

Design
& Health

Health Promotion by Design in Elderly Care

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Dilani is author or editor for the following books;

- 1- Health Promotion by Design in Elderly Care, published 2005, ISBN 91-7140-250-0
- 2- Design and Health III - Health Promotion through Environmental Design, published 2004, ISBN 91-7349-988-9
- 3- Design and Health – The Therapeutic Benefits of Design, published 2001, ISBN 91-7332-963-0
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ABSTRACT

The purpose of this study is to investigate the requirements of health promotion by design in elderly care. The overall goal of the study is to create conditions through supportive design for promoting healthy living and working environments. Initially the development of elderly care in Sweden is introduced. Some perspectives on ageing as a phenomenon and on elderly care in an organizational perspective are described.

Part two of the study discusses life and health conditions of the elderly. An understanding of the research questions is clarified by first reviewing some of the leading theories on ageing. Thereafter follows an explanation of the interaction between human beings, the organizational culture and the physical environment. Focus is then shifted to the specific design conditions within elderly care and health promotion design factors.

The method used in this study was based on the Future Workshop model consisting of workshops, seminars, field studies and a questionnaire directed to the staff. The study was carried out at Vårbergs Nursing Home in Stockholm, Sweden during the year 2004. A working team consisting of thirty persons from various professions participated in the study.

The results of this report point to a much-needed development of new values in elderly care. This progress requires an integrated effort based on understanding the interaction between the physical environment and the human being. Today's elderly care is dominated by traditional medical treatment methods. Through the use of nonpharmacological approaches the precondition of health for the elderly will be improved.

The outcome is a presentation of essential design solutions including the requirements for healthy living and working environments in elderly care. The report is summed up with a number of suggestions for further research and future development of health promotion by design in elderly care.

This report is addressed to researchers, health care professionals, decision maker, project coordinator, planner and developer working within elderly care as well as politicians, architects and those who care about health promotion by design in elderly care.

Keywords; Elderly care, Health promotion, Environmental Design, Health,

PREFACE

During the fall of 2003, the Research Centre of Design and Health received a proposal from Mr. Jan Johansson, County Director in Stockholm in regards to a research project concerning health promotion by design in living and working environments. The place of interest was the Vårberg Nursing Home in Skärholmen County, Stockholm, Sweden.

A fundamental principle was to meet the needs for humane living conditions amongst the elderly population by designing supportive housing that promotes health and well-being. These values can be realized through the conscious design of physical environments based on health care staff experiences.

The project started early 2004 with seminars and presentations of relevant research from the USA, Europe and Sweden regarding the conditions and needs for healthy environments. With the approved of city council, a reference group was established including a project group and project managers.

This book is published in two languages, Swedish and English, just one of the many results emanating from this project. The two separate language versions have a twofold mission, firstly aimed to reach a broader audience and secondly as a basis for an upcoming EU-project. The book is written for anyone interested in the development of elderly care, health promotion by design and the utilization of employee experiences for new ideas and organizational development. Many ideas and suggestions for change have emerged and may be of interest to government and municipal employees, union representatives, health care workers and others.

The project was carried out by the Research Centre for Design and Health at NOVUM Science Park in Stockholm, with Mrs. Agneta Morelli, Nurse, Health Educator and Art Therapist as project manager and Dr. Alan Dilani, Ph.D. as supervisor. We wish to express our gratitude to the reference group at Vårberg Nursing Home. Without their help and active participation, this project would not have been made possible. We thank to County Director Mr. Jan Johansson and City Council Chair Mrs. Margareta Johansson for their active participation and support. Our thanks also go to Mrs. Annika Andersson and Mrs. Anna Britta Hasth from the working group at City Council. A special show of appreciation is intended for Mrs. Marja Fihlman, Nursing Home Director for her vision and consciousness regarding the endless possibilities within elderly care.

The project was financed mainly by Stockholm Competence fund and partially by the Research Centre for Design and Health.

Dr. Alan Dilani, Ph.D.
Research Centre for Design and Health

March 2005
Stockholm, Sweden

PREFACE

Vårberg Nursing Home, originally built as a long term treatment care hospital was later transformed from a provincial institution to a municipal health service facility. Today, the building is too large for existing elderly residential needs and the physical environment does not support the quality of care practice standards. It was therefore decided to close the facility and replacing it with a smaller caring home structure.

A research project was started involving the nursing home staff in order to accomplish this task as successfully as possible. The project has been managed by the Research Center for Design and Health and was financed by the Stockholm City Competence Fund.

This book is aimed for use in the process of designing new elderly care facilities and for application to existing elderly residential facilities improving operations by smaller scale changes in the physical environment.

The book contains an overview of current Swedish and international research focusing on the importance of the physical environment for good quality care services and good living conditions for the elderly. The outcome is a set of design recommendations for future elderly care facilities. These recommendations have been developed in collaboration with health care staff at Vårberg Nursing Home. The staff cooperation grants particular magnitude to these recommendations.

The document articulates a foundation of values for elderly care and is a strong pledge for the importance of the physical environment not only in a functional sense but by expressing and influencing attitudes to elderly living conditions.

I wish to thank everyone who has participated in this process for their enthusiasm and knowledge which has contributed to this book. I believe it will have great impact on our work.

Jan Johansson
County Director
Stockholm, March 2005

CONTENTS

Abstract

Preface

Design & Health, Alan Dilani
City County Director, Jan Johansson

PART 1 RESEARCH STUDY AND PROJECT OUTLINE

1.1. Introduction

1.2. Purpose

- 1.2.1 Research Questions
- 1.2.2 Study Limits
- 1.2.3 Presentation of Vårberg Nursing Home

1.3 The Development of Elderly Care in Sweden

- 1.3.1 The Ageing Population
- 1.3.2 Elderly Health and Well-being
- 1.3.3 Physical, Mental and Social Activities
- 1.3.4 The Good Ageing
- 1.3.5 The Salutogenic Ageing
- 1.3.6 A Holistic Perspective on Elderly Care
- 1.3.7 Models of Elderly Care in Sweden

PART 2 ELDERLY LIFE CONDITIONS AND DESIGN REQUIREMENTS

2.1 Life Conditions for the Elderly

- 2.1.1 Theories and Perspectives on Ageing
- 2.1.2 Interactions between Elderly and the Physical Environment
- 2.1.3 The Physical Environment and Quality of Life Among the Elderly
- 2.1.4 Elderly Care, Organizational Culture and the Physical Environment

2.2 Elderly Design Requirements

- 2.2.1 Elderly Care Facilities as Residential Environment and as Workplace
- 2.2.2 Elderly Care Residential Environments and Health
- 2.2.3 Homelike Environments
- 2.2.4 The Physical Environment for Elderly with Dementia
- 2.2.5 The Physical Environment and Social Health
- 2.2.6 Nutrition and the Physical Environment
- 2.2.7 Aroma in the Elderly Residential Environment
- 2.2.8 The Outdoor Environment as a Health Promotion Factor
- 2.2.9 Spaces for Art, Culture and Creativity
- 2.2.10 Music and Sound in Elderly Care
- 2.2.11 Lighting and Color in the Elderly Residential Environment

PART 3 METHOD AND IMPLEMENTATION

- 3.1 The Future Workshop as a Research Method
- 3.2 Preparation Phase
- 3.3 Critique Phase
- 3.4 Field Studies
 - 3.4.1 Field Study Näsbyparken Elderly Home
 - 3.4.2 Field Study Alby Ångs Elderly Home
 - 3.4.3 Field Study Säby Elderly Home
 - 3.4.4 Field Study Tallhöjden Elderly Home
 - 3.4.5 Field Study Slottsovalen Elderly Home
- 3.5 Further Education for Staff
- 3.6 Vision Phase
- 3.7 Implementation Phase
- 3.8 Follow-up Phase
- 3.9 Evaluation of Applied Workshop

PART 4 RESULTS OF QUESTIONNAIRE

- 4.1 Implementation of Questionnaire
- 4.2 Reply Frequency and Demographic Data
- 4.3 Sense of Coherence
- 4.4 Health Index
- 4.5 The Physical Working Environment
- 4.6 The Physical and Psychosocial Residential Environment
 - 4.6.1 Overall Satisfaction in the Physical Environment
- 4.7 Staff Comments and Suggestions
- 4.8 Summary

PART 5 CONCLUSIONS AND RECOMMENDATIONS

- 5.1 Evidence Based Design in Elderly Care
- 5.2 Design Criteria and Requirements in Elderly Care

PART 6 FURTHER RESEARCH IN ELDERLY CARE

- 6.1 Proposals for Future Case Studies
- 6.2 EU Research Project for Prototype Elderly Care

References

PART 1 Research Study and Project Outline

1.1 Introduction

Elderly care facilities provide a living environment for the elderly and also constitute a workplace for employees. It is therefore important that the development of both environments is concurrent.

The population of elderly is significantly growing, increasing the demand of health services and care. Simultaneously, attitudes and perspectives on ageing are changing. A conscious and well-educated generation with new and different points of reference is emerging. The prosperous society has also created larger economic possibilities for an active and rich life for seniors far into old age. This development poses demands for changes both in health treatment and in the design of physical environments for the elderly. Another challenge within elderly care is the high levels of sickness absenteeism among health care employees in addition to the shortage of competent health care staff. A well designed environment with psychosocially supportive elements provides a supportive psychosocial work environment, which may in turn result in a healthier workforce.

The transformation of Vårberg Nursing Home into a new built environment forms the foundation for this research and development project. The goal is to evaluate how health promotion by designed environments for the elderly and for the employees needs to be envisioned in future planning.

1.2 Purpose

The purpose of this study is to explore the requirements for health promotion by design in elderly care. The overall goal is to create appropriate conditions through supportive design to promote healthy living and working environments.

1.2.1 Research Questions

- Which design components increase environmental conditions for health promotion in elderly care?
- Which design components are psychosocially supportive for employees and residents?
- Which design components contribute to healthy living and working environments from an employee perspective?

The research study will result in a document which may be used in assessments, planning, design and construction of future elderly care facilities.

The objective is to create appropriate conditions for health promotion by design through the knowledge and experiences of employees. The goal is to increase the understanding of environmental impact for health. The expected results will improve the efficiency and the development of operations within elderly care.

1.2.2 Study Limits

The focus of this study concerns design qualities in the physical living- and working environment in relation to health. The central point of interest is to illustrate the possibilities and limitations inherent in the physical environment along with the consequence of experienced health among staff and residents.

By capturing staff experiences of the working environment at Vårberg Nursing Home in Stockholm, Sweden, a limitation has been applied with the purpose of finding important environmental qualities. These qualities will form the foundation for the criteria of the future planning of the elderly care facility. The perspective has emanated from experiences and knowledge of health care staff, paramedical staff, family members and administrative staff. In this regard, the achieved experiences form the basis for health promotion in the residential living environment.

1.2.3 Presentation of Vårberg Nursing Home

The building has a total area of 18,895 square meters and was built during the 1960's as a seven floor complex. Originally used as a hospital for geriatric patients and later transformed into a Nursing Home. Today the home serves the elderly living mainly in Skärholmen, Hägersten, Liljeholmen municipalities but can at times serve residents from other parts of the city of Stockholm. The building is currently owned by a municipal real estate company called Stockholms Familjebostäder AB.

Vårberg Nursing Home has a capacity to provide elderly health care on a 24 hour basis, offering approximately 191 beds divided between nine units. In addition are three units for dementia care, one of which is for particularly demanding dementia residents. Also present is a short term care unit providing a number temporary care assistance beds. Besides these accommodations, the facility provides social activities for approximately thirty visitors daily. A paramedical unit with physiotherapists, occupational therapists and a speech therapist is also present at the home, together with an administrative department within the Nursing Home's management staff. At the Vårberg Nursing Home the residents have the possibility to visit dentist, hairdresser, foot specialist, café, library as well as the indoor swimming pool.

The prioritized questions during the year of 2004 had the following goals:

- Coordination of the operational to improve the use of existing spaces in order to be more cost effective.
- Assessing and improving routines for residential and family participation.
- Develop competence for all staff in order to increase the number of staff with a basic health education by ten percent.
- Lower short term sickness absence by making wellness programs available to all staff.
- Recruiting nurses and providing introductory training of all new nurses.
- To have a continuous dialogue with City Counsel in Skärholmen regarding the new Nursing Home.

Visions and Values

The visions at Vårberg Nursing Home are based upon the foundation of values determined by Skärholmen's city council. The central perspective is the development of the operation in interaction with residents, co-workers and the political leaders. Above this, the following guidelines for a practical and ethical conduct have been presented:

- Respectful treatment for all
- Utilization of differences and diversity
- Well used resources
- Open and clear communication
- Cooperating and creating a good atmosphere
- Appreciation of good work and acknowledgement of competence
- Focus on possibilities and utilization of competences
- Responsibility for personal and operational development

Vårberg Nursing Home also has a mission statement as part of their plan of operation, which is based on humanistic values wherein the following is stated:

- All residents and family members have the right to a feeling of safety, participation and social belonging in daily life at the Nursing Home.
- All employees must treat all residents and family members with respect.
- All employees must take responsibility for residents' needs and support their power and integrity.
- All employees should have the opportunity to grow and develop within their occupation.
- All operations at Vårberg Nursing Home shall be marked by trust, openness and work fulfillment.

The physical environment is of great importance in the visions for the new Nursing Home facility since management, staff and family members all share the conviction that the environment greatly contributes to the improvement of residential and employee health. The placement of the facility is therefore a priority with a lake view and easy accessibility for family members is places highly on the priority list for the future.

Health policy for employees

The municipality of Skärholmen has a health policy which includes the staff at Vårberg Nursing Home. The definition of choice regarding health is that "good health is a state of balance and well being for both the body and the soul". The health policy emphasizes individual responsibility for health awareness and for the development of the municipality at large. The health policy encourages employee participation in influence work conditions. The management supports health activities both on and off working hours. The activities may be the shape of physical activities or as courses and seminars on health related themes Health profile tests are carried out free of cost to a limited number of interested employees. There are around twenty health coaches in Skärholmen municipality with the task of motivating health activities among staff on the various municipal work sites. Each unit also has the possibility to apply for a so called "enjoyment fund" for employee group experiences and activities promoting social activities for work fulfillment.

