mirroring the demographic variety of the population while remaining in a geographically limited area to ensure similar organisational and political regimen, values, and policies across cases. The municipal Executive Director of Social Support and Care for Older People will be contacted to select two city areas with sufficient representative variation in building types. The next step will be to establish contacts within the selected areas through relevant managers and staff within the municipality, who will also receive

information about the study before being asked to approve the study and to participate. Information will also be given to the older people and staff receiving and providing in-home assistance and home healthcare services, and written informed consent will be asked of those who want to participate. The two managers will then meet the researchers and convey the names of the participating older people and their addresses (15 residences in each area), and the researchers will meet the staff in the two data collection areas, inform them about the study and invite questions and requests for written information. Finally, data collection will be planned. First, the person responsible for planning the home healthcare services in each area will be contacted by telephone to set a time for the observations and staff will then be informed about the forthcoming observations and focus group interviews. The participating staff will then inform the participating older people living in the ordinary housing. The data will be collected in three steps:

1. Non-participant observations of staff providing home healthcare services/assistance/rehabilitation in ordinary housing will be conducted.
2. The functional limitations and environmental barriers in the home will be assessed, and if possible, the older person living there will be interviewed.
3. Based on the observations and individual interviews, focus-groups interviews will be conducted to capture staff's experiences of performing home healthcare services for older people in ordinary housing.

Measures

Data on older people living in the ordinary housing in question. Data will be collected on the older people's age, gender, cohabitation status, use of mobility devices, time living in the housing, time receiving home healthcare services, type(s) of care intervention(s), and any housing adaptations that have already been made. Data on functional limitations will be collected by means of interview and observation, using the personal component in the Housing Enabler instrument (Iwarsson & Slaug, 2010). This instrument contains 14 items: difficulty interpreting information, visual impairment, blindness, poor balance, loss of hearing, incoordination, limitations in stamina, difficulty in moving head, reduced upper-extremity function, reduced fine motor skills, loss of upper-extremity function, reduced spine or lower extremity function, dependence on walking aids, and dependence on a wheelchair. The Housing Enabler instrument (Iwarsson & Slaug, 2010) is an internationally acknowledged, reliable and valid instrument that is available in several languages, and sufficient inter-rater reliability has been demonstrated in several studies in Sweden and elsewhere (Helle, Nygren & Slaug, 2010; Iwarsson, Nygren & Slaug, 2005; Lien, Steggell, Slaug & Iwarsson, 2016).

Data on observed staff in home healthcare services

Data will be collected on staff age, gender and education, as well as their professional experience in home healthcare services, rehabilitation, and helping older people in their own homes.

Data on staff in focus group interviews

Data will be collected on the professional experience of home healthcare services or rehabilitation amongst staff.

Composing focus groups

To capture different experiences and opinions among staff, six focus groups of 6 to 8 participants will be constructed, four representing homecare services staff in the two areas, and two representing nurses, physiotherapists and occupational therapists in the two areas. Thus, the focus-groups will be composed on the basis of both homogenous and heterogeneous principles (Krueger & Casey, 2009). The focus groups will be homogeneous in terms of profession in order to facilitate discussions; they will be heterogeneous in relation to years of experience and gender in order to stimulate variation in those discussions.

Environmental factors

Data will be collected on the type of housing, the year that the building was built, the size of the home, the number of rooms, and which floor the person lives on. The construction layouts of different homes will be assessed and documented by an architect.

In order to collect data on the environmental barriers in the older person's homes, we will use a reduced version of the Housing Enabler instrument (Iwarsson & Slaug, 2010), which is based on a person-environment fit visualised using the ecological model of aging (Lawton & Nahemow, 1973), as well as the Housing Enabler Screening Tool (Iwarsson, Slaug & Fänge, 2012), since we do not need all the features of the full instrument. The environmental component of the instrument assesses physical environmental barriers based on standards for housing design. The screening tool assesses the presence or absence of 61 environmental barriers (items) in the home and immediate exterior surroundings (exterior surroundings, entrances and indoors).

