

Health Supportive Design in Elderly Care Homes: * Swedish Examples and their Implication to Korean Counterparts

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Abstract

The objective of this research study was twofold; 1) to explore and identify health supportive design factors in Swedish elderly care homes and 2) to understand their usefulness and suggest implication in Korean elderly care settings. A descriptive and explorative method was applied using a combination of field studies and semi-structured interviews. Three study trips were carried out during Sept. 14th and Oct. 12th 2005; two facilities situated in Stockholm suburbs and one in the south of Sweden. According to this research, the valuable factors to support health and well-being for the elderly are as follows; 1) Community integration: These elderly care homes are generally places close to a residential area center or a city center. Services are often shared between residents and community members at large, consequently there is a flow of "visitors" of all ages connecting with the facility on a daily basis. 2) Homelike environment: A noteworthy aspect of Swedish elderly care homes is keeping the facility appearance as homelike as possible. The associations with home may be explored through the appearance and configuration of both the exterior and interior of the building. These homes seemed to be designed with a conscious aim to create a homelike setting. 3) Small scale approach: Clustering of resident rooms is one method through which the small scale approach can be achieved in larger facilities. With unit clusters, the facility can foster opportunities for social interactions among resident. 4) Accessibility to garden and nature: The courtyard is a well developed concept in planning elderly care homes in Sweden. They are generally safe and easily accessible to the residents. Studying Swedish models may provide practical knowledge of how the physical setting may improve resident's health in Korean elderly care homes.

Keywords: Elderly Care Home, Health Supportive Design, Integration, Homelike Environment, Small Scale, Accessibility to Nature

1. INTRODUCTION

Korea's elderly population is increasing both in numbers and as a percentage of the overall population according to the National Statistical Office (2003). This trend is expected to continue for the next quarter-century and beyond (7.1% in 2001, 14.4 % in 2019, 20.0 % in 2026). In terms of residential environments in elderly care, this future projection constitutes a concern for elderly care homes as supportive environments catering to the elderly interested in maintaining a healthy lifestyle.

Research has shown that one of the serious problems in elderly care is the unsuitable residential environment for the elderly who are physically and psychosocially fragile (Choi, 2000; Kim et al., 1999; Lee, 1998; Oh, 2000; Park et al., 1998; Shin, 1995). The majority of existing elderly care homes in Korea resembles an asylum or hospital setting with long corridors and in large scale which does not support the elderly physically, cognitively, or psychosocially. The traditional, institutionally designed elderly care home does not promote wellness of its residents.

Northern Europe including Sweden experienced an early demographic shift toward an aging society and had postwar governments with progressive social policies. In northern Europe, social service, health care, and housing

agencies recognize the influence of new architectural forms in challenging conventional thinking concerning social problems. Housing programs for the elderly emphasized non-institutional alternatives for the frail. (Regnier & Scott, 2001). These elderly care homes provide useful models to create a supporting health environment for residents in Korea.

A considerable amount of international research supports the general positive health effects of physical, mental, and social activities for the elderly. Physical activity, good eating habits, social relations and a meaningful life are the pillars upon which good health for the elderly should be built. Focusing on health promotion and prevention of disease for the elderly is advantageous for both the elderly individual and society at large (Statens Folkhälsoinstitut 2002:27). Health-promoting processes are becoming a central factor in the creation of a health supportive physical environment (Dilani, 2005). The role of the environment in the health improving process is a growing concern among architects, designers, environmental psychologists, and health care providers (Devlin, 2003). Results from studies suggest that the design of physical environments plays a significant role in making health promotion activities possible, which contributes to health and life quality for the aged individual. A lost ability to understand and comprehend the surroundings may induce feelings of unsafely which in

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turn may lead to negative health effects such as stress and depression (Wijk, 2004).

2. BACKGROUND

In the past, most physicians were schooled in the disease-focused biomedical model, which minimizes the role of patients in managing their own health. This model does not address the psychological, social, and spiritual needs that become critical in long-term care. The model understands aging as a disease that must be “treated” in a medical facility (Leibrock, 2000). As a result, many healthy individuals are placed in a hospital or institutional environment, having a negative effect on the patient or the resident (Toyama, 2002; Oh, 2000; Ryu et al., 2002).

The assertion that a homelike environment holds the most therapeutic potential for frail elderly has been a conclusion drawn recently by a number of studies (Brummett, 1997; Cohen & Day, 1993, Lee, 2006; Regnier & Scott, 2001; Ulrich, 1995; Zeisel, 2001). The home may be understood as a sphere of integrity and self governing having a symbolic value in a deeper sense. The homelike environment has a therapeutic function aiming to strengthen residents’ resources postponing the degeneration of cognitive abilities (Gaunt & Lantz, 1996). According to Ericsson (1991) the homelike physical environment is important for the elderly in the following ways; encouraging independence, supporting social belonging, providing safety, arousing recognition, offering physical activity, orientation and stimulation of the senses. Although homelike environments are considered a potential solution to improve the health and well-being for the elderly, it is rarely achieved by builders or designers, nor perceived by residents (Brummett, 1996). Developing design direction for achieving homelike environments is therefore important and constitutes the point of departure for this study.