Special competence within the operation

There is a concentration of special competence at Vårberg Nursing Home, the treatment and care of persons with Huntington's disease. The number of beds for persons with this diagnosis is at the present time ten. Huntington's disease is a genetic and neurodegenerative disease leading to gradual physical, cognitive and emotional disability and eventually death. There is as of yet no cure for the disease. Treatment consists of reducing symptoms mainly through medication as well as providing good care and support. Most individuals diagnosed are between the ages of 35 to 55 and live for 15 to 20 years after diagnosis. Symptoms may be categorized in three groups. Among the most common physical symptoms are uncontrollable or jerky movements, abnormal gait, slurred speech and difficulty swallowing. The cognitive symptoms are often a limited or total loss of short term memory, difficulty with planning and problem solving, lack of judgment and later dementia. The emotional symptoms include changes in personality such as impulsiveness and lack of emotional control, depression, anxiety, psychotic episodes, mood swings and aggression.

Vårberg Nursing Home in the municipality of Skärholmen, Stockholm, Sweden

1.3 The Development of Elderly Care in Sweden

Elderly care in Sweden has its origin in relief of the poor. It was not until 1947 that a law separated the elderly care facilities from the poor houses. Up until 1975, a major build up of care facilities followed which later were transformed into a regression during the following decades, remaining until today (Westerlund & Edvardsson, 1998).

Currently, care for the elderly is largely shaped by each municipality following directives from the social service law (SoL), the healthcare law (HSL) and the economic means. The big transformation took place in 1992 when municipalities through the so-called “Äldrereformen” (Elder reform) were given the collective responsibilities for long-term services and care of the elderly. The reform involved an extensive decentralization of responsibilities and authorities to the municipal level. A continuous development during the 1990’s is the fact that municipal elderly care has received competition from alternative actors. There has been a rapid increase of entrepreneurs within the elderly care arena establishing operations mainly in the larger cities of the country.

The point being made on many levels in Sweden pertains to the fact that resources for health services and care for elderly care are insufficient and very strained. New methods for improving effectiveness and quality control must be developed. A report of current conditions from the Swedish National Board of Health and Welfare (Socialstyrelsen, 2003) described the current situation as problematic. The great difficulties of recruiting and keeping competent staff are identified constant high levels of sickness absenteeism are mentioned in this context. The consequences of these continuous conditions are difficult to assess but the National Board of Health and Welfare warn that these changes will affect the elderly with less resources particularly hard.

Highlighting the fact that large differences exist between the demands and expectations of elderly today compared to the services delivered by municipal and provincial healthcare services. This creates tension emanating from the changing needs and the raised demands from older consumers. This gap must be closed through the development of new operational structures, services and environments within elderly care.

1.3.1 The Ageing Population

Within the field of gerontology, ageing is defined from several different perspectives. Ageing may be described with chronological age, in other words the distance in time from birth. It may also be expressed as social age which describes the roles and positions we have in relation to others through life, i.e. school child, teenager, working adult and pensioner. Psychological age may be measured by how well a person adjusts mentally to outside demands in regards to learning ability, personality, intelligence, and memory and so on. The biological age describes how the organic performances of human beings function in relation to lifespan. In summary, age may be defined as the loss of various functions. The process is slow and subtle (Dehlin, et al, 2000).

Two different processes are mentioned which have an effect on ageing. The first is internal ageing, influenced by factors within the individual such as heredity. The second is the external, environmentally influenced ageing. The external ageing is dependent on the particular environment we have been exposed to or are currently living in. Some examples are physical wear and tear due to inadequate ergonomic work conditions, poor health habits, and physical, psychological and social environmental factors. Human ageing takes place in a subtle way and the changes are not very noticeable from day to day (Dehlin, et al, 2000). However, the changes of ageing in cases of early dementia follow a relatively set pattern, in many ways a parallel to the development of infancy, childhood, and adolescence but in reverse order, so called “retrogenesis” (Reisberg, et al, 2002).

Rundgren (1991) describes below in general terms the biological ageing process without individual variations, conditions, lifestyle or illness related changes.

Body length decreases somewhat in the ageing process. Occurring as early as 40-50 years of age, a shortage of length may be determined. The cause of this is the disc plates between the spinal vertebrae being flattened as well as the vertebrae being compressed in the spine.

Body weight also changes according to a preset line in spite of individual variations. From the age of approximately 70, the weight is reduced by between 2-4 kilos per decade. The weight loss is usually caused by a degeneration of muscular tissue, afterwards being replaced by fat tissue.

The face and head: When the fat and muscle tissue in the face decreases, the skin becomes loose and forms baggy areas. Wrinkles appear in areas where the skin has the most flexibility. The hair becomes grey among most people. The reason is the pigment cells in the hair follicles are reduced and that the remaining cells decrease their production of hair color. The hair also thins out. The precision and flexibility of the eyes get worse with age, largely due to deterioration of eye muscle functions. The hearing is also affected adversely by ageing to various degrees.

Bones and joints: The bone mass decreases gradually and the reduction is more substantial among women compared to men, so called osteoporosis. The function of the joints degenerates resulting in less mobility and more stiffness.

The intellect involves functions such as problem solving ability and learning ability. A lower performance is found in both areas. The speed of psychomotor skills lessens which may lead to greater difficulty in making decisions. In other regards, the mental ability may improve with age. One example is the general language usage and vocabulary as well as creativity and judgment.

Memory researchers speak of short and long term memory. The long-term memory stores our knowledge and our experiences, the capacity is large but with growing older it takes more time to bring forth information from the long term memory. The H-70 study showed that older persons who stay healthy will maintain their intellectual performance far into the ageing process. However, the performance will take more time with age.

Sweden and the rest of Europe face a great challenge to meet healthcare needs of an ageing population when at the same time the average age of the health care professional increases. Another concern is the fact that Swedish elderly care has difficulty recruiting and keeping staff. Currently within Europe, a large part of the population is over 60 years old and that number is expected to double within 20-25 years. By the year 2010, one out of four women will be over sixty years old and in 2050 it is estimated that the world will be inhabited by more old than young people. Europe will then have inhabitants where approximately half of the population will be fifty year or older (Socialstyrelsen, 2004).

Today Sweden and Italy have the oldest populations in the world. Over 17 percent of the population is sixty five years or older (Statens Folkhälsoinstitut, 2002). The amount of Swedish people over sixty five is believed to remain constant until the year 2009 and thereafter will escalate radically. In 2030 it is estimated that this age group will make up approximately 23 percent of the population. According to Kommun & Landstingsförbundet (2000), the estimated amount of older people between the ages of 75 and 84 will have gone up by 45 percent by 2025 and the number of older persons over 85 will have increased by 42 percent. The older we become, the more risk of succumbing to various disorders. Forskningsrådet för Arbetsliv och Socialvetenskap reported in 2004 that the health and functional abilities among older persons between 77 and 98 did not improve but rather that their health clearly deteriorated in most cases between the years 1992 and 2002.

At the same rate as the number of really old people increases, the number of older with a dementia diagnosis also grows. In year 1991 there were 103 000 people with moderate to severe dementia in Sweden and in year 2025 the amount is estimated to around 156 000 (Tiwe, 1998). A demographic fact is however, that at the same time as the numbers of dementia are expected to increase, and the number of persons of working ages will decrease. The question is how dementia care will manage to make future care humane and supportive while at the same time operate as cost effective as possible?

For the age groups between 65 and 84, health improvement has risen during the last twenty years. However, at the same time it is reported that groups of older persons with lowered functioning levels have a 50 percent higher risk for early death compared to elderly without functional loss (Statens Folkhälsoinstitut, 2002). The Statistical Central office in Sweden (SCB), have through measuring health index determined that older individuals (both healthy and sick) live longer today than twenty years ago (SCB, 2001). The Swedish National Board of Health and Welfare (Socialstyrelsen, 2004) states that all conducted studies on the topic present a multifaceted and partially contradictory depiction which will lead to uncertainty of elderly health development and future nursing needs.

The Swedish National Board of Health and Welfare and the National Board of Housing conclude in the report called "Why can the need for specialty housing not be met?" (Socialstyrelsen, 2004) that there is a significant downsizing of beds in municipal elderly care facilities around the country. The report warns for a much too rapid and sometimes poorly planned cut back of elderly care. There may be a relatively large group of elderly for which a prolonged stay in the private home with homecare is not enough.

1.3.2 The Elderly Health and Well-being

An international research network started a number of years ago called “The European Consortium for the Study of the Oldest Old”. One of the first systematic approaches to examine factors and life patterns leading to a good and long life was presented in that context by Beard (1990). Beard observed during a period of forty years 12,000 centenarians and their approach and attitudes to life. In the results, specific health behaviors and health attitudes were discovered. These persons had during years of both good experiences and severe diseases a more rapid recovery as well as a passion for health habits. In combination the centenarians were also more satisfied with their life situation in general.

In November 2003 the “Senior 2005” query was handed over to the Swedish government, an inquest, which dealt with future pensioners. Attitudes and values among older persons and ageing as a part of life were discussed. A new concept was coined, “the lifecycle perspective” which emphasized ageing as something normal and not something pathogenic. It was concluded that the basic preconditions for a good life in old age are the same as for younger individuals. The requirements were secure economy, good health, a functioning social network, meaningful occupation and to be able to control one’s own life (SOU 2003:91).

The World Health Organization (WHO) has since its creation recommended a number of measures for health and quality of life among the older population. Preventative contributions and life quality from a physical, psychological and social perspective have been emphasized. A number of campaigns were carried out by the World Health Organization through the following years: “Health for All”, 1978, “The Health Goals”, 1991 as well as the Maastricht Declaration”, 1993. All reports highlight the preconditions supporting individual health development through conscious choices of lifestyle. Individual life style, the need for health education, the evaluation of the recreational sector and supportive environments are clearly emphasized.

Mortality of Swedish citizens over 65 amounts to 86 percent of all deaths within Sweden today. An increase of 4 percent over a period of twenty years is mainly due to an increased average age index. The most common causes of death for the elderly in Sweden are coronary related diseases (SCB, 2003). Almost 50 percent of 65 year olds in Sweden have some form of coronary disorder. Some of the contributing factors are smoking, low physical activity level and obesity. The risk of cancer increases with age, in large due to the longer average life expectancy. The most common forms of cancer are breast and prostate cancer, lung cancer and stomach and intestinal cancer. Age related diabetes is one of the fastest growing diseases in Sweden affecting the elderly. One reason for this rapid growth is believed to be increased excess weight and growing numbers of physically inactive adults. The number of elderly with hip fractures due to falling has doubled in the past ten years and these numbers increase dramatically with age. Risk factors for falling are slippery floors, rugs and inappropriate shoes. The living environment, the outdoor environment and traffic are important factors in this context. Osteoporosis, poor sight and hearing as well as incontinence should also be mentioned as common ailments among the elderly (Statens Folkhälsoinstitut, 2002).

Psychiatric disorders among the elderly population occur especially in the form of depression, anxiety related disorders and psychotic disorders. The risk of suicide is substantial particularly among older men. Approximately twenty six percent of all suicides in Sweden in 2002 were individuals over age sixty five. Neurological changes in the older population may according to Wijk (2004) be categorized into three groups; normally ageing individuals, persons with so

called “Mild Cognitive Disorder” (a growing group and ageing individuals with some form of dementia diagnosis). Disorders within the dementia category are today considered one of our welfare disorders and the most common type is Alzheimer’s, making up sixty percent of all dementia diagnosis. Among the contributing factors are heredity, smoking, a sedate passive lifestyle as well as alcohol consumption (Statens Folkhälsoinstitut, 2002).

1.3.3 Physical, Mental and Social Activities

Human beings are created for physical, psychological and social activity. When working life is left behind, a number of habitual activities are suddenly removed which must be replaced by other stimulating and meaningful engagements. A Swedish study where eighteen types of activities were listed (Norling, 2002), illustrated that much more than the activities themselves were of importance for the elderly. The planning, the follow-up, the reminiscing and the remembering of the activity had great value. The process of remembering may according to Norling (2002), promote health in connection to nature activities. A requirement for the positive effects of a given activity is that it stems from individual interest and personal motivation (ibid). In terms of physical activity, research shows positive effects for the older population. Some examples are osteoporosis and the risk of fractures being counteracted by exercise and the fact that physical activity offsets symptoms of depression (Folkhälsoinstitutet, 1997).

Muscle mass decreases gradually with age but may be counteracted by suitable exercise even at a very senior age. A test group of 86 - 96 year old individuals exercised regularly in a gym eight weeks and were able to increase their strength of the large thigh muscle by on average 174 percent. The effect disappeared completely after four weeks of no exercise at all (Ekblom & Nilsson, 2000). Oxygen uptake capacity may be improved considerable through cardio vascular training such as swimming, bicycling and walking. An improved cardio condition offsets tiredness and makes self independence more possible with older age. The brain also requires a large amount of oxygen and a good over all condition lowers the risk for depression and anxiety (Folkhälsoinstitutet, 1997).

The need for mental and intellectual stimulation is unchanged in old age. The ability to learn and remember needs continuous encouragement to stay intact. The environment we live in is important in this regard. We need varying stimuli daily, requiring us to remember as well as exercise the memory. It is important for an older person to stay interested in the things one wishes to remember and to repeat this (Rundgren, 1991). Reading and taking courses are good examples of mental stimulation. Activities containing humor or creating joy have proven effective, probably through improved attitudes. Intellectual stimulation has good health effects such as stress reduction, physiological improvements on pulse and blood pressure as well as improved rehabilitation after a coronary arrest (Norling, 2002).