Observations

Observations of the obstacles and opportunities during home healthcare services will be performed by registering staff movements within the layout of the apartment and by identifying obstacles and opportunities during care.

Interviews with people living in the apartment

The interviews will be conducted in the older people's homes in conjunction with the observations of the staff. The interview questions will be

open-ended and target themes such as older people's experiences and perceptions of receiving care in relation to housing and health, thoughts about remaining at home or moving to another apartment, and important considerations about the planning and design of new housing in which care could be given. The interviews will be recorded and transcribed verbatim.

Focus group interviews with staff in home and healthcare

Focus group interviews will be performed with staff in home healthcare services. Following the qualitative approach, a focus group methodology and descriptive design will be used. This method is considered appropriate to explore staff's experiences of performing home healthcare services for older people (Krueger & Casey, 2009; Wibeck, Abrandt Dahlgren & Öberg, 2007). A focus group session is a carefully planned discussion that takes advantage of group dynamics to access rich information efficiently (Wibeck et al., 2007). Group size may be crucial for the outcome of the discussion, and Wibeck et al. (2007) propose that 6 to 8 is the optimal number of participants to promote small group discussion. Smaller groups allow each participant to play a prominent role, while opportunities to speak are more limited in larger groups. Wibeck et al. (2007) advise that the interview guide should contain open-ended questions that stimulate discussion without directing it too narrowly. Data will be collected with explicit attention being paid to group interactions in which the participants discuss their own perceptions and experiences of the topic and are considered the experts on the issue in focus (Krueger & Casey, 2009). The focus groups interviews will be conducted at places familiar to the home healthcare services staff.

Data quality

To ensure data quality, the observations and the individual and focus group interviews will be discussed in the research group.

Ethical Considerations

All ethical principles for human research in the relevant Swedish national legislation (i.e., the *Act Concerning the Ethical Review of Research Involving Humans* [SFS 2003:460] and the *Personal Data Act* [SFS 1998:204]) and the World Medical Association Declaration of Helsinki (World Medical Association, 2001) will be followed. An ethics permit will be sought from the regional ethical committee and recruitment will not begin until permission is granted. Written informed consent will be obtained from all participants, the older people receiving home healthcare services and the staff in both the individual interviews and the focus groups interviews. Participants will be informed that they may decline participation at any point in time without any consequences. Data will be stored safely at the institution and only authorised researchers will have access to data during the study. There is always a risk of integrity violation when

conducting research where humans are involved. Although the actions of staff in the home healthcare services situation will be the focus of observation, the observations may be perceived to expose the older people in care. Therefore, great sensitivity for the older people's experience will be prioritised, with an emphasis on the voluntary nature of the older people's participation and ability to withdraw from the study.

Data analysis

In the forthcoming study, data will be analysed according to the mixed method guidelines set out by Freshwater (2007), using various methods of triangulation. We plan to focus on aspects and patterns of architecture, care and the working environment in our analysis of the data, according to the thematic analysis described by Braun and Clarke (2006). The individual interviews with older people will be analysed according to the manifest content analysis method used by Graneheim and Lundman (2004), which they use to analyse a text based on observations – a similar task to that set out in this developed study protocol. The focus group interviews will be analysed using a method described by Krueger and Casey (2009), with explicit attention being paid to the group discussions. The different analyses will be carried out in several steps and validated by the researchers involved in this study. Finally, descriptive statistics will be used for quantitative data.

Discussion

The aim of this paper has been to describe the development and structure of a study protocol for a forthcoming study that will seek to explore the physical preconditions for performing home healthcare services for older people living in ordinary housing. To support the process of healthy aging in ordinary housing, it is important to conduct studies with a team comprising of both researchers from architecture and caring sciences on the interaction between the individuals and their living environment as well as staff in home healthcare services. When someone's home becomes an arena for care, this creates a complex context that can introduce possible conflicts between a feeling of home and a supportive and attractive workplace. Mixed methods studies therefore seem to be a valuable way to study home healthcare services in ordinary housing and to capture different perspectives. According to O'Catlain, Murphy and Nicholl (2007; 2008), mixed methods are common in healthcare research, and they recommend a transparent design that integrates qualitative and quantitative methods. Qualitative methods such as observations are increasingly used in studies focusing on aspects of care and can be useful in the task of finding out what really happens in particular healthcare settings and in relation to architectural considerations (Pope, van Royen & Baker, 2002). The forthcoming study will use the observation method in order to objectively assess enablers and barriers when home healthcare services is performed, by means of observing staff involved

