

ASSISTED LIVING FACILITIES FOR THE OLD – ASPECTS OF USE AND USABILITY

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ABSTRACT

A growing number of old citizens and fewer working to support them is a reality in Sweden. More knowledge about assisted living facilities is crucial in creating appropriate care environments for the oldest. The study is part of a PhD project that explores use and usability in assisted living facilities for the old in Gothenburg, Sweden. This paper reports upon the observation study conducted November 2009-February 2010 in five facilities in Gothenburg, along with the other methods used in the PhD project. The aim of this study is to observe the daily use and thereby identify factors in the physical environment, affecting usability. Some preliminary findings are accounted for. Semi-structured interviews and a questionnaire survey are scheduled for 2011-2012. The city of Gothenburg and Chalmers finance the project and are the primary users of the results.

KEYWORDS

assisted living for the old, care environment, eldercare, usability

PROJECT OUTLINE

BACKGROUND

Swedish eldercare consumes today almost 20 % of the municipal budget in Sweden and 61 % of this by assisted living. Only 1% of the total population lives in assisted living (SKL 2008). By 2009-12-31, there were about 5200 residents in assisted living in Gothenburg out of a population of 507328 (Lokalsekretariatet 2010, Gothenburg Statistics 2010). The share of the population 65 years or older is expected to increase from 18% in 2008 to 25% in 2050, the group 80 years or older from 5% to 9% in the same time span (SCB 2010). The need for eldercare in Sweden is therefore expected to increase 2010-2050 (SKL 2005). The prognoses for Gothenburg and EU are similar (Gothenburg Statistics 2010, SKL 2009). Being responsible for the eldercare, this will have great implications on the municipalities' economy and planning (Swedish Government 1990). The Government's aim is to increase the number of persons and part of the population living in ordinary housing, introduce new housing concepts and develop specialized institutional care for the elderly (Swedish Government 2008). The PhD project is underway 2009-2013 and includes 35 assisted living facilities for the old, situated in Gothenburg and managed by the City of Gothenburg 2010-01-01.

RELEVANCE AND EXPECTED OUTCOME

The aim of the study is to increase knowledge about assisted living facilities for the old from an architectural research perspective. In Sweden there are few similar scientific evaluations within architectural research and in Gothenburg no such studies has been made. The project puts the question: "How are the studied physical environments used and how do the environments affect the usability?" More knowledge about assisted living for the old out of a user perspective is asked for by the municipal sector, being responsible for the welfare of the old (Law 2001:453) and by the construction clients, commissioning the physical environments. Expected outcome of the project is a) to enable better architectural programming in eldercare, and similar building projects, b) to facilitate physical resource planning in eldercare and c) to substantiate guidelines for appropriate property management possible.

DEFINITIONS

An old or elderly person is in this article defined as 65 years or older. This definition is used by the Swedish Government and other official institutes (Swedish Government 2008, SKL 2008). It has also been the age of retirement in Sweden until 2005, when the law was changed (Swedish Government 2003). The age group in assisted living are 80 years or older, referred to as older old by official statistics and by official organs in Sweden.

Laws governing person-related data collected in the project are the Secrecy Act (Law 1980:100) and the Law on Person-Related Information (Law 1998:204).

The Swedish term "*särskilt boende*" corresponds to the English "assisted living". The term "sheltered housing" is also used, along with "special housing". Assisted living is used commonly in both UK and the USA and is used as the sole term in this article. After an application to the municipality, a so called Aid Assessment is conducted. This leads to an Assistance Decision, e.g. to provide assisted living. The City of Gothenburg manages 92 buildings with assisted living

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facilities for the old in Gothenburg. The vast majority of them are operated by municipal eldercare, with the exception of handful private institutions. The project includes facilities built 1960-2006, representing 90% of the buildings. The size ranges from 300-15000 sqm with an average size of 5703 sqm. Measurements are in square meters, sqm (SS 021053).

The concept of Usability is defined as “*the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.*” (ISO 9241-11). Efficiency means that the artefact allows the user to perform easily and with use of little resources. Effectiveness describes the ability of the artefact to deliver a certain desired effect. Satisfaction would mean the degree of congruence between the ideal vision of the function and the subjective experience of the outcome, also described as the user’s feelings and attitudes towards the artefact and its effects (Alexander 2006). The concept was originally developed for technical products (Schackel 1991, Keinonen 1997), but applications on the built environment are being developed (Rasila et al 2010). Granath and Alexander (2006) suggest a widening of the concept by introducing context, culture and situation in the evaluation. The Norwegian researchers Monica Jensö and Tore Haugen discuss usability in healthcare settings in a conference article (Jensö & Haugen, 2004). They point out that the construction and user processes have different perspectives on usability and argue that we can study the usability of buildings by setting up the criteria and parameters, studying usability from the various parties’ perspective, consider the time factor and study buildings in their context.