An active social life which includes time with relatives and friends has an impact on overall health. This is evident in the Alameda study from California and the Roseto study from Pennsylvania. These studies have determines that social belonging is one of the most important determinants for our well-being. Social belonging may prevent early mortality, stunt the onset of disease and speed up recovery. The more integrated an individual is with the community, the less risk for a number of physical and psychological disorders. The result from several research studies (Bassuk et al, 199; Greenfield & Marks, 2004; Morrow-Howell et al, 2003) have shown that older persons who are engaged in organizational activities,

volunteer or participate in local politics, rate themselves as healthier than uninvolved older individuals. Considerable research has also showed that social contact offsets depression. Persons with close friends, kind neighbors and supportive colleagues at work are less prone to sadness and loneliness. They have fewer problems with appetite and sleep compared to socially isolated individuals (ibid.).

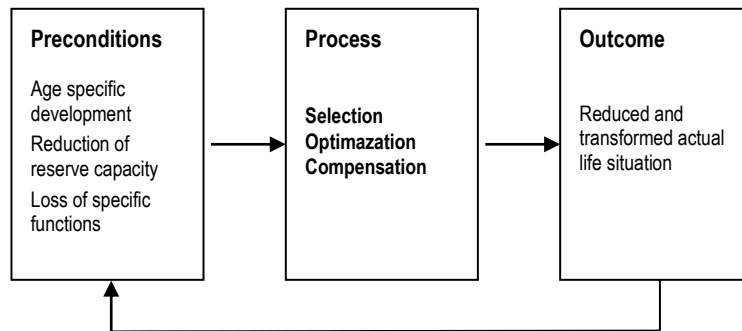
The social network has buffering effects. The social network may be of help in a concrete way such as lending money, services and transportation. The social network also strengthens healthy habits as socially isolated individuals have riskier health behaviors such as smoking, alcohol consumption and excessive food intake. Most interestingly, social connections may actually function as a biological release mechanism, stimulating the immune system to mobilize defense against various diseases and stress. Social involvement may according to Mendes de Leon, Glass & Berkman (2003) be an important factor in preventing functional loss among the older population.

1.3.4 The Good Ageing

Research on ageing as a phenomenon has focused primarily on the problems relating to ageing rather than on describing what actually successful good ageing is. However, in some respect, ageing may be seen as a positive development towards gained experiences. Baltes & Baltes (1990) make seven basic assumptions of the good ageing from a cross sectional scientific perspective:

1. There is a difference between normal, optimal and pathological ageing.
2. Ageing is a very individual process and manifests differently for each individual.
3. All elderly persons have a latent reserve capacity, a marginal resource just like younger individuals.
4. Ageing leads to a gradual decrease of the reserve capacity.
5. Knowledge and experience based mental capacity among the elderly may compensate the age related loss of ability concerning the thinking process.
6. Through balancing the loss of abilities, the older person may exchange a lost ability for a less demanding functioning ability

The concept of “*selective optimization with compensation*” developed by the authors may be explained in the following way. *Selectivity*, the older person selects, prioritizes and concentrates on the individual and social activities which work best and which gives most satisfaction. *Optimization* involves an engagement in certain activities which thereby are maintained or improved with age both in a qualitative and quantitative way. *Compensation*, the older person compensates certain limitation in their functioning with a complimentary activity.



The figure illustrates the process of selective optimizing with compensation in an age perspective (Baltes & Baltes, 1990).

1.3.5 The Salutogenic Ageing

There has been a growing interest in the health promoting features of the life cycle as a contrast to the pathogenic preoccupation of ageing. This has been gathered under the concept of salutogenic ageing. The model called “sense of coherence” is according to Antonovsky (1991) an individual general resistance resource against stress consisting of comprehensibility, manageability and meaningfulness. The concept is a way of explaining why some individuals exposed to various forms of stress are able to maintain good health. The model, sense of coherence may be generalized to the good ageing which in itself contains good health. A study of seventy year old persons revealed a high correlation between sense of coherence and health which had its origin in the remembering of one’s life history. The study confirms the importance of earlier experiences and the recollection these in relation to the sense of coherence and well being in old age (Rennemark & Hagberg, 1997).

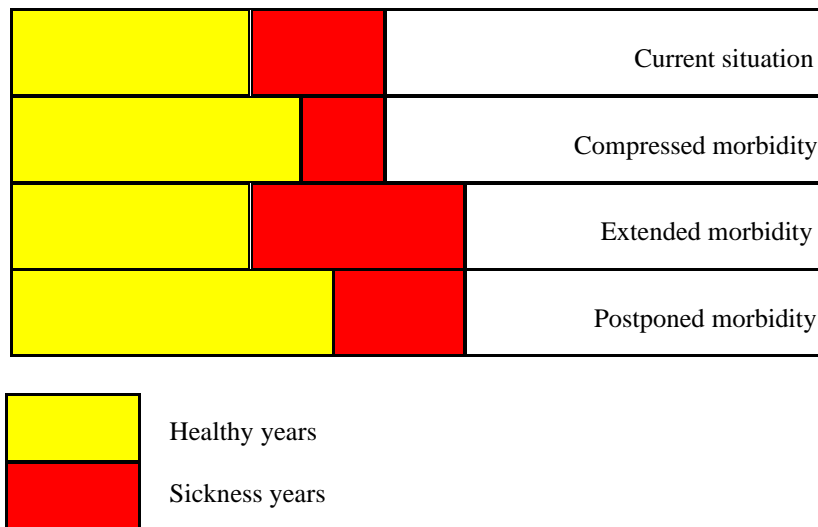
1.3.6 A Holistic Perspective on Elderly Care

To have a focus on physical, social and spiritual needs among the elderly implies a holistic view of the individual. Elderly care may function well for the older person with relatively intact memory and with limited medical needs or minor functional loss. However, the changes taking place in society will bear vast consequences for older individuals with greater health care needs and complex requirements for treatment (Gurner & Thorslund, 2003). Older individuals who simultaneously have several functional losses or disorders, the so called “multi-diseased” are often squeezed between a rock and a hard place in today’s specialized care system. A vast number of medical procedures are implemented for the elderly with complex care needs. However, these services are often applied without coordination. This group of multi-diseased elderly needs a consistent organization with centralized management, prioritization and financing (ibid.).

There has to be a higher priority of primary and secondary prevention for adults over seventy years according to Svanborg (1997) the former project manager of the H70 study in Sweden. Factors which improve and stimulate life quality for the elderly should be a mandatory societal interest and should be taken into consideration within urban planning of for example

residential and group homes for the elderly as well as the choice of environment for these buildings.

An important question for research has been how the need for treatment and care for the elderly will be realized in the future. There are three main theories. The first theory assumes a delayed health care need due to extended life expectancy. The second theory is more optimistic and foresees a healthier ageing with a compressed need for health care serviced (“compression of morbidity”). In other words, a longer life with a shorter period of illness before death occurs. The period of illness at the later stage of life will be shortened with improved living conditions and healthcare services. The third theory is governed by increased sickness where the older persons in the future will demand care during a longer period compared to current conditions.



The figure illustrates three hypothesizes regarding the future life expectancy and health among the elderly (Lagergren, Agahi & Wånell, 2004)

The health care culture is a valuable factor for well being in old age. The concept of so called “holding environments” originally used in the treatment of children within developmental psychology and was coined in 1960 by Winnicott. A good holding environment provides the safety and security needed to live an engaged life. It is an environment which at the same time encourages the individual to personal development. Good healthcare services at the later stages of life should have the goal to minimize suffering while simultaneously optimizing and promoting life quality. The values and attitudes inherent in the care organization effect the psychosocial work environment, the overall satisfaction at work and the use of staff competencies. This in turn will affect the well being of residents and to a certain degree the health of family members. The organization should therefore be developed to provide support for personnel, residents and family members (Socialstyrelsen, 2004).

The view on health care has broadened during recent years to include the perspective of family. Close relatives caring for the older person the elderly relative with limited functional ability or changed personality are often themselves at risk of health problems. This is a result of taking considerable responsibility for the wellbeing of their family member during long periods of time. It is therefore important that relatives receive support, made part of the organization and provided the opportunity to rest and restore energy (Socialstyrelsen, 1999).

1.3.7 Models of Elderly Care in Sweden

Care in the Private Home

Homecare is the service and personal care taking place in the private home. This type of service makes daily life in the home possible and easier. The help and service offered may be in the form of cleaning, laundry, shopping, cooking and assisting meals, as well as personal care such as hygiene maintenance and social interaction. There is a rich array of municipal services available for the elderly still living in their private quarters. Services may also include safety alarms, delivery of food or organized telephone services.

Day Centers

Daily services may take many forms but are often connected to some type of elderly care facility. These organized programs are first and foremost focused on undemanding forms of occupational and social togetherness but may also include various types of rehabilitation.

Short Term Care

This type of service pertains to support based on needs assessments. It is a temporary residential stay with treatment, rehabilitation and care. The service should be viewed as a short term relief for families as the primary care giver of the older person.

Particular Residential Services is the umbrella term for different forms of collective residential solutions such as, nursing homes, elderly care facilities and dementia care facilities as well as service housing. Below is a short description of the different types of care homes:

- **Elderly Care Homes** for relatively healthy persons with limited health care needs.
- **Dementia Care Homes** for elderly with a dementia diagnosis. These units are specially designed and may often be locked preventing disorientation and unnecessary suffering among this group of elderly residents.
- **Nursing Homes** for elderly particularly dependent on medical treatment.
- **Service Housing**, apartments in a residential area with both private and collective apartments. Activities are offered based on individual needs. Employees provide care in the housing complex and help the elderly residents in their private homes.

Temporary Out of Country Residential Care

Residential care in a foreign country is the latest type of service within Swedish elderly care. A newly launched project involving several Swedish municipalities has resulted in the first group of elderly Swedes traveling to a care facility in Spain for a two week stay during the winter of 2004. Many elderly today are experienced travelers; sun and warmth may improve health and reduce fatigue and health care needs. This form of care may also relieve family members who have carried substantial responsibility for their elderly family member. Additionally, this form of residential care is considered to be cost effective. The most active municipalities in this project are Solna and Täby communities within the county of Stockholm. Several other municipalities such as Tyresö, Lidingö and Umeå have shown interest in the project and have made study visits at the elderly care facility in Spain. No evaluation has at the time of this publishing taken place.

PART 2 Elderly Life Conditions and Design Requirements

2.1 Life Conditions for the Elderly

2.1.1 Theories and Perspectives on Ageing

The Activity Theory

The central reasoning in the activity theory is that the negative experiences of the elderly and the consequences that follow such as loss may be counteracted or prevented through individual activity. In this theory, the assumption is made that a persons' understanding of their situation is connected to the degree of activity. The more active the person is, the larger their satisfaction is assumed to be. The activity theory was presented for the first time at the World Congress in gerontology in Budapest 1993. The keywords were "dynamic, active and involved". The message was that a dynamic, active and engaged life style will lead to optimal ageing. To actively participate rather than being a passive viewer would be connected to possibilities of a rich intellectual, social and physical life (Dehlin, et. al, 2000).

The Disengagement Theory

This theory postulates that there is inherent instinct to discontinue engagements in old age. Older individuals free themselves gradually from social ties from which they have remained socially active and become more introverted. This process is not associated to psychiatric illness or lack of satisfaction but is seen as a natural process bringing harmony and satisfaction. Inactivity should according to the activity theory, be connected to dissatisfaction while in the disengagement theory it is viewed as normal and associated with a higher degree of satisfaction. When this theory was launched in the 1960' it evoked strong debate, the word disengagement had a negative connotation to many persons (Dehlin, et al, 2000).

The Gero-transcendence Theory

The gero-transcendence theory differs from the activity theory and focuses on a departure from the activity focused existence so common in adult life. The older person enters into a new understanding of reality which includes an increased sense of belonging to both humankind and to previous and upcoming generations. The interest for social relationships diminishes as do interests in the material world. Activities and social contacts become less important and the serene meditative moments bring additional satisfaction. According to this theory, ageing is not seen as a continuation of middle age life style and values but as a development towards something qualitatively different (Dehlin et. al. 2000).

Ageism

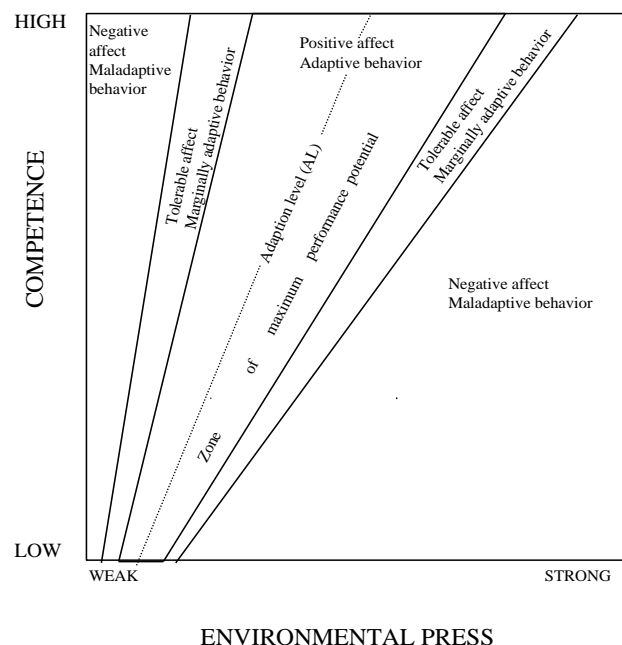
The value placed on older persons has varied greatly through history and social cultures. The concept of ageism was first introduced by the American gerontologist Robert Butler at the end of the 1960's. It is an expression of a social categorization of people over a certain age where all individuals are prescribed a number of qualities, which may be called discriminatory. Over the years, many definitions of ageism have been presented. Andersson (1997) a researcher in social gerontology at "Stiftelsen Äldrecentrum" in Stockholm uses a general definition of ageism. He suggests that ageism is "stereotypical conceptions or discrimination which stems from a persons age". According to Andersson, ageism is a phenomenon which exists in our language. The word "old" has few positive synonyms and is often associated to fading away, becoming senile, being worn out, and so on. Ageism is also alive within the

health care system, manifested in the prioritization of procedures and treatments affecting older persons. On the labor market age may be an obstacle in keeping or getting a job position. With the right to a pension, a new and distinct social category was formed. This category has become even more distinctive since the years after retirement generally are described as a wonderful time for traveling and amusement which is only true for a fraction of the elderly (ibid.).