in such care. Thereafter, this method will be combined with focus group interviews with staff, allowing a deeper understanding of staff perspectives about performing home healthcare services to emerge. Krueger & Casey (2009) see the major advantage of focus group interviews to lie in the deeper and richer expressions of opinions and experiences that are revealed when participants react to what is being said by others. In the forthcoming study, we will also assess accessibility problems for each person in their specific home environment by use of the Housing Enabler instrument (Iwarsson & Slaug, 2010). This instrument allows environmental barriers to be defined by reference to current standards and guidelines for housing design, which are observed and registered as present or not present by trained raters who have acquired their expertise and knowledge through special training courses. This objective assessment of accessibility will be augmented by individual interviews with older people regarding their experiences of receiving home healthcare services. Pope et al. (2002) state that interviews are useful for assessing user views of services and healthcare provision, and data from our planned interviews will contribute to understanding the perceptual aspects of home healthcare services. The methodological strengths of this developed study protocol include the combination of (i) interviews with older people receiving home healthcare services with (ii) focus group interviews with staff, which together will provide important complementary information and understanding. It is also advantageous that the observations will be conducted by an occupational therapist, accustomed to visiting and interviewing older people in their homes as well as trained rater of the Housing Enabler instrument (Iwarsson & Slaug, 2010). The forthcoming study's interdisciplinary nature will also combine perspectives from architecture, care science, occupational therapy and physiotherapy in order to provide rich and nuanced knowledge about enablers and barriers to home healthcare services for older people in ordinary housing. A range of different perspectives will be used in constructing the interview guides, undertaking the focus group interviews, performing data analysis and writing publications.

Quantitative data will be collected on the type of housing, the year that the building was built, the size of the home, the number of rooms, and which floor the person lives on. The construction layouts of the different homes will be assessed and documented by an architect.

The housing that will make up the study are will be selected on the basis of two main criteria:

- Areas where the researchers are allowed to follow the caregivers and observe.
- (As much as possible) areas that reflect the composition of existing housing in Sweden.

The two districts where the studies will take place will each have a different social status, with homes of different sizes and ages, constructed

in the last 100 years. Most of the apartments that will be studied will be found in multi-dwelling residential buildings, partly because single-family houses form a smaller proportion of the housing stock and partly because the floorplans of single-family homes tend to be too varied to be able to draw consistent conclusions. This forthcoming study is thus expected to provide architects and planners with new knowledge regarding the planning of apartments in multi-dwelling residential buildings that are suitable for old and frail residents. Accessibility – both from the perspective of residents and staff – is a crucial issue in studying how residential apartments can be designed to meet requirements in situations where home healthcare services staff enter and perform care in private homes. The quality of work environments is affected by the extent to which room is made for work to be undertaken. Two important questions concern the layout of housing plans are: How does the floorplan affect the ability of home healthcare services staff to perform care work, particularly given that such work is often carried out in bedrooms and bathrooms? What opportunities do residents have to maintain privacy despite the performance of care work in their home? Here, we must consider not only the rooms in which healthcare tasks are performed, but also the extent to which staff need to pass through other rooms in the home. The possibility of personal privacy is particularly important when the household is larger than just the person who is receiving care.

Critical issues

In line with Lincoln and Guba's (1985) recommendation of the use of triangulation to strengthen the credibility of data collection and analysis, triangulation will be performed in the forthcoming study, by means of a combination of data and methods. Data from the individual interviews and focus group interviews will be analysed by the various researchers involved in the forthcoming study, making it possible to capture a range of different aspects of the issues being analysed. Multiple perspectives will also be applied in order to identify physical enablers and barriers in home healthcare services and to try to understand the different experiences of older people and staff. Existing understandings held by the researchers involved in the study will be taken into consideration when interpreting the findings. Additionally, accessibility will be professionally assessed by means of the Housing Enabler instrument (Iwarsson & Slaug, 2010), which maintains a high level of reliability and validity (Iwarsson et al., 2012). As in all studies using the observation method, it is possible that observers will influence how the home healthcare services is performed; in response to this issue, strategies such as minimal interaction and habituation will be followed to minimise that influence, based on the recommendations of Robson and McCartan (2016).