There are a number of assumptions regarding the specific health aspects of the outdoor environment according to Grahn and Bengtsson (2004). Some of the most common presumptions are that exposure to daylight, intake of fresh air and physical movement prevents disease. Availability, obstacles, and support are three key factors which affect the usage of the outdoors among the elderly (Norling, 2002). The obstacles which are pivotal for the elderly persons’ relationship to the outdoors are mostly connected to feeling of trust and safety (Ottosson & Grahn, 1998; Ulrich, 1999). Benches, handrails, and arm supports are some examples of supportive objects in the outdoor environment (Grahn, 2000; McBride, 1999). The possibility to reflect in nature stimulates our senses and cognitive abilities. There is also value in looking at the outdoor environment from the inside, especially for the elderly with functional restrictions. To follow the changes of seasons, the social life outside and the view from the window may be stimulating in itself (Norling, 2002).

Elderly care homes that are sited within a community system can provide opportunities for connections that

extend far beyond the facility itself (Hoglund, 1985). Such opportunities foster resident independence, potentially freeing the more physically capable residents from having to rely on others to deliver needed goods or shuttle them about from the facility to distant destinations (Brummett, 1997). Brummett (1997) suggests that a place within the elderly care home communicating an identity as both part of the facility and part of the community provides a more public setting, for social interaction with other residents, visitors, and patrons, and accommodates interesting people-watching activity. For residents who have more limited mobility or cognitive impairments, such a place presents an opportunity for a stimulating environment, without extensive assistance.

Research is still in the beginning phase of explaining the significant role of the physical environment in supporting health and quality of life for the elderly. However, available research is still limited particularly concerning which environmental factors should be taken into consideration to improve health and well being among the elderly living in a care home. Cultural differences and their implications on how the physical environment is experienced by the elderly is another unexplored area. The examination of supportive design factors and the understanding of their usefulness constitute the foundation for this research study.

2.1 Purpose

The objective of this research study was twofold; 1) to explore and identify health supportive design factors in Swedish elderly care homes. 2) to understand their usefulness and suggest their application in Korean elderly care settings.

2.2 Definition

Since 1992 all types of institutional service and care facilities for the elderly in Sweden have been grouped under the common description “special needs housing” (Sweden National Board of Health and Welfare, 2000). The elderly care homes in this study are all in the category of “special needs housing” and refers to group accommodations for old people with a dementia diagnosis and limited medical health care needs. The aim of these care homes is to offer residents a high level of personal security by ensuring that both services and staff are easily accessible 24 hours a day.

3. METHOD

A descriptive and explorative method was applied in this study using a combination of field studies and semi-structured interviews.

The field studies were performed at three elderly care homes in Sweden. The selection process was conducted by a deliberate search for well-designed elderly care homes according to Swedish literatures (National Board of Health and Welfare, 2000; Dilani & Morelli, 2005), recommendation by Swedish authority of health facility

design, and newly built facilities with a potential for application in Korean elderly facilities.

Pre-study trips. Trips were conducted between Aug. 23rd and Sept. 8th 2005 in five elderly care homes, three situated in Stockholm suburbs, one in south of Sweden, and one in central part of Sweden. Each home was visited once in preparation to secure the suitability of the facility in the study. Thereafter, final selection of appropriate elderly care homes were made. Two of the care homes were eliminated due to a change of management. Each care homes manager was subsequently contacted by phone and email to arrange the main study visit day.

Main study trips. Three study trips were carried out during Sept. 14th and Oct. 12th 2005; ‘Slottsovalen’, ‘Säbyhemmet’, and ‘Vigs Ängar’. The full inspection of each facility took approximate 2 hours. Data was gathered using photos, floor plans, geographical maps, and visual observations of general appearance, connectivity to the community, accessibility to courtyard/ nature, etc.

Semi-structured interviews were performed with the care home managers and physical therapists to gather information regarding 1) care home philosophy, 2) special programs helping new resident to adapt in a new environment, and 3) other operational factors believed to affect health positively. An interpreter was utilized for translation during the interviews and time expenditure for interviews was approximate 1 hour.

Another set of semi-structured interviews were performed with the residents to obtain information regarding self rated health conditions. The instrument used for measuring health was ‘Health Index’ developed by Karolinska Institute in Sweden. Interviews were confirmed in collaboration with staff opinion by residents signing a consent form or by family’s permission when appropriate. Interviewees were in total 11 residents, four in Slottsovalen, three in Säbyhemmet, and four in Vigs Ängar. During the interviews, the managers or therapists read statements to the resident and marked in the appropriate category as the respondents were not able to self-administer these instruments. Due to the limited number of respondents, data from the questionnaire results were eliminated as information was not sufficient to generalize.