THE RESEARCH AREA

Within Swedish architectural research, few similar studies have been made and very little research has been done in the architectural academies in KTH, Chalmers and Lund. Architecture research about assisted living has been conducted at KTH (Andersson 2005), Lund University (Åhnlund et al 1995, Åhnlund & Ohara 1998) and at Chalmers (Almberg & Paulsson 1991, Paulsson 1998, 2002, 2008, Almberg 1997). Research about geriatric care environments has also been conducted (Fridell 1998). The Centre for Ageing and Supportive Environments - CASE - at Lund University is conducting interdisciplinary research about older people and home environments. At Chalmers, there is current research on housing issues, old persons living conditions, assisted living and handicap. A Research Center for Healthcare Architecture has been started during 2009 at Chalmers on initiative from Professor Peter Fröst. Besides Stockholm, Gothenburg and Lund, multi disciplinary research with a sociological approach is conducted at Linköping University in the National Institute for the Study of Ageing and Later Life – NISAL. Catharina Nord is here doing research within the architectural field, concerning the design of future housing for the oldest old with extensive help needs. A study about assisted living has also been made (Lövgren 2002). On many academies in Sweden, research about old people, quality of life and care environments is carried out within the medical and sociological fields.

A literature search made 2010-03-31 on “assisted living” gave 455 hits. 14 of these were considered applicable to this project and included some kind of assessment of the physical environment, overview or relevant methods. The others dealt with quality of life, supportive technology, independence, medication, workplace issues, etc. A search on “special housing” gave 26 hits: 1 contained a questionnaire survey to eldercare nurses and 2 dealt with ordinary housing. Finally, a search for “sheltered housing” produced 78 hits of which 11 were applicable. Only 3 hits were related to Sweden.

THEORY AND METHOD

The project puts the question: “How are the studied physical environments used and how do the physical environments affect the usability?” In this PhD project, mixed research strategies are used to answer that question. The research approach is mainly qualitative and four main methods are used in the project: Observation, interviews, questionnaires and document studies. Participant observation, semi-structured interviews and document studies are mainly qualitative methods (Patton 2002). The observation study and the interviews constitute an exploratory case study (Yin 2003). The questionnaire survey is mainly a quantitative method (Ornstein 1988). This means that the project uses different sources of data, along with a combination of qualitative and quantitative methods (Flyvbjerg 2006, Groat & Wang 2002). Results from the observation study are triangulated with results from the interviews, questionnaires and from the document studies (Stake 1995, 2005). The analysis of the data follows a flow-model of the data organization: Data collection - data reduction - data displays – conclusion/verification – analysis (Miles & Huberman 1994). The documentation from the observations and interviews are processed and analyzed using Excel as a computerized qualitative data analysis tool (Meyer & Avery 2009). Textual accountancies and analyses are processed in Word.

The two first studies are designed as one case study in two parts with five cases, i.e. five assisted living facilities for the old in Gothenburg. Five assisted living facilities for the old in Gothenburg are chosen for the case study. The facilities vary in terms of size, location and original purpose (Table 1). Each case contains several analysis units, equivalent to the 14 care units (Yin 2009). The analysis units constitute the physical and organizational background to each session in the observation study and to every round of interviews in the interview study (Illustration 1). By observing how residents and staff use the common unit areas, a number of problems, related to the physical environment, are defined. This method is mainly qualitative (Patton 2002). Question areas based on these problems, on basic assumptions and on pre-conceived knowledge are further penetrated and developed in the semi-structured interviews, where also apartments are included. A mixture of deep-interviews and group-interviews will be conducted. Residents and staff from the five facilities will

participate. Both individual and group interviews will be conducted. Thick descriptions are used to display complex interrelationships (Geertz 1973, Patton 2002, Stake 1995). The questionnaire survey will give quantifiable results from a large number of respondents in thirty other facilities in the third and last study. The survey aims to obtain quantifiable material with a high degree of external validity by triangulating results from the case study and to compare material within the study (Groat & Wang 2002).