Conclusions

To support home healthcare services in ordinary housing, it is important to conduct studies with a team of researchers from both architecture and caring sciences on the interaction between individuals and their living environments. When someone's home becomes an arena for care, a complex context is produced that introduces possible conflicts feelings of being at home and the provision of a supportive and attractive workplace. A recent scoping review revealed that research exploring enablers and hindrance in the physical environment of ordinary housing where home healthcare services is conducted is scarce. The forthcoming study, which is presented in this study protocol, addresses this problem by means of the use of a combination of scientific methods in order to explore the residential situational context in ordinary housing for older people. Our ambition is to be able to transfer new and complex knowledge to housing companies and architects, as well as to medical decision makers and staff in home healthcare services for older people.

Declaration of conflicting interest

The authors have no conflict of interest or financial ties to disclose.

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- Alcee, D. (2000). The experience of a community hospital in quantifying and reducing patient falls. *Journal of Nursing Care Quality*, 14(3), 43–53.
- Beard, J. R., and Bloom, D. E. (2015). Towards a comprehensive public health response to population ageing. *Lancet*, 385, 658–661.
- Borgstrand, I., and Berg, L. (2009). Närstående erfarenheter av ett palliativt hemsjukvårdsteam [Next-of-kin experiences from a palliative home nursing team]. *Vård i Norden*, 95(4), 15–19. [In Swedish.]
- Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Chatterji, S., Byles, J., Cutler, D., Seeman, T., and Verdes, E. (2015). Health, functioning, and disability in older adults—present status and future implications. *Lancet*, 7, 563–575.
- European Observatory on Health Systems and Policies. (2013). *Home care across Europe*. N. Genet, W. Boerma, M. Kroneman, A. Hutchinson and R. B. Saltman (Eds.). Copenhagen: Regional Office for Europe. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0008/181799/e96757.pdf.
- Freshwater, D. (2007). Reading mixed methods research: Contexts for criticism. *Journal of Mixed Methods Research*, 1, 134–146.
- Graneheim, U. H., and Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24, 105–112.
- Groat, L., and Wang, D. (2002). *Architectural research methods*. New York: Wiley.
- Gromark, S., I. Malmquist, P. Fröst, O. Nylander, H. Wijk, M. Elf, and C. Thörn. 2014. “Integrative Ways of Residing: Health and Quality of Residence. A Concerted Trans-Disciplinary Research Effort - AIDAH ‘14-‘18. Architectural Inventions for Dwelling, Ageing and Healthcare.” The International Conference ARCH 14 on Research on Health Care Architecture, Helsinki SF Aalto University 19-21 Nov 2014. Retrieved from <https://www.chalmers.se/en/projects/Pages/Integrative-ways-of-residing.aspx>
- Haak, M., Fänge, A. M., Iwarsson, S., and Dahlin-Ivanoff, S. (2011). The importance of successful place integration for perceived health in very old age: a qualitative meta-synthesis. *International Journal of Public Health*, 56(6), 589–595.
- Helle, T., Nygren, C., and Slaug, B. (2010). The Nordic Housing Enabler: Inter-rater reliability in cross-Nordic occupational therapy practice. *Scandinavian Journal of Occupational Therapy*, 17(4), 258–266.
- Iwarsson, S., Slaug, B., and Fänge, A. M., 2012. The Housing Enabler screening tool: Feasibility and inter-rater agreement in a real estate company practice context. *Journal of Applied Gerontology*, 31(5), 641-660.
- Iwarsson, S., and Slaug, B. (2010). *Housing Enabler – a method for rating/screening and analysing accessibility problems in housing. Manual for the complete instrument and screening tool*. Lund and Staffanstorps, Sweden: Vetens & Skapen HB.
- Iwarsson, S., Nygren, C., and Slaug, B. (2005). Cross-national and multi-professional inter-rater reliability of the Housing Enabler. *Scandinavian Journal of Occupational Therapy*, 12(1), 29-39.
- Krueger, R. A., and Casey, M. A. (2009). *Focus groups: A practical guide for applied research*. Thousand Oaks, CA: Sage Publications.
- Lantz, G. (2007). Hemmets betydelse [The importance of the home]. In G. Silverberg (Ed.), *Hemmets vårdetik – om vård av äldre i livets slutskede* [In-home medical attention – on the care of the elderly in the final stages of life] (p. 31-46). Lund: Studentlitteratur. [In Swedish]
- Lawton, M. P., and Nahemow, L. (1973). Ecology and the aging process. In C. Eisdorfer and M. P. Lawton (Eds.), *The psychology of adult development and aging* (p. 619-674). Washington, DC: American Psychological Association.
- Lien, L. L., Steggell, C. D., Slaug, B., and Iwarsson, S. (2016). Assessment and analysis of housing accessibility: Adapting the environmental component of the Housing Enabler to United States applications. *Journal of Housing and the Built Environment*, 31(3), 565-580.
- Lincoln, Y. S., and Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: SAGE publications.
- Markkanen, P., Quinn, M., Galligan, C., Sama, S., Brouillette, N., and Okyere, D. (2014). Characterizing the nature of home care work and occupational hazards: A developmental intervention study. *American Journal of Industrial Medicine*, 57(4), 445-457.