4. RESULTS

4.1 General and Architectural Features

Features of the three elderly care homes surveyed are shown in Table 1. Two are located in suburbs of Stockholm and one, a mid-sized city in the southern Sweden. Each facility was opened in 1995, 2003, and 1995 respectively.

The buildings were constructed in single or two stories housing approximately 30-40 beds. The care homes have 3 or 4 units for elderly with various somatic disorders and units with dementia care where the residents have a small flat of their own.¹ The features of low buildings and small

groupings are the result of pursuing a small-scale approach in Sweden. The departure from an institutional atmosphere towards a smaller scale with a homelike environment was initially introduced for special needs housing such as the mentally or physically disabled. This approach has proved successful in elderly care with positive effects. The planned common spaces for community residents as well as facility residents are considerably varied according to the elderly care home. A lot of spaces in Säbyhemmet are allocated and opened for community residents. This provision of public spaces is one physical outcomes of the Säbyhemmet philosophy. To create an active atmosphere, the planner and manager designed public spaces as a connection point between the facility and the community. Vigs Ängar opened a common space for community residents on fixed days. The building layouts have diverse shapes according to the facility. In spite of diverse layouts, outdoor courtyard enclosing the building was planned to provide and access to the natural environment.

The residential profile includes as many as 70% or more residents being 80 years or older. Female resident numbers are twice that of male residents. The registered staff numbers amounts to 40, 45, and 21 persons in each of the facility consisting of director, nurses, and various therapists.

4.2 Features of Elderly Care Homes

4.2.1 Elderly Care Home “Slottsovalen”

This elderly care home was built as an oval shaped, one level structure connected to an existing castle from 1894 on one end. The oval-shaped residential units embrace a courtyard and are divided into 4 units, two units for the somatic disorders and two units for dementia care. Each unit has 10 private flats.

1) Space

Public spaces: In each unit, there is one common living room and one open kitchen connected to the dining room. From the dining room it is easy to access the inner courtyard (Fig.1).

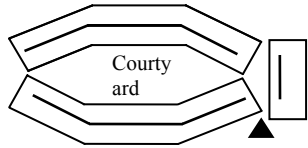
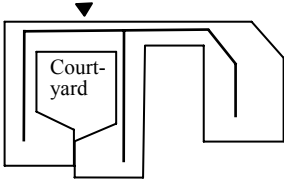
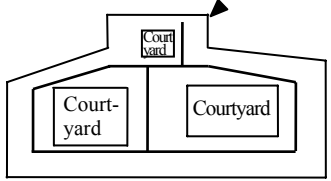


Figure 1. Common Spaces

room allocated for personal hygiene, social contact, sleep and rest, cooking, meals, and storage and communal spaces adjoining the individual flats within dwellings for the elderly. The mandatory provisions in this Statute specify room functions in the building. There are no specific requirements or regulations regarding number of beds or residents, and size of spaces.

¹ According to Swedish Building Regulations BFS2002:19 (Swedish Board of Housing, Building and Planning, 2002. p.26), there shall be a

Table 1. General and Architectural Features

Name of Facility		Slottsovalen	Säbyhemmet	Vigs Ångar
Category				
Location		Approximately 20km east of downtown Stockholm	Approximately 20km south of downtown Stockholm	10km north of downtown Ystad, a city of southern in Sweden
Opened		1995	2003	1995
Micro Environment		Residential house for over 50 yrs old & general people/ Natural seaside/ Forest walkway	Children's day care center/ shopping center/ residential apartment	Residential house/ Baltic sea
Facility Features	Storey	Single storey	Two storey with basement	Single storey
	Beds & type	41 beds/one-bedroom	36 beds/one-bedroom	32 beds/one- & two bedrooms
	Number & Arrangement of Unit	4 units: 2 units for ordinary & disease residents 2 units for dementia residents	4 units: 1 unit for ordinary & disease residents 3 units for dementia residents	3 units: 2 units for ordinary & disease residents 1 units for dementia residents
	Common Space for community	—	Elderly day-care center, Multi-purpose room, Conference room, Beauty shop, Wooden-work room, Hobby & craft room, Therapeutic tub & massage room	Multi-purpose room, Indoor therapeutic swimming pool, Massage room, Sauna room, Beauty shop
	Building Layout & Flow-line			
Personal Features	Number, Gender & Age of Resident	- Total 40 (Men: 13, Women: 27) - Less 70yrs: 2, 71-80yrs: 10, over 80yrs: 28	- Total 36 (Men: 12, Women: 24) - Less 70yrs:1, 71-80yrs: 9, over 80yrs: 26	- Total 32 (Men: 12, Women; 20) - Less 70yrs: 1, 71-80yrs: 5, over 80yrs: 26
	Number of Staff	Registered staff: 40	Registered staff: 45	7 staff for each unit