2.1.2. Interactions between the Elderly and the Physical Environment

According to Lawton & Nahemow (1973) there are three main functions of the physical environment; the aesthetic, the objectively functional and the subjectively functional (individual demands and preferences on function). The model developed from the theory of ageing is based on the premise that ageing is a process dependent on the balance between individual abilities and demands from the surrounding environment.

The model is described in a formula; behavior (B) is equal to function (f) which consists of the balance between personal competence (P) and stress from the physical environment (E). The formula is abbreviated in the following way; $B=f(P+E)$. As the individual experiences life as more demanding such as in the state of illness, the ability to manage stress from the surrounding environment is reduced. Various functional losses in connection to ageing may negatively affect the degree of experienced stress. It is therefore important that the surrounding environment is adjusted and improved to fit the remaining abilities of the older person in relation to his or her environment.



The diagram illustrates the effects on behaviour and emotion in the interaction between the individual and the physical environment. Source: Lawton, M.P. and Nahemow, L. Ecology and the ageing process. In: C. Eisdorfer and M.P. Lawton, eds. The psychology of adult development and aging. Washington: American Psychological Association, 1973.

2.1.3 The Physical Environment and Quality of Life among the Elderly

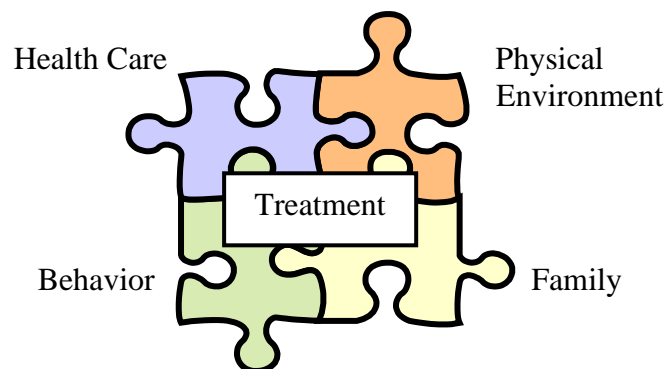
Calkins (1988) makes the following assumption regarding the correlations between the physical environment and health among the older population:

- Human behavior and the physical environment are significantly and mutually interrelated.
- Human beings with a limited biological behavioral ability have greater difficulty managing the physical environment and are subsequently in need of increased support.
- A supportive physical environment is a form of non-pharmaceutical treatment.
- A supportive physical environment strengthens the remaining abilities and functions.
- A demanding environment does not support people with dementia and does not compensate for their lost abilities.

A holistic approach for the care and treatment of elderly with dementia has been presented by Jarvik & Wingrad (1988) with a focus on non-pharmaceutical treatment. The authors claim that an incurable disease is different from an untreatable disease and the purpose is to minimize symptoms rather than concentrating all efforts on finding a cure for these disorders. The question asked by Zeisel & Raia (2000) is whether the ageing individual with dementia should to be seen as a dying or a living person? If the individual is viewed as dying, it is reasonable to make life as comfortable as possible until the end. However, if the person is seen as a living individual, it is then necessary to reflect on a deeper level about their treatment, care and life quality (ibid.).

Zeisel (2004) presents a coordinated model for treatment and care which includes the reduction of symptoms among the elderly with a dementia diagnosis. The model emphasizes the importance of care based on two components complimenting traditional pharmacological treatment. The two components are; changes in the physical environment and behavior modification/communication. It is a holistic view of treatment which according to Zeisel is more effective compared to pharmacological treatment alone.

A holistic perspective within elderly care specializing in Alzheimer's disease demands according to Zeisel (2000) a coordinated treatment with the following components:



The figure illustrates a holistic perspective on treatment of persons with Alzheimer's disease within elderly care (Zeisel, 2000).

- The purpose of *health care* is to stabilize treatment of the elderly through medical and pharmacological procedures.
- The purpose of the *environment* is to support and improve abilities and independence among the elderly through the stimulation of senses and remaining cognitive functions such as emotional memories.
- The *behavior* of older persons may be supported by health care staff assisting the elderly in behaving more adequately in various daily situations. This may be accomplished through communication and daily activities.
- *Family* members are viewed as resources with valuable information and should have an active role in the treatment of the elderly person.

The non-pharmacological and holistic approach does not distance from the scientific ambition of finding a cure for dementia. The objective of the model is to maintain positive emotions based on knowledge of the amygdala (the emotional centre of the brain) and its functions which are intact far into the developing disorder.

Two main concepts in the physical environment are emphasized; natural guidance and memory objects. Both contribute to improved functions and increased independence (Zeisel, et al, 2003). Natural guidance was first developed by Norman (1988) and is describes as a physical environment which clearly communicates a message of the expected behavior by the persons within the space. This may be illustrated by the following example; a garden with an apparent walkway and no obvious end point for supporting the elderly with dementia in finding his or her way, by slowly walking foreword instead of anxiously wandering about. Memory objects pertain to items stimulating the memories which no longer are produced at will due to damage of the hippocampus in the brain. These memory objects may be photos, images or personal objects which remind the elderly person of family, significant times in the past and their context.

Alzheimer's Environment-Behavior (E-B) Factors Model

E-B Concepts	Definitions	Dimensions	Dimensions
1. Exit Control	Boundary conditions of each Special Care Unit, the surrounding walls, fences, doors and how they are locked or otherwise limit and allow people to come and go	Immediacy of Control: The degree to which the exit doors are magnetically or otherwise locked, versus open but alarmed.	Unobtrusiveness: The degree to which the exit doors are camouflaged by paint or other devices, the amount of hardware, and their location along side walls as supposed to the ends of hallways.
2. Walking Paths	Circulation space residents' use for wandering and moving around.	Continuousness with Destinations: The absence of dead-end and cul-de-sac corridors, and the presence of active destinations that might encourage residents there to turn around.	Way finding: The presence of orienting objects along the pathway, as well as wall objects that attract resident's attention and provide them with a sense of being in a place.
3. Individual Space	Spaces (primarily bedrooms) assigned to and mostly used by a limited number of residents.	Privacy: The number of private bedrooms in the Special Care Unit.	Personalization: The degree to which residents are allowed to) place personal objects in their rooms.
4. Common Space	Sizes, relationships and qualities of spaces used by all residents in the Special Clare Unit.	Quantity: The appropriate number of common rooms for the number of residents- to avoid crowding in too few rooms and to avoid "under-manning" in too many rooms.	Variability: The degree to which interior décor , furniture and natural light provide common rooms with unique characteristics and a "mood" appropriate to their use.
5. Outdoor Freedom	Residents' access to common areas out of doors and the way these places support residents' needs.	Availability: The degree to which there is an adjacent outdoor space and the degree of free access residents have to that space-doors unlocked and appropriate supervision.	Supportiveness: The degree to which the open space is "therapeutic" with appropriate places to sit, walk, smell the plants, engage in safe and interesting activities and be apart from others.
6. Residential Character	The lack of institutional surroundings-including furniture and décor, wall covering and flooring, and layout with prominent nursing station.	Size: The degree to which the size of the Special Care Unit reflects a large family space.	Familiarity: The degree to which the Special Care Unit uses residential furnishings, design features and personal objects.
7. Autonomy Support	The way in which the facility encourages and supports residents to use their remaining faculties, carrying out basic tasks and activities independently and with dignity, including enabling staff to be over protective.	Safety: The degree, to which the units' physical environment protects residents from injury, from objects and inappropriate furniture, helping to prevent falls, and injury from inevitable falls, and prevents elopements.	Prosthetic: Physical supports in the environment for residents to do things for themselves-handrails, toilet seats high enough for self toileting, bathtub and shower support rails.
8.Sensory Comprehension	Quality of the sensory environment; acoustic, visual, thermal, odor and kinesthetic environment in all spaces and the degree to which these conditions may confuse residents.	Sensory Management: The degree to which staff can control auditory and visual "noise" in the unit and the degree to which such sensory complexity has been controlled by design.	Meaningfulness to residents: The degree to which the ambient sensory environment is familiar to residents; smells, sights, sounds and touch/texture.

2.1.4 Elderly Care, Organizational Culture and the Physical Environment

The organization may be viewed as an entity of interplay between physical structures, social structures, culture and technology. All four aspects of the organization are in constant and dynamic union with each other. According to Hatch (2002) there are two perspectives on the organization, the behavioral and the symbolic viewpoint.

The Behavioral Perspective

This perspective is centered on the relationship between the physical structure and the human interactions taking place within it. The basic assumption is that human behavior is governed by the form and layout of the physical environment. With larger distances between individuals, comes less direct interaction contributing to lower effectiveness. Due to limitations regarding the numbers and placements of people within a given area, demands are placed on space utilization. An open environment generally encourages interaction and communication (ibid). It is according to this perspective essentially that the staff and residents have a part in the planning of the physical environment to create involvement and a sense of belonging. A well planned close environment is of great importance for the interplay between the staff and the elderly. The immediate environment must create stimulation and a sense of safety for the residents. It is valuable to create open shared spaces, which enables staff to oversee the unit. The open layout also strengthens the elderly persons' ability to find their way. In contrast, physical structures such as walls may be helpful during times of confidential interactions and providing privacy for staff when needed.

The Symbolic Perspective

The physical structure is significant for cultural expression and provides a source of symbols in this perspective (Hatch, 2002). With time, buildings have come to represent their organizations. The human beings within them may conceptualize their thoughts regarding the organization. In this perspective, the surroundings convey clues to assist in determining the location, at home, at work, and so on. The understanding of the space releases the appropriate behavior for the particular setting (ibid.). The differences in the care of the elderly could according to this perspective be connected to the differences in the organizational culture of the facility. A nursing home with a hospital like environment might contribute to less personal treatment while an elderly care facility with a home like setting would encourage more personal conduct.

Effects of the Physical Structure on Relationships

The physical elements of the organization consists of buildings and their placement, furnishings, equipment, design elements, layout and the human bodies moving around within them. The organization may be viewed as an array of activities which cover everything from the interactions taking place between employees within the organization to the external interplay between the organization and the surrounding world. The placement of individuals and groups are interesting and central aspects in the construction of buildings since the physical surroundings directly affect how individuals and groups communicate with each other and how they coordinate their work. Design components are important as functional physical elements in the organizational culture and as image makers for employees and visitors. Aesthetic qualities in the elderly care setting are interpreted differently by employees, family members and residents (Hatch, 2002).

Territorial Boundaries

Organizations according to Hatch (2002) divide their buildings more or less consciously into entities defining both functional and social structures. The territorial boundaries are marked to clearly distinguish each separate group. This is done through physical objects such as walls and floor levels. Various groups will thereby experience themselves as linked to certain other groups due to their proximity and may experience a certain connection or belonging to another group. In contrast groups may experience themselves as different from the others if the physical distance is great. People may demonstrate their boundaries individually by making their own territorial marking with strategically placed personal items. The need to express personal boundaries and group belonging is a biological human behavior endured through evolution (ibid.).

The Personal Space

Human beings have a need for personal space. To have a self controlled private place has proven an important factor for both health and well being in many situations such as the living and the working environments. The possibility and the risk of individuals invading each other's private spheres depend upon a number of conditions in the physical and social environment. It is well known that tight spaces may provoke stress (Aiello, 1991) and bring negative consequences to social interactions. A retraction, a tendency to avoid social contact or an aggressive behavior may be observed (Braun & Pulus, 1991) and work performance may suffer due to the lost ability to focus and concentrate on tasks according to McAndrew (1993). Large distances between individuals in contrast may create less opportunity for personal interaction. Studies have shown that the closer the co-workers are placed to each other, the larger the probability of interaction (Hatch, 2002).

2.2 Elderly Design Requirements

2.2.1 Elderly Care Facilities as Residential Environment and as Workplace

An elderly care facility has two main design functions, as a home environment for the residents and as a work environment for the health care staff. These dual functions place complex demands on the character of the physical environment. A home like environment as discussed previously, promotes health, increases overall satisfaction and supports the remaining abilities of residents. However, the space as a work environment also places specific requirements on the physical environment which may be conflicting with the criteria for an optimal residential environment.

The creation of psychosocially supportive environments should present an overall social goal as the promotion of health in the physical environment will lead to social growth. Creating the optimal conditions for health and a good life in old age requires access to the following components:

- *Via activa* – to be able to work and experience participation in a productive context, to make sure the elderly person is stimulated and encouraged to an active life through for example occupational therapy and physical activity, to be a part of daily tasks.
- *Vita contemplativa* – to nourish the inner life through social contacts, to make sure the elderly person is given the possibility to participate in cultural and mental activities such as dancing, singing and discussion groups.
- *Vita ristorativa* – to take care of the physical needs for recuperation, sleep and rest, to make sure the elderly person has the option of peace and quiet in calm surroundings, to have the option of deciding when to rest.

The physical environment as a healing element has a long history. Florence Nightingale was one of the first in modern times who emphasized the importance of the environment for the natural healing process of the body. Nightingale recommended sunshine and fresh air as a part of the treatment (Nightingale, 1969). Interdisciplinary researchers have recently started to become interested in how the physical environment contributes to health. The area is moving into a new phase where methods and results from brain research will be useful for a deeper understanding of the physical environment as a form of treatment (Zeisel, 2004).

Human beings are shaped by the physical and social environment they live in. The physical environment has qualities which may be experienced as restrictive or as liberating. Our living spaces have according to Paulsson (2004) four qualitative perspectives; a practical, a social, a communicative and an existential. The practical viewpoint concerns accessibility, usability and physical safety, dealing with functional and objective aspects. The social perspective is subjective and concerns how personal interactions and behaviors are experienced in the setting. The communicative position relates to how buildings, rooms and interior design inform and convey messages to the people within these environments. Finally, the existential perspective has the quality of a platform for our identity both personally and for our surroundings (Gaunt & Lantz, 1996; Hurtig, 1995; Wikström, 1994). The physical

environment speaks about who we are and stands for both safety and vulnerability as our homes are strongly associated to our identity and integrity (Paulsson, 2004).