- National Board of Health and Welfare. (2008). *Hemsjukvård i förändring. En kartläggning av hemsjukvård i Sverige och förslag till indikatorer* [Home care in change: A survey of home healthcare in Sweden and suggestions for indicators]. Retrieved from <http://www.socialstyrelsen.se/publikationer2008/2008-126-59> [In Swedish].
- National Board of Health and Welfare. (2016). *Statistics on care and services for the elderly 2016*. Retrieved from <http://www.socialstyrelsen.se/publikationer2017/2017-6-2>
- O’Catain, A., Murphy, E., and Nicholl, J. (2007). Why, and how, mixed methods research is undertaken in health services research in England: A mixed methods study. *BMC Health Services Research*, 7, 85.
- O’Catain, A., Murphy, E., and Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of Health Services Research & Policy*, 13(2), 92–98.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods*. London: Sage Publications.
- Pettersson, C., Malmqvist, I., Gromark, S., and Wijk, H. (2019). *Enablers and barriers in the physical environment during care for older people in ordinary housing: A scoping review*. Manuscript submitted for publication.
- Pope, C., van Royen, P., and Baker, R. (2002). Qualitative methods in research on healthcare quality. *Quality Safe Health Care*, 11(2), 148–152.
- Reiling, J. (2006). Safety by design. Safe design of healthcare facilities. *Quality & Safety in Health Care*, 15(Suppl 1), 34–40.
- Robson, C., and McCartan, K. (2016). *Real world research: a resource for users of social research methods in applied settings* (4th ed.). Hoboken: Wiley.
- SFS 1998:204. *Personuppgiftslag* [Swedish Personal Data Act]. Stockholm: Swedish Ministry of Justice. [In Swedish]
- SFS 2003:460. *Lag om etikprövning av forskning som avser människor* [Swedish Act concerning the Ethical Review of Research Involving Humans]. Stockholm: Swedish Ministry of Education and Research. [In Swedish.]
- U.S. Bureau of Labor Statistics. Registered nurses, 2014. Retrieved from <http://www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-3>
- U.S. Department of Health and Human Services Health Resources and Services Administration. (2010). *The registered nurse population—findings from the 2008 National Sample Survey of Registered Nurses*. Retrieved from <http://bhpr.hrsa.gov/healthworkforce/rnsurveys/rnsurveyfinal.pdf>
- Wibeck, V., Abrandt Dahlgren, M., and Öberg, G. (2007). Learning in focus groups: An analytical dimension for enhancing focus group research. *Qualitative Research*, 7(2), 249–267.
- Wipfli, B., Olson, R., Wright, R., Garrigues, L., and Lees, J. (2012). Characterizing hazards and injuries among home care workers. *Home Health-care Nurse*, 30(7), 387–393.
- World Medical Association. (2001). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *Bulletin of the World Health Organization*, 79(4), 373.