Each unit has one laundry room adjacent to the common areas. These rooms are located in the centre, surrounded by the residential rooms to promote accessibility from the private spaces. The exterior walls are built with plenty of large glass doors and windows to take full advantage of daylight. The large glass surfaces also provide a generous view and closer contact with the outside environment including seasonal and climate changes. A multi-purpose room is located near the main entrance. Residential units are divided into ordinary and dementia units with the multi-purpose room as a central axis. This room functions as a gathering space and a place for activities such as singing and games for residents. All furniture is movable and stackable to allow for diverse activities. A glass wall is built on both sides of this room creating a bright and very visible space inviting resident to join in activities. The courtyard is also conveniently accessed by wheelchairs from this room.

Private spaces: According to Swedish building regulations, private flats are to provide amenities for sleep, rest, storage of personal belongs, social interaction, meals, personal hygiene and other daily activities (National Board of Health and Welfare in Sweden, 2000). All private rooms are built on one ground

level. Each resident's personal room is 27 sq. meters² and has a low ledge bay window (Fig.2). Included in each room is also a fully equipped kitchenette located in entrance hallway. Residents may bring their own personal furniture and belongings with the exception of the bed as the elderly care home provides a height adjustable bed equipped with wheels for convenience. The personal bathroom in each private room has a sliding door for easy wheelchair access.

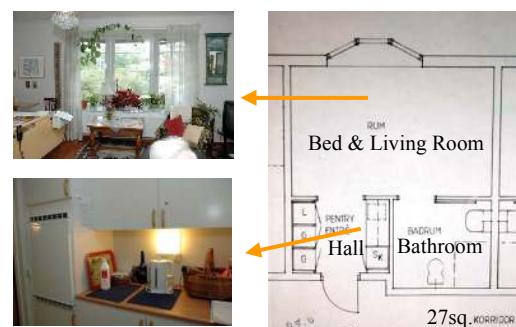


Figure 2. Resident Room

² According to the staff of Boverket, Sweden National Board of House & Building (www.boverket.se), the flat area in elderly care homes is varied depending on the community. Generally recommended values are: 25-35m² for one person, 45-55m² for two persons.

2) Unique Features

Semi-structured interviews were performed with manager and physical therapist to collect information regarding elderly care home philosophy, special programs and other operational factors believed to affect health positively. Results were summarized into the following three features.

Family-oriented life: Slottsovalen operates with “family-oriented life” as its central philosophy. Staff will maintain close relationship to all resident by enjoying meals together, assisting resident’s hobby and by employing a one-to-one personal system where individual staff members have the primary responsibility for appointed residents to ensure their health and well-being. Architecturally, this concept is translated in two ways; 1) the connection between public space and private flats 2) open planned shared kitchen, dining room, and living room. The public area is located in the center surrounded by private flats so that the resident easily can access the public space from their flat. This plan is likely to enhance the social contact (Fig.3). The shared kitchens, dining rooms, and living rooms were planned as open spaces such in a residential home providing residents with a homelike atmosphere where they can watch staff preparing a meal and smelling the food. According to Evans & Crogan (2001), there are many experienced problems during mealtimes that can be resolved simply by creating a homelike atmosphere for residents in the dining area. This space also facilitates staff sharing meal times together with residents. The philosophy is particularly important for new residents who are not yet acquainted with the setting. New residents stay 2-5 hours with their family members at Slottsovalen for one week to ensure a more comfortable transition to the new environment. ‘Family-oriented life’ generally affects residents’ mental and social well-being as well as architectural aspect.



Figure 3. Public space adjoining individual flats in a unit

Nature Accessibility: The unique factor is the highly accessible courtyard and surrounding nature. The generous enclosed courtyard is surrounded by residential buildings. Residents in the care home are able to enter the courtyard easily from the common rooms or the multi-purpose room. The oval-shaped courtyard is divided into separate ‘rooms’ by green hedges creating privacy for each unit. Residents and staff can have a clear view of the entire courtyard providing spatial orientation (Fig. 4, 5). The courtyard is a place where residents grow vegetables and ornamental plants as a part of horticultural therapy. The therapeutic planting boxes, garden furniture, and fountains function as a landmark to the residents, especially to the elderly with dementia.



Figure 4. Objects for wayfinding and rest



Figure 5. Areas separated by green hedges creating privacy

Bright color and lighting: High value colors and adequate illumination make the interior space bright to assist old residents with impaired vision and to stimulate mental activity (Brawley, 2006). Wide glass windows and doors were planned to accept daylight. The amount of research pointing to correlations between the built physical environment and human well-being is extensive. Particularly the presence of features such as nature, sunlight, daylight, and windows are associated with positive outcomes (Heerwagen et al., 1995). Considering the long dark winter in Sweden, these features play a significant role in supporting the old resident’s physical, psychological, and mental health.