2.2.2 Elderly Care Residential Environments and Health

A considerable amount of research supports the health effects of physical, mental and social activity for the population at large including the elderly (Folkhälsoinstitutet 1997; Norling, 2002; Olofsson & Thelander, 2002: Statens Folkhälsoinstitut & Svenska Kommunförbundet, 1998). A conclusion drawn from this research suggests that the design of physical environments plays a significant role making health promotion activities possible, which contributes to health and life quality for the individual.

Knowledge of how the physical environment and psychosocial health are connected is limited and the relationships are not easily explained as many factors play a part in human psychosocial health. A hypothesis is that living and working in certain environments releases physiological reactions through human sensory interpretation. This takes place in the limbic system of the brain, which has many functions such as the understanding of space and the experience of well being. Signals from the limbic system govern the discharge of transmitter substances connected to both well being and stress (Zeisel, 2002).

Human understanding of the surroundings is dependent upon the sensory and cognitive abilities. The physical environment naturally affects the ageing individual as well. Limited sight, lost memory and impaired concentration usually occurs at some point in the ageing process. Dementia disorders also bring a number of specific difficulties which are related to the physical environment. The sense of space, orientation ability (Gustafsson, 1996; Kaske & Storandt, 1995; Wallin et al, 1994), difficulty processing information from the environment and reduced recognition ability (Bäckman & Herlitz, 1996) are some examples. A lost ability to comprehend and understand the surroundings present a feeling of unsafely which in turn may lead to negative health effects such as stress and depression (Wijk, 2004).

2.2.3 Homelike Environments

The living environment is fundamental in daily life for the elderly and must be designed to meet their needs as they experience difficulty understanding the environment. The home may be understood as a sphere of integrity and self governing. The home has a symbolic value in a deeper sense. Furnishings and personal objects are reminders of one's life history anchored in various episodes of life. During the later years of ageing, reminiscing is of great value which makes these items even more essential. A homelike environment at the elderly care facility also communicates an ideological standpoint for the operation as a whole (Gaunt & Lantz, 1996).

A relaxing and safe milieu is not only about creating comfort but also a strategy making the most of remaining abilities of the elderly resident with dementia (Ericsson, 1991). The homelike environment has a therapeutic function aiming to strengthen residents' resources to postpone the degeneration of cognitive abilities (Gaunt & Lantz, 1996). According to Ericsson (1991) the homelike physical environment is important for the elderly with dementia in the following ways; encourage independence, support social belonging, provide safety, arouse recognition, offer physical activity, orientation and stimulation of the senses.

Paulsson, (2004) claims that an elderly care facility should be designed to bring together all necessary conditions for achieving a high quality of life from a residential standpoint. The physical environment must, according to Fridell, (1998) provide an experience of value, meaningfulness and safety. The experience of the physical surroundings is dependent on our earlier experiences and on our current life situation. Therefore it is important that the elderly are able to reconnect with earlier experiences through the environment. The ideal situation is a consistency between the elderly care facility and the private home the older person lived in previously. An environment reminiscent of the residents' earlier life situations will assist orientation and create a sense of safety (ibid.).

2.2.4 The Physical Environment for Elderly with Dementia

For the elderly with dementia and for many other elderly as well, memories become more and more difficult to access, this is particularly true for short term memory. Ericsson (1990) claims that the physical environment may be utilized as a communication device to access the emotions rather than the intellectual faculties which are damaged by the disease. It is in the amygdala, (the emotional centre of the brain) that the abilities to understand, to awaken, to respond to and to retain emotions are concentrated. According to Zeisel & Raia (2000) this emotional centre is relatively intact far into the development of the disorder. Objects in the physical environment may therefore carry qualities of recognition and thus evoke feelings of well being.

2.2.5 The Physical Environment and Social Health

The sense of togetherness is a basic human need and has major effect on the status of health among the elderly (Dehlin, et al, 2000). In relation to a critical incident in life such as illness or loss, access to a social network is of great importance (Rydén & Stenström, 2000). Research has shown that elderly persons feel good in environments providing the sense of safety and control (Grahm & Bengsson, 2004; Grefsrød, 2002; Paulsson, 2004; Wijk, 2004). A supportive surrounding gives residents the possibility to use more of their energy for social interactions rather than for orientation. In this way they can become more socially involved (Baksi & Cradock, 1998). A feeling of safety and control in the physical environment is a psychosocial factor which may reduce various stress symptoms. Psychosocially supportive living and working environments may strengthen the individual's ability to manage situations which are often experienced as demanding (Dilani, 2001).

Common interests can often create social situations which require appropriate physical space. The physical setting is a must for a variety of social activities and should be readily available in the care home. The contact with family members is an important component in the social network and an increasingly recognized resource. Rooms with the possibility for family members to stay overnight may assist in the social support and therefore uphold the social health of the resident.

The physical surroundings are connected to the behavior of the elderly which in turn affect their social health. The elderly with dementia generally maintains their social needs far into the disease according to Ericsson (1991). In a study of elderly with Alzheimer's disorder (Zeisel, et. al, 2003) the results pointed to a consciously adapted physical environment which lowered aggressive behavior and social isolation. The explanation may be that specific design

factors relieve the residents of cognitive stress, bringing an increased sense of control and encouraging adequate behavior thus improving social well being (ibid.).

2.2.6 Nutrition and the Physical Environment

The Swedish National Action Plan for Nutrition (Livsmedelsverket & Folkhälsoinstitutet, 1999) identifies the elderly as an “at risk” group in need of aimed measures to achieve healthier eating habits. The problem is considered so great that it may lead to severe consequences for both individual and society at large, through lowered quality of life and increased risk of complications (ibid.).

The appetite of the older people and their food intake is connected to physiological, mental and social factors. Decreased appetite may physically be a result of medication, or due to changes in the sense of smell and taste. Mental factors may be for example depression and loneliness and isolation is a common social factor affecting appetite and food intake (Domini & Cannella, 2003). Food and meal habits are to a large degree constructed, maintained and changed in a social and relational context. Situations experienced as stressful and the availability of a social network directly affects the appetite and food intake of the elderly (McIntosh, Shifflet & Picou, 1989).

The residential situation has an important role as a platform for the immediate social milieu, a meeting ground where mealtime is one of many arenas for interaction. The desire for food is clearly influenced by elements in the physical environment, in the social atmosphere and in connection to new relationships. These factors may quickly affect or induce individual emotions and attitude to food (Jansson, 1993). A good meal should stimulate all senses according to Ericsson (1991) who states that the smell of food, a calm environment and a normal table setting provides the right impulses for the elderly person to independently start eating. The mealtime situation supports recognition, safety and time orientation for the elderly as mealtimes fall in accord with festivities, seasons and times of the day (ibid.).

2.2.7 Aroma in the Elderly Residential Environment

Older persons often experience the food as tasteless or not tasting as it used to. The sense of smell has according to Larsson & Wilander (2004) a close connection to appetite and the reduced sense of smell therefore always causes changes in appetite. Generally the sensitivity of smell diminishes with age and this often causes lesser food intake among the elderly. Taste additives and the administration of food odors in the indoor environment may compensate for these losses, thereby stimulating appetite and preventing abnormal weight loss among the elderly (Koskinen, et al. 2003; Mathey, et al, 2001)

2.2.8 The Outdoor Environment as a Health Promotion Factor

Recreational habits in the outdoor environment are widespread among the Swedish population between ages 65-74 according to research on life conditions for the Swedish population (Regeringskansliet, Kulturdepartementet, 2000). The interest for recreation and the outdoors increases with age. The need for contact with nature is very strong and extensive, especially among older Swedes and Canadians (Norling, 2002). The majority of elderly spend time outdoors at least weekly (Ottosson & Grahn, 1998; Olofsson & Thelander, 2002) and they

prioritize nature based activity higher, compared to non-nature based activity such as reading, and indoor hobbies (Norling, 2002).

There are a number of assumptions regarding the specific health aspects of the outdoor environment according to Grahn & Bengtsson (2004). Some of the most common presumptions are that exposure to daylight, intake of fresh air and physical movement prevents disease. The green outside may replenish mental health from information overload and stress. Outdoor activities in themselves promote health since they are joyful and experienced as meaningful which lead to a sense of reward. The possibility to reflect in nature stimulates our senses and cognitive abilities. There is also value in viewing 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 (ibid.).

A basic factor in the health promotion effects of the outdoor environment is the concept of activity according to Norling (2002). Activity has in this context a broad definition and is divided into five phases; planning, traveling to, carrying out the activity, traveling from, following-up and remembering. Outdoor activities are health promoting on many levels, physical, mental and social. There are chains of effect since the various levels of effect may be difficult to separate. Social activities often contain components of physical and mental activity and so on (ibid.).

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 emotions of trust and safety (Ottozon & Grahn, 1998; Ulrich, 1999). Benches, handrails, and arm supports are some examples of supportive objects in the outdoor environment (Grahn, 2000; McBride, 1999).

2.2.9 Spaces for Art, Culture and Creativity

Creating art may for the elderly provide an added value beyond a nice way of spending time. It may also involve thinking and learning activities (Rugh, 1991). An elderly individual may through their own creativity look back on life to process earlier experiences. New insights and understandings may thereby bring renewed energy. Creative elderly people seem to have a more positive outlook on the remaining years of their lives. This may be due to the sense of being an active maker of one's own life instead of being a passive victim of the ageing process according to Smith (1990). The risk of becoming bored is also less acute for creative individuals compared to those who only passively enjoy art and culture (ibid.).

Artistic activity may play an important role for the ability to manage problems and for the sense of meaning. In an interview study of older creatively active persons, the results showed that most of the elderly did not focus on the end product but on the process of the creation itself (Ficher & Specht, 1999). The inner experiences of the individuals were transformed to a concrete expression in the art. Important qualities in the process of creating were motivation, attitude and imagination. These qualities could be transferred to other parts of life. The participants exhibited a more active, open and curious behavior. These creative abilities expanded to include the challenges of everyday life (ibid.).

Studies have shown that severely ill patients with the opportunity to create art were able experience joy, hope, enthusiasm and meaning in spite of their difficult situation (Kennett, 2000). To take part in some form of artistic creative activity is often possible for most residents in a care facility. Seriously ill elderly can be assisted to find a way of expression. Artistic creative activity has been used for a long time in hospice and palliative care and the experiences have been predominantly positive (Kennett, 2000; Rolling & Lawrence Riccio, 2002).

2.2.10 Music and Sound in Elderly Care

Music may be used actively (to create music) or passively (to listen to music) with the sole purpose of promoting health. Therapeutically, music may reduce stress, anxiety and pain for the elderly (Aldridge, 1993). Music may also be used by health care staff to add a calming element to an agitated situation. Sound and music may also provide a relaxing and comforting function to assist with sleeplessness as a compliment to pharmacological treatment (Lindenmuth et. al, 1992). Music in combination with exercise has proven to have positive cognitive and physical effects for the elderly (Hagen, et. al, 1986).

Sound may be experienced differently by each individual person. What is fine music to one person may for another be experienced as noise interfering with the ability to concentrate. To have the option of controlling sound through the choice of tune and volume is often appreciated by the listener (Ragneskog, 2001). An over-stimulated auditory environment may lead to stress and anxiety among residents at an elderly care facility. So called “low stimulus units” is a form of care home which aims to limit sound stimuli to promote psychosocial health among the older residents (Hall, et al, 1986).

Live music entertainment as stimulation for the elderly

2.2.11 Lighting and Color in the Elderly Residential Environment

Color, form and lighting collectively contribute to the overall sense of space. Light is an important aid for the elderly who often have some form of sight impediment. An attractive visual environment may compensate for reduced sight and sensitivity to glaring common in old age (Brunnström, et al, 2004). Compensation can be achieved through a sufficient level of light, appropriate direction of light, correct contrasts and glare-free light. Improved lighting

may add higher quality of life among the elderly. By not having to refrain from desired activities, the elderly person can maintain independence in daily life. A light switch reachable from the bed position is recommended in the residential environment for the elderly as it assists with a sense of control, safety and security (ibid.).

Perception of color is according to Wijk (2004) well retained in old age including the elderly with dementia. The objective is to clarify the environment by using contrasts, codes and cues to facilitate orientation and choice. The use of colors in residential environments has been used successfully to support the elderly in daily life and to compensate for lost abilities. Most of the cognitive limitation and sight impediments can be compensated for by a more comprehensible visual environment, Color have many functions; guidance, stimulation, clarification, calming, attention grabbing and aesthetically pleasing (Wijk, 2004). The ability to perceive contrasts diminishes with old age and with that the comprehension of space. Contrasting color may be used to compensate making the room more apparent. Doors and door handles can be painted with a contrasting color to become more obvious. Dark contrasting colors as part of the flooring are often perceived as holes by the elderly with dementia and should therefore be avoided (Ericsson, 1991).

2.2.12 Pets in Elderly Care

Pets may have several important functions for the elderly in the residential environment and serve in health promotion. Pets may in a social perspective, replace human warmth, safety and social contact according to Rogers & Hart (1993). Pets are used for therapeutic purposes in elderly care and have a great value on a non-verbal level (McNicholas & Collis, 2000). The psychosocial needs of people vary throughout life and the need for connection is greater among widows, widowers and older couples according to Albert & Bulcroft (1988). Rogers & Hart (1993) have in their studies connected pet ownership to improved maintenance of both physical and mental health in times of grief. Pets may then function as a buffer in life situations when the experience of loneliness is intense. Pets help the elderly maintain an active life style, to quickly recover from disease and help in improving the immunity system according to Bergler (1992). The psychological benefits of pets in the residential setting include improved sleep, reduced depression and anxiety as well as less aggressive behaviors (Fine, 2000). A calming and relaxing effect of pets for the elderly with dementia has also been documented (Fossier.Varney, 2001).

Dogs and aquarium as examples of suitable pets in elderly care

PART 3 METHOD AND IMPLEMENTATION

3.1 The Future Workshop as a Research Method

The method selected for this research study is based on a series of workshops, field studies, external presenters and a questionnaire. This research also included extensive literature studies. A reference group was selected to participate in these activities. The Future Workshop is a well structured process consisting of five stages.