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Biographical information

Cecilia Pettersson
PhD, Associate senior lecturer
School of Health Sciences, Örebro
University.
Address: Fakultetsgatan 1,
SE-701 82 ÖREBRO, Sweden
E-mail: cecilia.pettersson@oru.se
Affiliated at Chalmers University of
Technology

Cecilia Pettersson is a registered occupational therapist, senior lecturer at Umeå University and associate senior lecturer at Örebro University. The work involves teaching, research and development in Health sciences and Occupational therapy. Cecilia had a postdok position at Chalmers University and involved in a project focusing on architecture and care of older people. The aim of the project was to explore the physical preconditions to perform home and health care for older people living in ordinary housing. Cecilia is also involved in research on mobility and use of assistive technology in relation to accessibility, participation and discrimination.



Biographical information

Inga Malmqvist
Professor, Architecture and Civil
Engineering, Building Design
Chalmers University of Technology
Address: Sven Hultins gatan 6,
412 96 Gothenburg
E-mail: inga.malmqvist@chalmers.se

Inga Malmqvist, Professor, PhD, at Chalmers Architecture have recently retired but is still active as examiner for doctoral student. Her focus was on ageing societies and how to plan for good housing for the elderly as much care work takes place inside private homes. Inga contributed in a MSB financed research project about injuries in living areas which includes the work of one of the doctoral students who Inga supervises. Her doctoral students have been working with operation environments as well as elderly care and primary care facilities. For 11 years Inga led a design project at master's level about sheltered housing for the elderly.



Biographical information

Sten Gromark
Professor, Architecture and Civil Engineering, Building Design
Chalmers University of Technology
Address: Sven Hultins gatan 6,
412 96 Gothenburg
E-mail: sten.gromark@chalmers.se

Sten Gromark is a Dr Professor of Architecture, Architect SAR/MSA, at Chalmers ACE, Göteborg, Sweden, within the theme of Modern & Residential Architecture, Division of Building Design. He has been active in research on architectural sociology in international cooperation concerned with residential issues but has also published reflections on the influence of philosophical concepts within contemporary European architecture based on humanistic and social science oriented interpretations. He is the vice director of the Formas supported Research Environment 'Architecture in Effect' 2011-2017 hosted by KTH in Stockholm and was the co-coordinator of the NordForsk supported Nordic-Baltic researcher network Visurf 2008-2011. Since 2012 he co-coordinates the CIB Commission W069 on 'Residential Studies'. He is currently the Director of the Research Environment AIDAH, 'Architectural Inventions for Dwelling, Ageing and Healthcaring' supported by Formas 2014-2018 and hosted by Chalmers Architecture. He is a Swedish MC of EU COST Action Intrepid 2015-19 and the co-editor and author of the 2017 published text collection on Ashgate/Routledge; Ways of Residing in Transformation. as well as for Gromark, S., Mack, J., & Toorn, R. v. (2019 forthc.). Architecture in Effect vol #1(2) Rethinking the Social in Architecture. on Actar.



Biographical information

Helle Wijk
RN, Professor
Deputy head of Cooperation
Institute of Health and Care Science
The Sahlgrenska Academy at Gothenburg
University
Address: Box 457, 405 30 Gothenburg,
Sweden

Helle Wijk is a registered nurse, senior lecturer and professor at Gothenburg University and Sahlgrenska University Hospital. The work involves teaching, research and development in nursing. Helle is the principal investigator for the research group Health Care Environment. She is also affiliated researcher at the Center for Health Care Architecture at Chalmers in the research project Inquiries, Innovation and Implementation Strategies for Resilient Residential Qualities. Situations of Dwelling, Ageing And Healthcaring in Transdisciplinary Collaboration. Helle is a board member of the Forum for Healthcare Architecture.

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