4.2.2 Elderly Care Home “Säbyhemmet”

This care home is located within a short walking distance to the children’s day care center, the shopping center, and several residential apartment buildings. The care home provides several generous spaces for the community groups and organizations to enhance social connections between resident and the community. The two-story beige brick facade is similar to the surrounding buildings, blending well with the community.

1) Space

Public spaces: There is one common living room, one kitchen connected to the dining room in each unit which also has one laundry room. These rooms are gathered at the core of each public area. Kitchens and dining rooms have an open floor plan so that the residents can join in preparing meals, if only by sitting at the dining table and absorbing sounds and smells of cooking (Fig.6). One open multi-purpose space is located near the main entrance designed to be inviting as it is open to the community at large. This space is offered as a gathering place for residents, community meetings, or seasonal events together with children from the day care center such as Easter and Christmas celebrations (Fig.7). Seniors living in the community may drop in for social interaction every morning.

Private space: Private areas are divided into two levels. Each resident’s personal room is 28 sq. meters built at an

angle with a French balcony. Doors and hallways are wide to accommodate wheelchairs. Window ledges in bedrooms are low, allowing a bed positioned view. A fully equipped kitchenette is included in each room. The private bathroom is large enough to accommodate staff, wheelchairs and lifting devices.³ A foldable seat in the shower stall is fastened into the tiled wall to prevent falling accidents. Contrasting tile color is placed behind the toilet seat and the wash basin making them easily identifiable for old people with poor sight. Residents may bring their own furniture and belongings to encourage fond memories or carry symbolic value of personal and family history (Fig.8).

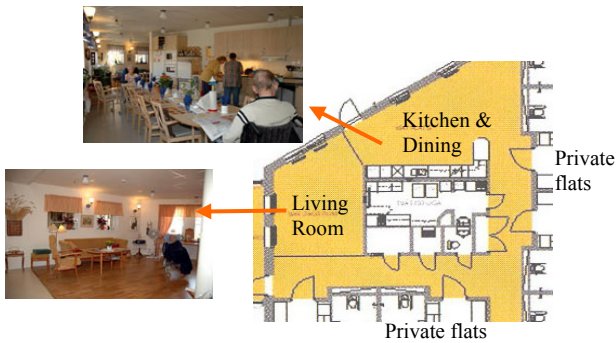


Figure 6. Public Spaces



Figure 7. Open multi-purpose space & café

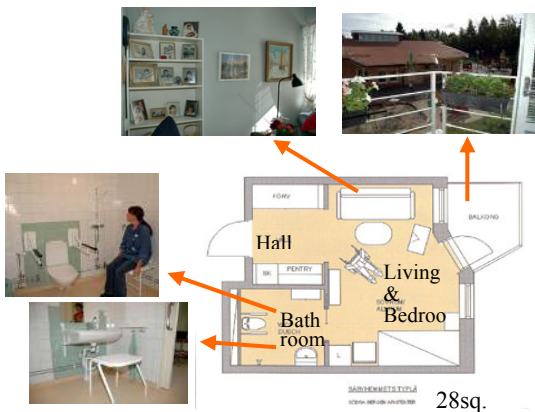


Figure 8. Resident Room

³ To ensure optimum working conditions for staff, the recommended dimensions of bathroom in Swedish elderly care homes are 2.4 sq. meters, or 2.4 x 3.0 meters if shower chairs are to be used (Sweden National Board of Health and Welfare, 2000. p.13)

2) Unique Features

Interview results with the physical therapist involved in the care home plan from the beginning stage was summarized into the following categories.

Creating active atmosphere: The fundamental philosophy of Säbyhemmet is to create an active atmosphere for residents. To deliver this concept, integration with the community was prioritized over separateness (Fig.9).

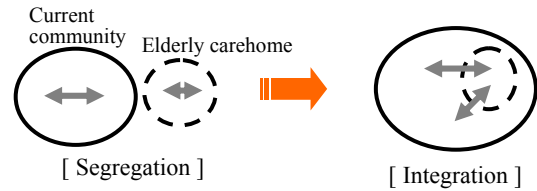


Figure 9. Segregation and Integration

Architecturally it is designed with two guiding principles; 1) to maintain connectivity to the surrounding community and 2) to play a role as a community-based center. The care home was deliberately situated adjacent to the children’s day care center and the city center including with banks, restaurants and shops. Apartment buildings are located nearby (Fig.10).