The purpose of documents is to a) illustrate, b) support theories and hypotheses, c) to give background to prevailing circumstances and d) give validity to obtained data. A great number of documents are identified and of various types: Visions, goals, policies on each level; time schedules; individual care plans; routines for contacting the property manager's helpdesk; birth year and moving-in date for each resident and practices concerning Aid Assessment procedures on district committee level. Three main groups of documents are identified or used in the project:

1. *Pictorial representations of the environment*: Photos, drawings and other depictive media, historical or up-to-date provide both quantitative and qualitative data. Photos are used in combination with the other methods (Fangen 2005).
2. *Other descriptive documentation about the premises and activities*: Data about the buildings, routine descriptions and some medical data.
3. *Governing documents*:
 - 1) Supra-national and national documents: Plans, laws, regulations and agreements.
 - 2) Regional and Municipal: Regional health care policies, regional and municipal policies, guidelines and plans.
 - 3) Local: Documents are identified on a) district committee level, b) facility level and c) unit level.

The philosophical foundations for the qualitative research methods are found in phenomenology, applied as a social science methodology and as a base for empirical research, focusing on the meaning of a phenomenon rather than on the phenomenon itself. It also implies an inductive approach, based on empirical data rather than theories (Szklański 2009).

CASE/FACILITY				ANALYSIS UNIT/CARE UNIT			
Facility	Built	Size	Position	Analysis unit	Residents	Schedule	Day of the week
<i>Krokslätt</i>	1971	8915	Central		75		
				<i>Dementia</i>	9	13-21	Thur.
				<i>Somatic 1</i>	8	07-15	Fri.
				<i>Somatic 2</i>	8	11-14,30	Sun.
				<i>Somatic 2-4</i>	25	21-07	Thur.-
<i>Morän-gatan</i>	1980	8924	Central		89		
				<i>Dementia 1</i>	7	13-21	Tue.
				<i>Somatic 1</i>	15	07-14	Wed.
				<i>Somatic 2</i>	15	21-07	Wed.-
				<i>Dementia 2</i>	7	15-18	Sun.
<i>Björkås</i>	1993	2103	Suburb		24		
				<i>Somatic 1</i>	10	13-21	Wed.
				<i>Somatic 2</i>	10	07-15	Fri.
				<i>Somatic 1</i>	10	21-07	Mon.-
				<i>Somatic 2</i>	10	11-14,30	Sat.
<i>Solängen</i>	1993	1764	Rural		20		
				<i>Dementia 1</i>	6	14-21,30	Thur.
				<i>Somatic 1</i>	7	07-15	Fri.
				<i>Somatic 2</i>	7	11-14,30	Sun.
				<i>Mixed</i>	20	21-07	Mon.-
<i>Kviberg</i>	2001	4060	Suburb		72		
				<i>Dementia 1</i>	8	12,45-21	Thur.
				<i>Somatic 1</i>	16	07-15	Wed.
				<i>Somatic 1</i>	16	21-07	Thur.-
				<i>Dementia 1</i>	8	15-18	Sun.

Table 1. Facilities, analysis units and observation schedule. Size in square meters BRA (SS 021053).

The project design is best described in a bottom-up perspective. If one theoretical point of departure would be Grounded Theory, the other would be the testing of precise hypotheses (Fangen 2005). In this project, a precise, but initially open, question is posed. The many questions deriving from the observation study are then transformed into more precise topics in the interviews. In the questionnaire survey, few and important questions are explored. The project is explorative and the formulation of the problem initially flexible in order to develop a deeper understanding out of the context (Fangen 2005, Dewalt & Dewalt 2002, Miles & Huberman 1994). The process is dynamic in the sense that each step in the process is dependent on the previous. The bases of the project are own experiences, collected data, existing research and the experience and knowledge of residents and staff. A basic assumption is that the physical environment interacts with the people in it and either supports or counteracts the intended purpose. Another is that the interpretation and evaluation of the physical environment prerequisites people using them or, in other terms, use is a prerequisite for experiencing and thus interpreting and assessing architecture.