The Future Workshop is considered to be a democratic and pedagogic method aimed at revealing and clarifying mutual problems, conceptualizing visions and building ideas amongst employees. The method was developed by a researcher called Robert Jungk in Germany during the 1960's. The technique has been used by social scientists as a way of discovering alternative methods for the development of future concepts based upon active participation.

This method has spread to Sweden via Denmark. It is Dr. Verner Denvall and Dr. Tapio Salonen who have represented the development in Sweden. Both are employed at the faculty of social sciences at the Lund University in Sweden within the teaching and researching fields. A Future Workshop is a structured process consisting of the following phases:

1. Preparation
2. Critique
3. Vision
4. Implementation
5. Follow-up

3.2 Preparation Phase

A well executed preparation phase is a requirement for successful results. It is of importance to limit the subject matter of the Future Workshop. The theme must be concisely formulated, thereby narrowing the amount of interpretations to make place for more homogenized interpretations. It may be an advantage to have a slightly provocative theme as this causes attention and involvement among participants. The recommended number of participant in a Future Workshop is approximately thirty. Employees of various ethnic backgrounds, age, gender and professions create dynamic resources, enriching imagination and broadening perspectives on the organization. It is necessary that all members participate through the entire process as active participation is one of the cornerstones of a Future Workshop.

The preparation phase was started in the beginning of 2004 with a number of seminars regarding life conditions and living environment of the elderly, vis-à-vis the working environment of health care staff in elderly care. Alan Dilani, project supervisor and Agneta Morelli, project manager took responsibility in leading the workshops which were carried out during a two month period including field studies and seminars. Prior to the first workshop, information was distributed to participants consisting of workshop content and discussion questions. Each workshop event was documented. The total number of participants in the reference group at Vårberg Nursing Home was twenty-seven. Represented professions were; nurses aids, licensed practical nurses, registered nurses, head nurses, occupational therapists,

physiotherapists, speech pathologist, administrators and representatives from the county council. Here follow a list of participants in the reference group:

1. Alan Dilani Project Supervisor, Research Center for Design & Health
2. Agneta Morelli Project Manager, Research Center for Design & Health
3. Margareta Johansson Chairman of Skärholmen City Council
4. Jan Johansson County Director, Skärholmen, Stockholm City
5. Annika Andersson Project Coordinator, Skärholmen City Council
6. Marja Fihlman Nursing Home Manager, Vårbergs Nursing Home
7. Henriette Hanser Assisting Nursing Home Manager
8. Ann Nugiseks Assisting Nursing Home Manager
9. Ingrid Strömberg Registered Intake Nurse
10. Rut Silva Practical Nurse
11. Patiance Toko Nurse's Aid
12. Monica Carlsson Head Nurse
13. Kirsti Taittonen Registered Nurse
14. Maria Kinkopf Practical Nurse
15. Estefanom Halefom Practical Nurse
16. Christina Berggren Head Nurse
17. Marina Canales Registered Nurse
18. Agneta Nordgren Practical Nurse
19. Luis Diaz Practical Nurse
20. Maritta Manngård Head Nurse
21. Maria Andersson Registered Nurse
22. Gun Rimpinen Practical Nurse
23. Lamin Camosa Nurse's Aid
24. Yvonne Näslund Practical Nurse
25. Raül Espinosa Nurse's Aid
26. Gunilla Åhlander Head Nurse
27. Eva Sandin Speech Pathologist
28. Åsa Brandin Physiotherapist
29. Christina Sundberg Occupational Therapist
30. Margareta Karlberg Occupational Therapist
31. Pia Karlsson Occupational Therapist

3.3 Critique Phase

This phase is considered to be a time for problem inventory concerning general working and living conditions. This includes existing qualities of the physical environment which may be experienced as challenging in daily operations.

The purpose of the critique phase is to put all experienced problems and impediment on the table. The participants document all they experience as hindrances in their daily work tasks. Each and every member of the workshop needs to be actively involved and given the opportunity to express themselves. In this stage, it is important to refrain from commenting on others' expressions and to avoid offering solutions. The goal is to give everyone the space to speak their mind. The participants are divided into groups of four to six persons for in depth discussions and summaries of their critical views.

The next step is to prioritize the most important critique by voting. This is done by placing points from one to seven on the most urgent issue of critique. The participants place their votes as they wish. This results in a list of concerns which are most relevant to the conditions at the workplace. At the end of the Critique phase their task is to identify patterns and connections of their critique.

The Future Workshop was started on September 8th 2004 at 1 pm. Twenty-one members from the group were present, eighteen women and three men. Present were also Alan Dilani and Agneta Morelli from the Research Center for Design and Health, Annika Andersson project coordinator from Skärholmen County Department, Marja Fihlman, Nuring Home Director and Margareta Johansson chairman of City Council in Skärholmen County.

After welcoming ceremonies, presentations and a brief introduction, the newly developed mission statement governing Vårberg Nursing Home was read out loud (se appendix). All participants were informed of the workshop's overall goals. The importance regarding active participation of each and every individual in the process was emphasized. Information was then handed out including a list of all participants, a schedule for planned activities as well as an introduction to the activities of the day.

A power point presentation further introduced the purpose, content and process of the Future Workshop. This was followed by time for questions, suggestions and clarifications. A suggestion of dividing the group according to profession was expressed. However, after some consideration it was decided to randomly divide the group as suggested in the research method. The purpose of random selections is to maximize the dynamic exchanges in each group. A number of questions were handed out in order to facilitate group discussions:

- Which issues do you wish to leave behind?
- What do you feel critical about?
- What do you experience as a problem?
- Are there patterns of the identified issues?
- Are the problems connected? If so, how?
- What are some of the possible reasons behind these problems?

The workshop in circle discussions

*County Director, Nursing Home Manager and
City Council Chairman actively participating
in the workshop*

The involvement was great as the groups discussed and documented their thoughts. The research leaders circulated to assist as needed. After fifty minutes the groups joined to evaluate the progress. It was concluded that the groups needed more time to discuss the three last questions in the hand out. After an additional time period of thirty minutes, all groups were asked to document their criticism listing their top-ten items as well as to identify connecting patterns. All group members were encouraged to share their criticism with colleagues not participating in the workshops to gather further critical assessments thereby enriching the process.

The project group had a thirty minute meeting directly after the closing of the first workshop day to evaluate the activities. It was concluded that the process had been satisfactory, that the participants had shown great involvement and that the group discussions had been filled with active participation

The number of participating group members was nineteen on the second day. The Nursing Home Director and the two representatives from the Research Centre for Design and Health were present.

Participants working in small groups

Active discussions during the critique phase

The five sub-groups presented their top-ten list documented on large sheets of paper. All concerns, fifty in total were reduced to twenty six as several issues coincided. The group members were then given ten minutes to consider the distribution of their votes. Seven points were given to the primary issue of critique, six points for the first runner up and so forth. Here follow the results of the votes by the reference group:

Top-ten list of Critique:

1. Inadequate rooms/apartments	96 p
2. Too large units	95 p
3. Tight bathrooms	70 p
4. Long corridors	53 p
5. Lighting and ventilation	33 p
6. Understaffed units	29 p
7. Mixed categories of elderly in the units	28 p
8. Limited availability to the outdoors	25 p
9. Too many floor levels	23 p
10. Colors creating anxiety	16 p
11. Noisy non-ergonomic dishwasher	15 p
12. Windows are too high	14 p
13. Limited time to spend with residents	14 p
14. An unwelcoming entrance	11 p
15. Hospitable like environment	8 p
16. No lifts in resident's rooms	8 p
17. Tight laundry room	6 p
18. Lack of competence among new staff	5 p
19. Passive leadership	5 p
20. Too small dining room	5 p
21. Not enough activities for the elderly	5 p
22. Alarm system	3 p
23. Too small kitchens	3 p
24. Lack of rooms for staff	1 p
25. Non-ergonomic furniture	1 p
26. Elevators	0 p

The reference group was then divided into four smaller groups for in depth discussions. The participants chose by interest which issues to focus on. The following subjects were chosen:

- 1. Too large units and inadequate rooms/apartments*
- 2. Understaffed units and mixed categories of elderly in the units*
- 3. Limited availability to the outdoors*
- 4. Tight bathrooms*

1. Too large units and inadequate rooms/apartments

The group opinion was that the large units contribute to the experience of an institution and the feeling of living in a ward, not in a room. The environment is not experienced as cosy or homelike. The long corridors do not fill a functional purpose and are not used during the day according to this group.

The in depth critique of the rooms/apartments were presented in point form:

- Shared rooms
- Tight quarters with very limited space for personal objects or furniture
- Anonymous rooms
- Poorly functioning night tables
- No chair to sit on for family members
- Limited personal integrity
- No lockable closets
- No lockable valuables boxes
- No storage space in close proximity to the rooms/apartments
- Window ledges are too high
- Slippery floors
- Tight doors
- Motley wallpaper
- Poor lighting
- No ceiling lifts

2. Understaffed units and mixed categories of elderly in the units

Staffing is according to this group irregular. At certain times of the day there is a shortage of staff particularly at mealtimes when several residents need help eating. Other times there may be a surplus of staff. The situation is also uneven between units. Being understaffed is common during evenings and weekends. This is questioned since the residents' needs are the same regardless of time of the day or day of the week. The group also states that the mixing of elderly categories creates added anxiety among residents and staff.

3. Limited availability to the outdoors and the garden

This group documented their in depth critique in point form as presented below:

- The entrance doors' sensors do not work properly
- Inadequate paths for promenades
- Poor outdoor lighting, very dark at night
- Walkway edges are too high
- Boring planting beds
- Few and uninviting garden furniture
- Large and unattractive garbage containers
- Large unsightly sandbox by the entrance
- Disturbing smoking area outside the entrance

The group presented their in depth critique of the garden in point form as follows:

- The entrance doors to the garden are too narrow
- The trash cans are unattractive
- Steep slope to the garden

- Unattractive and broken garden furniture
- No roof protecting from sun or rain
- No privacy
- Uneven broken stone pavers
- Steep slope down to walkway
- No seating arrangements along the walkway
- Little variation of plants in the garden
- No fruit trees
- Weeds growing in the flower beds
- The doors to the glassed-in outdoor room are too narrow
- The glassed-in room has no protection from sun on warm days
- Uneven balcony floors

4. Bathrooms

- The toilet is not always in the same room as the ward
- Too tight for space
- Poor placement of wash basins
- No space for staff on each side of the wash basins
- Shared bathrooms
- No private cupboards for storage of personal hygiene articles
- Misplaced handles
- The toilet seats are too small
- The toilet tanks are located too close to the seat
- The bathroom doors are too narrow
- The wash basins are not adjustable for height
- There is a shortage of storage shelves
- Poor ventilation and lighting
- Lights above the mirrors are missing
- It is difficult to keep bathrooms clean
- Poorly placed shower stalls

After a summary of the Critique phase, the entire group was informed of the upcoming field studies. These trips took place at five appropriate elderly facilities with particular architectural and design interests in the surrounding area of Stockholm. This was further complemented by seminars and presentations on elderly related topics. Both these activities were carry out as a “bridging over” from the Critical phase into the Vision phase of the Future Workshop.

3.4 Field Studies

The reference group visited five elderly care facilities in total. All homes are relatively newly built in the region of Stockholm and were considered interesting in the planning of a new nursing home. The purpose of the field studies was to inspire and provide a frame of reference regarding various design solutions and environments in elderly care. The field studies supported the transformation to the Vision phase by providing an experience of various

qualities of rooms and spaces, The elderly care facilities visited were; Näsbyparken in Täby, Alby Äng in Botkyrka, Säby in Salem, Tallhöjden in Södertälje and Slottsovalen in Värmdö. The following is a summary of the field studies including photos and architectural drawings:

3.4.1 Field Study Näsbyparken Elderly Home

Elderly Care Home on fifth and sixth floor

The Operation:

The home is located in a high rise building connected to a shopping centre. It is a specialized home for residents with Parkinson's disorder and approximately 80-90 percent of all residents have this diagnosis. The Swedish Parkinson's Organisation is a major cooperating partner and took part in the planning and designing of the home. The operation is run by a private property and care facility corporation. The organization is constantly challenged with new questions since being the first elderly home in Sweden specializing in residents with this disorder. Besides the Parkinson's diagnosis, many of the residents also have other disorders such as Alzheimer's and other forms of dementia.

Organizational Development:

The mission statement for the entire organization is "the customer is central". A residential council has recently started where residents and family members regularly meet to develop and improve the living conditions.. Family members are supported through regular meetings with the residents addressing any needs, issues or problems that may emerge.

Staff:

The staffing consists of a neurologist, a geriatric physician, an occupational therapist, a physiotherapist two registered nurses and six practical nurses. All health care staff has received training on Parkinson's disease organized by the Swedish Parkinson's Organisation. They are provided monthly supervision and further training by the neurologist on staff. A well, there are well organized volunteer services connected to the facility.

Activities for Residents:

- Sitting aerobics
- Celebration of events, holidays and traditions
- Regularly occurring family meetings

Architecture and Design:

In total there are 31 beds with 30 apartments in the home. The facility is located in a high rise building on two levels. Level five has 22 apartments and level six has nine apartments. The sizes of the rooms are approximately 40 square meters each. The home was renovated and

finished in January 2004. Representatives from health care staff joined as part of the project group in planning the new facilities. Two interior designers were hired. Furnishings were purchased mainly from antique stores and from IKEA.

Entrance:

There are three ways to reach the elevator leading up to the care home. There are no entrances as such on level five and six. The elevator opens right into the units.

The Units:

Contrasting colors have been used in the corridors to mark borders between all private rooms. The floor strips also have contrasting colors to distinguish the floor from the walls. All apartments are spacious and equipped with ceiling lifts, ample closet space and large bathrooms.

Private apartment with a homelike feeling

Floor inlay as borders between apartments

Furnished private room with good daylight

A wall decorated with family photos

Spaces for staff:

There are few and small spaces available for the staff. There are two change rooms with a locker and two other small rooms each equipped with a desk and a computer used for documentation purposes. This is a conscious choice based upon the premise that employees and residents ought to spend daily life activities such as mealtimes together.