Figure 10. Community adjacent to Säbyhemmet

This design plan facilitated the intergenerational programs between the Säbyhemmet and the children’s day care center and provided elderly residents with the opportunity to watch children in the playground on a daily basis. Residents are encouraged to visit the city center to purchase personal items as this fosters independence. The care home offers a range of space and services for many community residents; the adult daycare center, open multi-purpose spaces for gatherings, hobby room such as woodworking rooms and conference rooms. These open spaces may be used by community residents as well as care home residents. These places present an active atmosphere for residents with compromised mobility. This care home also delivers home health care service to community residents if needed.

4.2.3 Elderly Care Home “Vigs Ängar”

This care home has been influenced by Anthroposophy and the organic perspective of the parts and the whole creating an organic unity. This interpretation of design and architecture provides the residents with a full view of the setting contributing to sense of place in the community. According to Coates (1997), this is a way for the individual to find themselves once again at home in human community and the natural world. The entire facility was

built as a one level structure in harmony with the surrounding nature. The exterior material is wood painted in colors of warm pink-rose and shades of cool blue-violet vitalizing and revealing the nature of the materials (Fig.11). Interior circulation was planned using two connecting loops linked to each other, thus eliminating dead ends (see Table 1.). The circulating pathways are visually broken up into zigzag configurations reducing institutional like corridors. Residents are able to wander freely.



Figure 11. Main entrance (right) and residential units (left)

1) Space

Public spaces: There is one common living room and one kitchen connected to the dining room in each unit (Fig.12). A small common living room is furnished sparsely as compared with other facilities. This space has a dual purpose, serving as a living- and dining room. An organically sculptured fireplace is located opposite to the kitchen. The dining room also connects to the courtyard and the laundry room is adjacent to the kitchen.

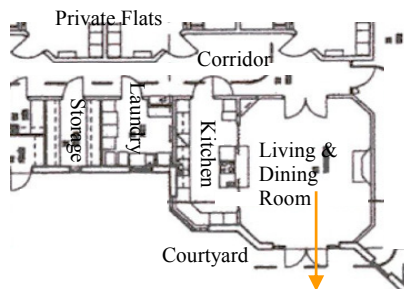


Figure 12. Public Spaces and. Kitchen & Dining Room with Fireplace

One multi-purpose room is painted in a warm pink color to express and encourage conviviality and lively conversation. This space has a high ceiling and windows providing visual and spatial interest for residents. All furniture is movable and stackable to accommodate diverse activities. The material used in lamp shades is white linen fabric and wood bringing a feeling of softness and warmth. The form of the lighting fixtures expresses a quality of light and air. There is a spa area equipped with a therapeutic swimming pool and a massage room with two beds (Fig.13). This is located next to the courtyard. The exterior walls in this area are generously built with large glass windows taking full advantage of the view. This facility is available to residents and staff allocated days of

the week. In addition, the community has access to these services as well on separate days.

Private spaces: The residential quarters are grouped around two spacious courtyards. Each resident's personal room is organized in the form of a small terraced house close to nature. This room has a wide entrance for wheelchairs, fully equipped kitchenette, bathroom with a sliding door, and a bed- and living room with a door to the outside.



Figure 13. Multi-purpose room (left) and swimming pool (right)

The slanting ceiling line adds interest to this space. Window ledges in bedrooms are low, allowing a bed positioned view. Just like the other facilities, residents may bring their own furniture and belongings (Fig.14).

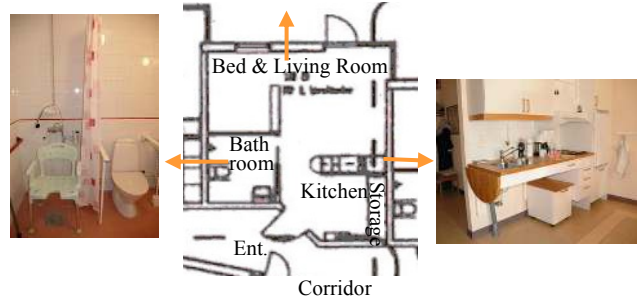


Figure 14. Residential Space

2) Unique Features

Interview results with the manager and architect who designed this care home directly was summarized into the following categories.

Organic Building: The design and architecture of this building was planned with influences from the anthroposophic philosophy and the belief that buildings should provide a sense of organic, living order and must be experienced as nurturing, responsive and alive. Through space, form, color and material, the facility provides support in regaining health and stimulating spiritual growth. The entire facility was colored mainly in warm pink-rose tones and shades of cool blue-violet according to anthroposophic view. In this outlook health is a dialectical process of balancing exaggerated tendencies toward *cold* on one hand and *warm* on the other.

Doors and entrances throughout this care home have

architectural hints communicating nonverbally cues regarding the purpose of each room. An example of this is the public spaces which have a straight-line lintel above each door, a small arched glass inset and a different dark brown color. All private spaces have an arched lintel and blue-violet colored doors. All spaces for staff have a straight-line lintel and dark brown doors (Fig15).