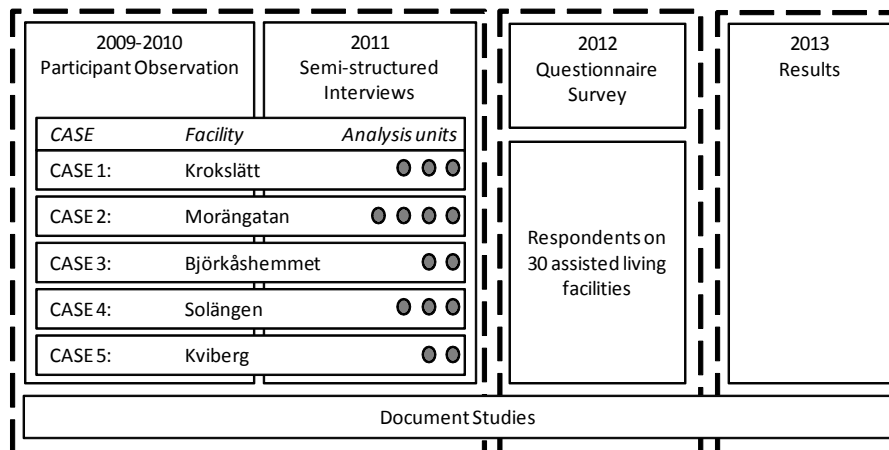


Illustration 1. Research Design.

PARTICIPANT OBSERVATION STUDY 2009-2010

PREREQUISITES FOR THE OBSERVATION STUDY

The goal of this study is to identify factors in the physical environment related to use and usability by observing the daily use of common areas in the care units. The aim is also to find answers to questions that are essential to designing and building special housing in the future to meet its objectives in the best way. Examples of questions asked in the study are: What kinds of activities are performed? How often? How many are involved in the activities? Do they require specific conditions, such as extra equipment or reshuffle? Is there undesirable use, such as use of space for transport or by others who do not belong to the unit? The experience and knowledge derived from observation of the study, can then be translated into questions about spatial aspects such as: What is the room shape and proportions? Is there room for more variation? Is it possible to equip with more appropriate furniture? What materials are used? Are there good acoustic conditions? Is there a passage to other rooms? Those aspects are relevant for future projects. It is also relevant to question whether the activities currently carried out are relevant in the physical context. In other words - on the physical environment is designed in such a way as to prevent or hinder certain intended uses. These questions will be further explored in the interviews.

The purpose is to study how common areas are used and the units are studied at 20 occasions, covering all days of the week and all parts of the day, amounting to a sum of 146 hours (Table 1). The degree of participation is moderate, allowing the observer to interact, without actively participating in the action (Dewalt & Dewalt 2002). Interaction in this context means for instance having conversation or adapting to the situation by moving around. Paper, pen and camera were used.

PRELIMINARY FINDINGS

This study is in the initial analysis phase, but some preliminary findings are apparent. We can see that manning and responsibilities differ between the studied facilities, for instance, the workload of the night staff. The lighting differs regarding quantity, quality and routines. An integrated plan makes it difficult to close the kitchen area and lock out the sound from the dish washer. Variations in coloring and materiality of walls, floors and furniture are observed. This affects both the acoustic environment and the visual legibility, given the fact that all old people suffer from some visual impairment, e.g. lens confusion (Woodrow 2002, Brunnström 2004). The use of common unit areas differs and some distinctions are obvious: There are differences regarding number of residents and also variations during the course of the

day. These variations coincide to a great extent between the facilities and are connected with the routines on the unit. The use of the common areas seem to be more intense and more evenly spread over the day on dementia units, while on somatic units, more concentrated to meals or other common activities.

Rather surprising is that localities and equipment differ very much between the facilities. The open plan makes it for instance difficult to prevent demented residents to access drawers with knives etc. Some dementia units have smaller drawing and dining rooms, than the somatic units on the same facility. This is notable, since they are supposedly more used. Staff areas differ regarding access to restrooms, documentation areas and report rooms. Waste disposal and sanitary equipment also differ to a surprisingly high degree. On one facility, there are separate areas for all these functions and a clean, cooled, separate waste room, accessible from the outside. On another dementia unit, there is no room for documentation, which has led to a provisory, where a third of the drawing room has been transformed into an office. On the same unit, the lack of waste disposal area has led the staff to use a store room, mixing waste and used diapers with clean goods, very close to the dining room. This is undoubtedly one of the most important findings in the study. Smell is a sense that gives us bad or good feelings. Bad smell from diapers or garbage in a dining room is evidently something that evokes and reinforces bad feelings and memories. All the differences between the facilities are to be viewed against common regulations and a common employer, the City of Gothenburg.