Balcony for outdoor contact

Large living room for social activities

Positive Staff Experiences:

- Low window ledges for residents to look outside from a bed position.
- There are no restrictions in private apartments, the room is considered private property and may be arranged with total freedom.
- Ceiling lifts are installed in all apartments which is ergonomically good for staff.
- All common areas are generous so that wheel chairs may be used without difficulty.
- Flooring in the common areas have been inlaid with contrasting colors to facilitate the motor skills of the Parkinson's residents

Negative Staff Experiences:

- The indoor lighting is not functional considering the dramatic daylight changes in northern countries.
- Small and limited spaces for staff.
- The room planned for creative activities has never been used for its original intent.

TV cupboard for selective viewing

Antique plates as art and conversation piece

Practical TV cabinet

Large living room with dining table

Interior in old style with piano

Private bathroom for each resident

3.4.2 Field Study Alby Äng Elderly Home

Entrance view of the elderly home

The back yard

The Operation:

The facility opened gradually and was in full operation by January 2003. In total there are 61 beds divided up as follows:

- One locked unit with nine beds for late stage dementia residents.
- One unit with eight beds for elderly mentally challenged.
- Four units for generally healthy elderly residents.
- One unit, a daytime service for elderly with dementia still able to live at home.

Back yard with fountain

Balcony and seating outdoors

Organizational Development:

The efforts of quality development are carried out by a group of representatives from various parts of the organization. The work is based on achieving operational goals through information distribution.

Hall for various activities

Corridor in one of the residential units

Staff entertaining with live music

A corner for thoughts and social activities

Staff:

Employees consist of one director, one organizational developer and three operational supervisors. There are 48 daytime practical nurses and 11 night time practical nurses. Daytime staff also consists of two registered nurses, one physiotherapist, one occupational therapist and 7 other employees.

Activities for Residents:

- Musical Entertainment
- Religious Services
- Arts and Crafts
- Sitting Aerobics
- Bingo
- Study Circles
- Outings

Storage shelving must be functional

Wall mounted toilets are preferable

Architecture and Design:

The total area of the building is 5000 sq. meters, each apartment area has 30, 4 sq. meters and the unit area (1x10 apt.) is 583 sq. meters. The building contains 61 apartments (six of which are doubles) divided into six units. All spaces are presented as gross area and technical spaces such as ventilation rooms. The daytime unit space is also included in the total area. This elderly care facility was planned by SWECO-FFNS architects and constructed by PEAB. The building opened in October 2002. Choices for interior design were made in collaboration between architects and a group of representatives from the municipality.

Entrance:

The entrance has a spacious open atmosphere with large windows facing directly on to the garden. The office of the facility director is located here as is a small store, elevators and the entrance to the daytime activity unit.

Units:

The entrance doors to each unit are all made of glass and the corridors are decorated in varying colors. The entrance doors to each apartment are made of wood and have nametags and photos of family members. Each apartment has a French balcony and low window ledges.

Spaces for staff:

There are change rooms with lockers and a relaxation room for staff. A large room functions as a conference room, a room for educational purposes, with entertaining and exercise classes combined. The physiotherapy room is located on the second floor as is the registered nurse's office.

Positive Staff Experiences:

- The building is experienced as spacious, light and airy
- The building has only two levels
- The surroundings are calm and beautiful
- The mix of old and new furniture
- Photos of family members by residents' apartment door
- The relaxation room for the elderly in the daytime unit
- The floor material is soft and comfortable
- There have been no break-ins or graffiti
- The residents have their own mailboxes
- The garden/backyard
- The ongoing organizational developments
- There is an involved, positive and creative atmosphere among staff

Negative Staff Experiences:

- No central kitchen for food preparation
- Lamps in the conference room are too low, some activities difficult to carry out
- Poor outdoor lighting
- The key cards do not work well.
- The alarm system is tied to the phone system and has been difficult to operate
- The registered nurses find their office small, particularly when preparing medications
- The rooms with two beds have not functioned well

3.4.3 Field Study Säby Elderly Home

The Operation:

This elderly care home was opened in November 2003. There is currently one unit with eight beds which is planned to open in 2005. In total, there are 36 beds divided into three locked units each with 8-9 beds for elderly with dementia. One unit with ten beds is used for the elderly with a physical disorder.

Inviting entrance in tow levels

Large kitchen with dining table

Stimulating and appropriate art

Living room with TV

Level two above the entrance

Large space on second floor for activities

Organizational Development:

One of the primary goals for this organization is to create an environment as homelike as possible. The ethical standpoint concerns individual care, respect and integrity. The vision is to become the best elderly care home in Sweden. According to the director, a recent survey revealed that residents and family members were very satisfied with the facility.

Staffing:

The employees consist of one director, one group leader, 34 practical nurses, two registered nurses, one physiotherapist and one occupational therapist.

Space for physiotherapy

Appropriately wall mounted toilet

Spacious private room

Washbowl med storage shelves

Entry with equipped kitchenette

Apartment door with orientation objects

Day care adjacent to the elderly facility

Nature contact from kitchen and dining areas

Activities for Residents:

- Café run by the residents
- Arts and Crafts
- Bingo and Bridge
- Song and Music
- Pub nights, Friday Fun and Parties
- Promenades and Outings
- Religious Services
- Slide Shows and Films
- Family member meetings

Back yard with benches and fountain

Barbeque in the yard just like at home

Mobile planter adjusted for the elderly

Suitable lockers for staff in the changing room

Architecture and Design:

The total number of beds is 36, all of which are in single rooms. The area is divided into two floor levels. Each residential apartment is 28 sq. meters built at an angle with a French balcony or an outdoor patio. The Architectural firm is Södra Bergens Arkitekter. The elderly care home director was a member of the project group planning for the new facility.

Entrance:

The entrance also functions as a hall for larger gatherings. It contains the office of the director and has large painted glass windows facing the garden. Accentuating colors used in this area are orange and red.

Units:

Solid doors open into each unit. Corridors are short and painted in different colors and featured with bay windows to minimize the corridor feeling. All door frames are painted in contrasting colors. The name of the resident and photos of family members are placed by each apartment door. There are no mirrors used as it is believed to agonize the elderly. The window ledges are low, allowing a view from a bed position. The bathrooms have built in foldable seats in the shower stall and the tile color contrasts against the toilet seat making it more obvious. A fully equipped kitchenette is also included in each apartment.

Spaces for Staff:

There are change rooms with lockers and a generous staff room with comfortable couches and a fully equipped kitchen. A conference room is adjacent to the staff room and is separated by a folding wall. A corner in the corridor functions as the physiotherapy room.

Positive Staff Experiences:

- Art with tangible motifs
- Large inviting entrance
- Hearing aid system throughout the common areas
- Courtyard with barbeque
- Therapeutic planting boxes with aromatic and tactile qualities to stimulate senses
- Painted door frames in contrasting colors to facilitate orientation
- An adjacent day care with a view of the playground and mutual activities periodically
- The building is well insulated
- The staff turn over is low
- There is a mini spa for residents with a Jacuzzi tub and massage bench
- There are so called care dolls for the elderly with dementia to find comfort in

Negative Staff Experiences:

- The locked door system is not working. Family members must ask staff each time they wish to pass through a door
- The main entrance is very open which has resulted in unwelcome visits by youth
- There are more residents with dementia than originally planned for, resulting in inappropriate placement of dementia residents
- The garden is less green than planned to facilitate access for wheel chairs and walkers
- The light in the entrance is not adequate

3.4.4 Field Study Tallhöjden Elderly Home

The Operation:

The home was opened in 1990. There are 48 beds in total divided into three units of 16 beds. Each unit is divided into two parts. The entire facility services elderly with dementia.

The building integrated with the surroundings

Layout drawing of two units

A room with homelike interior

Staff:

There is one director, four practical nurses per unit, three registered nurses servicing the entire facility, one physiotherapist, one occupational therapist and one occupational therapy assistant.

Activities for Residents:

- Arts and Crafts
- Cooking and Baking
- Live Music and Dance
- Sitting Aerobics
- Celebration of Traditions
- Family Member Meetings

Centrally located living room

A fire place in the living room for social times

Architecture and Design:

The total number of beds is 48, of which all are in single rooms. All apartments are built at floor level and spaces for staff and other amenities are located on the basement level. Each apartment measures 30 square meters. The architectural firm is BLP Arkitekter. A project group consisting of representatives from the province, architects and staff cooperated in the planning stages.

Entrance:

There is no main entrance to this elderly home. Instead there are three entrances, one to each unit. These entrances are inconspicuous.

Units:

There are no corridors at all in these units which are built around a U-shaped kitchen, a dining room and a smaller living room. The apartments all have sliding doors into the bathroom and a bay window with low window ledges for a bed position view. There are no kitchenettes in these rooms.

Spaces for Staff:

There are change rooms with lockers and staff rooms with equipped kitchen on the basement level. A small nurse's station is adjacent to each unit. A conference room is also available for both staff and residents.

Positive Architect Experiences:

- Pets in the units
- No corridors, all apartments are placed around a square with dining and living room
- Good layout for staff sense of visual control
- All residential apartments on floor level
- The building is designed to blend in with the surroundings

Negative Architect Experiences:

- There are no overnight rooms for family members
- Small and few spaces for staff
- Many rooms fill other functions than originally planned for
- Dark entrances to all living quarters
- A lack of storage space in the apartments
- The laundry rooms are too small
- The ventilation is not satisfactory

3.4.5 Field Study Slottsovalen Elderly Home

The Operation:

This elderly care facility opened in 1995. There are 41 beds partitioned between four units. Half of the beds are designated for elderly with dementia and these units are locked. The other two units are for the elderly with various medical care needs. The organization is run by ATTENDO CARE, a private business and the building is owned by the local municipality.

Suitable enclosed backyard for short walks

A room for activities inviting to a promenade

Flowerbeds in the backyard for visual pleasure

Orientation object and a place to rest

Organizational Development:

An external evaluation takes place annually. Residents, family members and employees have a chance to rate the services. The foundations of health care values in the organization is to help the elderly do as much as possible of daily life chores even if it takes a considerable amount of time. It is considered important to encourage independence among residents. Information to family members is also a high priority.

Staff:

There is present one director and two registered nurses for the entire care home, three practical nurses per unit, one physiotherapist and one occupational therapist.

A place to contemplate and rest

Pictures illustrating the surroundings

Corridor

A private room in a dementia unit

Activities for the Residents:

- Seasonal festivities
- Bingo
- Promenades
- Social Gatherings
- Live Music
- Dance
- Sitting Aerobics
- Religious Services
- Pets brought by Staff

Architecture and Design:

The facility is built in one ground level. It is an addition to the Farsta castle originally constructed in 1620. The old castle is a residential facility for healthy independent elderly. The original thought was to offer these residents a service house as their health deteriorated. Each apartment has an area of 27 square meters. All rooms have a bay window and a large bathroom.

Entrance:

The main entrance is built as a glassed in walkway between the old castle and the newer facility. All administration and health care offices are located in the castle. There is a second smaller entrance to the facility.

The Units:

Doors to the units are made of solid wood. There are corridors, L-shaped kitchens, a dining room with several small tables and a living room with access to the courtyard. The apartments are equipped with a kitchenette including a fridge. The windows have low ledges to allow for

a bed position view. There is a sliding door to the spacious bathroom. No ceiling lifts are installed.

Spaces for Staff:

Changing rooms with lockers and a small room with a fully functioning kitchen are available to staff. There is also a conference room. However, it is too small to hold all staff members at one time.

Additional Spaces:

Overnight apartments for family members can be arranged. The art work decorating the walls consists largely of photos from the local area. The oval shaped courtyard is divided into separate “rooms” by green hedges creating privacy for each unit. Planting boxes, garden furniture and benches are readily available. The rooms for physiotherapy and occupational therapy activities are connected and generously planned.

Sliding doors to the bathroom work well

Kitchenette with fridge

Spa tub not in use due to placement

Appropriate door ineffective with nametag

Positive Staff Experiences:

- The facility is located in beautiful surroundings
- There are no stairs or elevators

- It is easy for all residents to access the garden

Negative Staff Experiences:

- Limited spaces for staff
- No room large enough to hold the entire staff at once
- Poor public transportation on evenings and weekends

Planting box adapted for the elderly

The physiotherapy room

3.5 Further Staff Education

A number of external speakers were invited to the Future Workshop. The purpose was to further stimulate and educate the group concerning elderly care alternatives. Some examples of the topics covered were: “Nutrition and the Elderly”, “Using Color Design in Elderly Care Environments” and “Ageing in a Salutogenic Perspective”. The goal was to communicate the following information regarding a health perspective:

- To think from a health perspective rather than from a pathogenic perspective
- To identify wellness factors, potentials and abilities rather than risk factors, limitations and problems.
- To start thinking of personal values and opinions on health care
- To aim for an increased sense of coherence

- To have a broad approach towards the individual and the organisation
- To focus on improvements rather than change

3.6 Vision Phase

This is the time to forget all limitations and make allowances for possibilities, in this case the optimal living and working environment. It is time to describe visions and fantasies for the work place. Just like in the Critique phase, the methods of brain storming and group discussions are used to describe and set concrete the visions. This phase is often the highlight of the workshop. The reference group is encouraged to let go of all mental limitations at this stage. The purpose is to distance from traditional thinking towards regarding what is right and wrong in order to seek out new possibilities. All is achievable in thought, only our fantasy sets the restraint. Negative thoughts focusing on difficulties and obstacles must be exchanged for thought of options and opportunities. The participants are encouraged to imagine situations with endless resources.

In this phase it is wise to try and imagine the space and the room. To understand what is optimal in the environment and what meets the needs of the organization. At the same time it is also important to note environmental factors affecting emotions and experiences in a positive way.

After the field studies and the seminars it was time to move to the next stage of the Future Workshop, the vision phase. Creativity had been evoked by this time to help participants conceptualize their ideas of a future work place. It was time to dream of the most ideal and finest possibilities regarding a healthy living and working environment in elderly care. The first day of this phase consisted of a slide show with 240 pictures from all of the elderly facilities visited. The slide show illustrated many possibilities and stimulating design solutions. Comments, reflections, questions and discussions were shared during this time.