Figure 15. Doors providing architectural hints

5. DISCUSSION

This study has intended to examine and identify health supportive design factors of Swedish elderly care homes and to explore the implications to Korean counterparts. To directly transfer and apply design features from another country with a different culture, social, and political background might result in unwanted consequence. Therefore it was considered valuable to further identify the design interventions in Sweden as these may offer a more cost effective alternative compared to organization- or staff interventions. This is true particularly in the early stages of planning for elderly housing in Korean society. The results of this study suggest that important design strategies implemented to enhance health supportive settings must include much broader considerations such as geographic, physical, social, and organizational and cultural conditions. According to this view, four main themes have emerged:

Integration: Moving into a new environment for an elderly resident coming from a long period of independent living at home can initiate feelings of lost identity and lack of a place in the community. Elderly care home design and planning which do not attempt to encourage social connectivity may be inclined to isolate the elderly from community activities and resources. The elderly care homes visited in Sweden demonstrate the physical building, the community, and services provided as a single entity concept. Planning a commercial or public space within an elderly care homes such as the café in Säbyhemmet or the massage room in Vigs Ängar are examples of such social integration. Community center activities and services are readily available to elderly residents and services are often shared between residents and community members at large. Consequently there is a flow of “visitors” of all ages connecting with the facility on a daily basis. This strategy is believed to maintain interactivity with the surrounding community, supporting social health and adding to resident’s experience of overall satisfaction. The elderly care homes investigated reflect

the values associated with a general residence. Choices of exterior building materials and the building scale of the Swedish elderly care homes clearly blend in with surrounding areas, be it a residential area or a community center area.

In consideration of the themes described above, one possible solution particularly in urban Korean areas is to allocate apartments for the elderly on the lower floors in multiple level and high-rise apartments. This alternative improves accessibility to community services by limiting or elimination the use of stairs, elevators and doorways often perceived and experienced as environmental obstacles. In consideration of the expensive city area real estate of appropriate locations, the alternative with allocated floor levels for elderly homes may be an alternative for further exploration. This plan may offer elderly residents and the downsized buildings an opportunity to share community services. It is reasonable to suggest that locating community services such as daycare centers and public spaces adjacent to elderly facilities may enhance community integration, particularly in low population areas.

Homelike Environment: A noteworthy aspect of Swedish elderly care home is keeping the facility appearance as homelike as possible. The environmental associations with home may be explored through the appearance and configuration of both the exterior and interior of the building. These homes are designed with the conscious aim to create a homelike setting. The choice of materials and colors used on the exterior and interior walls and interior design materials such as textiles are some examples. A sloping ceiling, a fireplace, an open kitchen-dining floor plan and lighting are such residential design elements. To integrate a home like environment into Korean elderly care homes must be culturally appropriate and provide the same psychological comfort and sense of familiarity. Clustering residential units, planning an open kitchen-dining room, incorporating residents’ own furniture and personal belongings in their private flat are desirable solutions to provide the sense of familiarity and comfort.

Small Scale Approach: The small scale approach appears to dominate Swedish elderly care homes in general. This is true for entire facilities with 30 and up to 200 resident rooms in total. It is also true within units which are typically kept to between 8 and 12 resident rooms. According to studies (Regnier & Scott, 2001; Lee & Yim, 2005), most settings require a minimum of forty to sixty resident rooms to achieve an acceptable operational economy of scale. Clustering of resident rooms is one way through which the small scale approach can be achieved in larger facilities. It is suggested that unit clusters in the physical environment foster opportunities of informal social interaction among residents.

Accessibility to Nature: The courtyard is a well developed concept in designing elderly care homes observed in Sweden. They are generally safe and easily accessible to elderly residents. This design creates contact with nature

even from an inside position with a generous use of windows and glass doors. Involving the elderly in nature based activities such as various horticultural therapy programs appear to be frequently used in Swedish elderly care homes. As well, accessibility to nature is well developed through wheelchair ramps, handrails, and other supportive devices eliminating potential obstacles. Korean elderly care homes have relatively limited accessibility to a courtyard or nature, especially facilities in the urban areas. With relatively small measures Swedish design factors could be utilized such as wheel chair ramps, landscape plantings, safe roof gardens, closed-loop paths, or replacing solid doors and small windows. These obstacles may be easily overcome. Window sizes and placement should allow for contact with nature as much as possible.

6. CONCLUSION

This research study has examined health supportive design plan factors in Swedish elderly care homes and discussed possible implications to Korean counterparts. Results indicate benefits on in four areas; the integration the care home with the surrounding community, the homelike environment, the small scale approach, and the accessibility to nature. These four themes appear to play a valuable part in improving health supportive design elements in the Swedish model designed for the elderly with the same mental and physical disorders as those in Korea. However, to directly transfer and apply design features from Swedish examples to Korean counterparts without consideration of architectural, spiritual, and cultural differences would most likely create redundant consequences.