TWENTY FOUR HOURS IN AN ASSISTED LIVING FACILITY FOR THE OLD

A winter workday in Morängatan started at 06:45 with a report in the common staff room on second floor. The night staff report what has happened during the night to representatives from each unit. Some of the day staff start at 06:45 and some at 07:00. They return at 07:00 to their own units and report to the rest of the staff. At 07:20, everybody goes to the residents apartments to help some of them with the morning toilet. There are sounds from the rooms – radios and televisions, someone screaming, conversations. Some doors are open, some are closed. This routine is similar on all units, dementia and somatic. Most residents, but not all, are helped to the breakfast table. They come by wheelchairs and walkers. At 08:00 a delivery man from the technical department delivers the lunch and evening meal for two days. One of the staff takes care of it in the kitchen. At 08:25, most of the residents are up and sit by the dining tables. One of the staff is preparing the breakfast in the kitchen, at the same time keeping an eye on the residents in the adjoining dining room. Kitchens and dining rooms are integrated.

Breakfast is served At 08:40. Most of the residents are gathered. Some eat in their rooms and some are being fed. The staff talks to the residents, but the residents don't talk much to each other. Subdued sounds accompany the meal. By 09:30 everybody has had their breakfast and the dining room is empty. Some residents go back to their rooms and a couple of them to the drawing room. The TV is on. Between 09:30 and 10:30 the staff has their morning break for half an hour. During this time it is very quiet and calm in the unit.

Coffee is served At 11:00 in the drawing room to some of the residents. They talk to each other and to the staff. By 12:00, the washing up is done and the staff starts helping the resident to the toilet. At 12:30 the staff starts to prepare lunch in the kitchen.

Lunch is served at 13:00 and all residents who can and so wish, come to eat in the dining room, either assisted or by themselves. Evening staff starts at 13:00 or 14:00 and by 14:00 the dining room is empty. Before 16:00, when the day staff gets off, the evening staff gets their afternoon break. When they get out, they start helping the residents to the toilet and some of them are now put to bed.

Evening meal is served at 17:00. There are fewer in the dining room than at lunch. Residents are continuously helped to bed and some sit in the drawing room, watching TV. Coffee and sandwiches are served at about 20:00 to those who wish. After the coffee it is very calm on the unit. Most residents have gone to bed. Some staff go home at 20:00 and some at 21:15.

The four night staff arrives at 21:00. They get report from the evening staff in the common staff room on second floor. The last of the evening staff leaves at 21:15 and the night staff returns to the base unit. Three of the staff have a common base unit for the 5 somatic units and one staff works the two dementia units. All residents sleep or at least sit in their own apartments. The lighting is in night mode.

The first night round is made between 21:00-22:00. All residents are looked after. At 03:00 a more extensive round is made, where diapers are changed and water or lemonade is administrated. The last round at 05:00 is a check-up. There are only occasional alarms from residents during the night. The staff watches TV or reads, but have no meal. You get very tired between 04:00-06:00. At 06:45 it starts all over with report to the next day staff.

DISCUSSION AND CONTRIBUTION

Several research-studies in Sweden and in Europe state the importance of skillful and detailed programming or briefing before the design-phase (Blyth & Worthington 2001, Fristedt & Ryd 2001). Less effort put in the programming-phase often results in changes done soon after the delivery of the built facility. With high costs for correcting mistakes, the importance of briefing or programming has become more evident for Construction Clients. The City of Gothenburg has therefore a major interest in such research-findings that can bring forth relevant prerequisites concerning the assessment of the requirements – requirements of care providers, staff and residents. The city has therefore established a Research & Development Unit, to promote better conditions for the elderly of the city. There is an increasing interest in detailed aspects concerning the context between different spaces and the conditions for multiple uses of spaces. There is also a lack of knowledge of how well existing facilities for assisted living are serving their purpose, and of the aspects affecting the use. The studies in this project are expected to contribute to this knowledge.

Many research studies concerning assisted living environments for the old focus on medical or social aspects of eldercare. An overview of eldercare research in the Nordic countries has been made by Martha Szebehely (2005). Medical studies focus on health aspects and are often limited to either staff or residents/patients while social sciences study interaction and behavior. However, the focus of this research is to study use and usability. The daily use of the studied environments out of an architecture perspective represents the core and the coherence of the research project and the common denominator for the studies included in the project. The aim is not to study any particular group or phenomenon, but to apply the concept of usability on these specific environments in a Swedish context. The results are expected to be transferable and comparable to similar conditions both in Sweden and elsewhere. This observation study has identified areas of interest, related to use and usability of assisted living facilities for the old. By observing use, analyzing documentation and the outcome of interviews and questionnaires about use and perceived usability, the project is expected to provide relevant answers to the research question.

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