A limitation of this study was the unsuccessful completion of resident interviews due to interviewees with in some cases advanced senility. This resulted in unreliable qualitative data. Therefore, vital information concerning resident's experiences of the living environment was not explored. It is suggested that a prescreening process is used to eliminate this issue in future studies thereby reaching residents who are able to provide this information. Empirical or quantitative studies on health supportive plan are encouraged in order to continue to examine other valuable environmental factors affecting resident's health positively.

Empirical and quantitative studies on health supportive design plans are encouraged to further examine valuable environmental factors affecting resident's health positively.

REFERENCES

- Brawley, E.C. (2006). *Design Innovations for Aging and Alzheimers's*. John Wiley & Sons, Inc.
- Brummett, W.J. (1997). *The Essence of Home; Design Solutions for Assisted Living Housing*. Van Nostrand Reinhold
- Choi, M. K. (2000). Analysis of housing environments of the elderly households and its suggestions in preparation for aging society. *Journal of Architectural Research*, Vol.16, No. 9, 29-39
- Coates G.J. (1997). Erik Asmussen Architect. Swedish Publisher of Architecture and Design.
- Cohen, U. & Day, K. (1993). *Contemporary Environment for People with Dementia*. The John Hopkins University Press.
- Dilani, A. (2005). New paradigm of design and health in hospital planning. *World Hospital & Health Service*. Vol.41, No.4. 17-21
- Dilani, A. & Morelli, A. (2005). *Health Promotion by Design in Elderly Care*. Research Center Design and Health
- Devlin, A. S. (2003). Health care environments and patient outcomes: A review of the literature. *Environment and Behavior*. Vol. 35 No.5. 665-694
- Evans, B.C. & Crogan, N.L. (2001). Quality improvement practices: Enhancing quality of life during mealtimes. *Journal for Nurses in Staff Development*. Vol.17. No.3, 131-136
- Heerwagen J.H. et al. (1995). Environmental design, work, and well being. *Journal of American Association of Occupational Health Nurses*. Vol.43. No.9. 458-468
- Hoglund, D (1985). *Housing for the Elderly: Privacy and Independence in Environments for the Aging*. NY: Van Nostrand Reinhold Co.
- Kim, I. K. (1999). *The Life of Korean Elderly: Inspection and Vision*. Seoul: Research Center of Future
- Lee, J.H., Yim, C.B. (2005). A study on the trend and architectural design proposal of urban type user-charged residential facilities for the elderly. *Journal of the Korean Architecture*. Vol.21. No.3. 11-22
- Lee, S.Y. (2006). Residential design characteristics for the elderly health & life quality through elderly care home in Sweden. *Journal of the Korean Housing Association*. Vol.17.No.1. 19-27
- _____ (1998). *The Korean elderly needs for the planned elderly home care*. Doctoral dissertation, Yonsei University.
- Leibrock, C. (2000). *Design Details for Health: Making the Most of Interior Design's Healing Potential*. John Wiley & Sons, Inc.
- National Board of Health and Welfare in Sweden (2000). *Good housing for older people and people with disabilities*. Socialstyrelsen.
- Oh, E. J. (2000). *The relationship between the therapeutic quality of architectural environment and behavior of elderly persons with dementia in long-term care settings*. Doctoral dissertation, Yonsei University.
- Park, S. H. (1998). A study on architectural planning for the elderly. *Journal of Architectural Research*, Vol. 18, No. 1, 89-94
- Regnier, V. & Scott, A. C. (2001). *Creating a therapeutic environment: Lessons from northern European models*. In S. Zimmerman, P. D. Sloane, & J. K. Eckert (eds.). *Assisted Living: Needs, Practices, and Policies in Residential Care for the Elderly*. The Johns Hopkins University Press. 53-77
- Ryu, S. S. (2002). *Study on the design of therapeutic environment in a nursing home for the elderly with*

- dementia. *Journal of Architectural Research*, Vol. 18. No.5. 3-10
- State Public Health Institute (2002:27). Put the Effort into Elderly Health, a Concise Summary with Good Examples (In Swedish).
- Toyama, T. (2002). Past, present & future of elderly housing design & service of Japan. *International Symposium Proceeding organized by Yonsei Institute of Millennium Environmental Design and Research*.
- Ulrich, R. S. (1995). Effects of healthcare interior design on wellness: theory and recent scientific research. In S. O. Marberry (eds.), *Innovations in Healthcare Design*. John Wiley & Sons, Inc. 88-104
- Zeisel, J. (2001). Health outcomes: Improvements from Alzheimer care design. In A. Dilani (eds.). *Design & Health: The therapeutic benefits of design*. AB Svenka Byggtjänst. 17-24

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