The reference group was randomly divided into five smaller groups on the second day. By using paper, pens and discussions dreams, fantasies and visions were created of a new and ideal elderly care facility. The participants described briefly how they wished to form their workplace. This was presented verbally and by drawings, illustrating the new workplace. Environments for social and mental well being among residents to promote their happiness and satisfaction were also shared.

The five groups gathered after approximately one hour for a new vote, this time to select the top-ten list of visions. Each group presented their respective list. The fifty issues were reduced to twenty-four as several issues overlapped. Each person then had ten minutes to decide on how to divide their votes. The voting process was identical to the one in the Critical phase. Here follows the results of the vote:

Top-ten list Vision Phase

A inviting entrance	115 p
The apartments	73 p
An Activity Centre	72 p
The Garden/Backyard	53 p
Space, daylight, windows, lighting	41 p
Spacious Bathrooms	40 p
View	31 p
Colors and Patterns	28 p
A central kitchen for the entire facility	25 p
One level building	25 p
A memory room	17 p
Wellness room/Spa for staff	14 p
Adjacent day care facility	14 p
Well connected spaces	9 p
Good ventilation	7 p
Wellness/Spa for residents	6 p
Café	6 p
Homelike environment	6 p
Quiet ergonomic kitchens	6 p
Boat with private dock	4 p
Conference room	1 p
Mobile cooking plate	1 p
Free parking for visitors	1 p
Alarm and information technique	0 p

Voting in the Vision Phase

The Project manager compiles the results

3.7 Implementation Phase

The purpose of the implementation phase is to unite the critique and the visions creating tangible suggestions and action plans. The objective is to realize the visions and to have an agreement in the entire group. Each group presents their plans in front of the large group. The various suggestions are challenged, questioned and commented on by anyone who wishes to do so. This is a way of testing the strength of each plan.

A number of themes emerged from the top-ten list in the Vision phase. Themes that later were complemented and concretized. After a consensus regarding the most important subject, the group divided according to personal interests. The work continued with in depth discussions and later presentation of proposals and plans. The presentations received views, criticism and questions from the other group members. There was much involvement and energy placed on trying to be convincing in terms of the importance of each plan. The areas chosen for in-depth development had the following themes:

1. *A Lively Entrance – Garden and Backyard*
2. *Units – Apartments – Bathrooms*
3. *Activity Centre*

Here follows a summary of the presentations for each theme with concrete suggestion for the new elderly care facility:

1. *A Lively Entrance – Garden and Backyard*

A Lively Entrance:

- A store and a café
- Fountain and aquarium
- Living plants and flower
- Music equipment and the possibility for stage performances
- A reading corner
- Small lamps with soft lighting
- Mild colors
- The apartment doors must have names, not numbers
- Intercom systems and cameras for each unit
- Art must be chosen by consulting residents, staff and family members
- Several seating arrangements
- Fire place
- Floor heating
- Soft floors

Garden and Backyard:

- A gazebo
- A rose garden
- A lawn with a sun catcher
- Berry bushes and fruit trees
- Mild garden lighting
- Mobile planting boxes

- Mobile lattice walls

2. Units – Apartments -Bathrooms

Units:

- Small units with maximum eight beds
- Preferably no corridors, wide and short corridors if necessary
- Overnight rooms for family members
- Staff rooms adjacent to units
- Large storage spaces and large laundry rooms
- Nurse's station, a kitchen and a living room for each unit
- Large windows
- Light and spacious atmosphere
- The use of color contrasts
- Easily available exits to the garden/backyard

Apartments:

- Spacious apartments
- Floor heating
- Ceiling lights with dimmer, sensory lighting for night time
- Bay windows with low window ledges
- Storage cupboards accessible from bathroom and apartment
- Value box with key for residents or family members
- Ceiling lift
- Fridge in kitchenette
- Mobile stove
- Wide door openings, sliding doors
- Adjustable kitchenette wash basin
- All rooms with beautiful views
- Colored door handles
- Ample closet space
- Good ventilation
- Telephone hook-up in all rooms

Bathrooms:

- Available in all apartments
- Must have sensory lighting
- Soft night time lighting
- Spacious
- One extra large bathroom per unit for shower beds
- Wall mounted toilets
- Usage of contrasting colors
- Sliding door
- Floor heating

- Adjustable wash basin
- Good ventilation

2. Activity Centre

The group presented their concrete plan for the activity centre by drawings and verbal comments. The concept was based on a centrally located unit in the elderly care facility. The space must be large enough to hold all kinds of physical social, cultural, intellectual and spiritual activities for staff, residents and family members. The space must also according to the group, be built with flexible modules to accommodate the type of activity, event and number of participants. There was a requirement for generous daylight and a natural view with large windows and an open atmosphere.

Activity Center with surrounding units designed by staff

Example of detailed residential room and unit designed by staff

3.8 Follow-up Phase

After the workshops were finished and the group participants parted, the Future Workshop moved on to the next segment, the follow-up phase. The work continued with documentation by the researchers. This documentation will be made available to all participants. All information and follow-up is important in continuing the process of change. This research documentation should be considered an important part of the follow-up.

The most significant work will take place during the future process, a full scale study of various residential design spaces. Some examples are the evaluation of design components aiming to improve orientation as well as the mealtime environment which may be crucial for health and well-being.

3.9 Evaluation of the Applied Workshop

Eighteen individuals from the reference group of twenty seven filled in the evaluation form at the end of the Future Workshop which is a response frequency of sixty percent.

1. How have you experienced participating in the Workshop?

Very good	11	61%
Somewhat good	7	39%
Somewhat poor	0	0%
Very poor	0	0%

2. How meaningful has it been for you to participate in the Workshop?

Very meaningful	15	83%
Somewhat meaningful	3	17%
Not very meaningful	0	0%
Not at all meaningful	0	0%

3. Would you be interested in participating in this type of project in the future?

Yes	16	90%
No	1	5%
Don't know	1	5%

4. Has anything been useful to you in the Workshop?

Yes	18	100%
No	0	0%
Don't know	0	0%

5. If yes, what has been useful to you?

- Seventy-two percent answered that the Workshop has brought new perspectives, new knowledge and a more holistic view on the living and working environment.
- The cooperation and exchange between professional groups was stated as useful by fifty percent of the respondents.

6. Was anything not to your satisfaction at the Workshop?

Yes	8	44%
No	10	56%

7. If yes, what was not satisfactory?

- The voting process took too long.
- The activities were too tightly scheduled and did not accommodate night staff.
- Some of the seminars were not experienced as relevant.

8. What do you think of the contents of the Workshop?

Very good	12	67%
Somewhat good	6	33%
Somewhat poor	0	0%
Very poor	0	0%

9. What did you think of the Workshop leaders?

Very good	13	72%
Somewhat good	5	28%
Somewhat poor	0	0%
Very poor	0	0%

10. What do you think of the Workshop method?

Very good	14	78%
Somewhat good	4	22%
Somewhat poor	0	0%
Very poor	0	0%

11. What was the best thing about the Workshop?

- Most respondents stated that participation and the possibility to influence were best.
- The work method came on second place.
- In third place there was a tie between “the time to think and discuss freely” and the field studies.

12. Additional comments.

- In total, sixty-one individuals had filled in their comments and suggestions.
- The comments were very varied. Most common, among twenty-two percent stated that the workshop process had been better if concrete decisions already were made regarding the new elderly care facility. Decisions such as choice of location, size of the building and the number and types of residents living at the facility.

PART 4 RESULTS OF QUESTIONNAIRE

4.1 Implementation of Questionnaire

The content and application of the three part questionnaire will now be described. The first part of the questionnaire contained the Sense of Coherence Scale originated and developed by Aaron Antonovsky, published in his book “Unravelling the Mystery of Health” from 1991. A Health Index Scale developed by Langius & Björövell was applied in the second part of the questionnaire and the final part of the survey contained a number of questions regarding design components in the physical environment.

Antonovsky (1991) constructed a questionnaire using a self rated scale to measure sense of coherence. The original version contained 29 questions and measured the three elements; comprehension, manageability and meaning as a whole (ibid.). A shortened version of the questionnaire was also constructed by Antonowsky containing 13 questions taken from the larger survey when space and time may be limited (Feldt, 2000).

Data supporting the Senses of Coherence Scale was presented in a meta-analysis Antonovsky (1993). Results from 30 published studies were presented using both the long and the short versions. The studies in the analysis were carried out in seven countries and the number of respondents totaled 5771 individuals. The final result illustrated that the questionnaire was of good quality as the questions generally were experienced as interesting, challenging and stimulating. Reliability was high, internal consistency measured with Cronbach’s alpha was for the full version of the questionnaire 0,82-0,95 and for the shortened version 0,74-0,91 (reliability is considered high if alpha is higher then 0,5). Few test-retests have been executed, however they do suggest a correlation of 0,52-0,86 after one year and 0,41-0,55 after two years.

Health may be measured using a variety of assumptions and definitions of health. If health is defined as the absence of illness, then health should be measured using objective measures of occurrences of sickness symptoms for example. If health is defined as a physical function alone then adequate measuring of cardio vascular condition or muscle strength should be measured. In this study health is defined in a broader manner. The definition of health used in this study is based on the World Health Organization (1946) definition “Health is a state of complete physical, mental and social well-being and not only the absence of illness” Subsequently; health in this study is measured through general health and well-being involving all three aspects of health considering these as being equally important. Many researchers claim that measurements of subjectively experienced health equally or even better predict objective health status compared with objective measuring methods (Hunt, et al, 1986; Bolin & Lindgren, 1997). The subjective measures of health may be divided into four categories, physical/mental health, social well-being and quality of life. The three first categories are included in this study.

The Health Index Scale used in this study measures general experienced health and includes nine questions regarding the following health factors; energy, mood, tiredness, loneliness, sleep, dizziness, digestion, pain and mobility. Two additional questions measured current health status and general health status. The last question in this section of the questionnaire was semi-structured and concerned the occurrence of any currently experienced health

symptoms. Each question was responded to on a four graded “Liker scale” where higher points reflect a higher rating of health for each aspect (appendix).

The third and final section of the questionnaire was constructed and designed by the authors. This section focused on the experienced physical working environment of health care staff as well as the physical and psychosocial living environment of the elderly. The emphasis was on the health promotional aspects of design components earlier identified in the reference group. In total, part three contains 21 questions, two of which are semi-structured with options for motivating the experiences of the environment. One open question completes part three and offers a chance to freely express, comment, and suggests anything related to the subject matter.

A pilot questionnaire was carried out with a reference group. The purpose was to test the relevance and distinctiveness of the questions. The persons participating in the pilot questionnaire represented various health profession categories. A number of changes were made in language due to the proportion of the staff with a different first language. The aim was to simplify the questions, making them clearer and easier to understand thereby improving reliability. A cover letter explaining the purpose and content of the survey was attached to the questionnaire. Information regarding ethical matters such as the right to anonymity and the right to refrain from participating were also included.

Approximately 190 individuals had some type of employment at Vårberg Nursing Home during the hand out of the questionnaire. The number of distributed questionnaires to health care professionals was 130. The questionnaires were distributed via the nursing home management to head nurses who handed these out to staff at each unit. The survey was conducted after the last workshop. Respondents were given the option to fill in the questionnaire during working hours and to hand it in anonymously. The questionnaires were collected after ten days. A follow-up meeting with all head nurses was organized after two weeks. The purpose was to provide information regarding the importance of participation in the questionnaire study thereby increasing motivation and response rate.

All filled in and returned questionnaires were coded with an identification number and date. The statistical data was processed and analyzed using two statistical computer programs, SPSS and Excel. The semi-structured and open questions were processed manually. All coded data was kept confidential as statistical information such as personal data of gender, age and profession indirectly might have reveal identity thereby compromising the right to anonymity.

4.2 Reply Frequency and Demographic Data

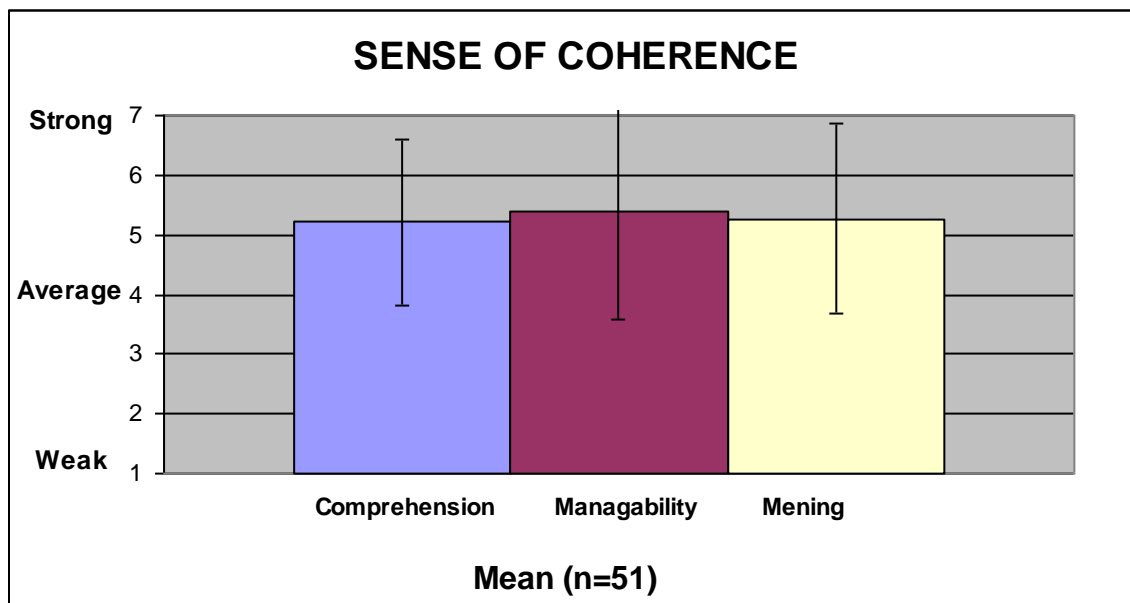
The number of completed questionnaires were 58 which is a response frequency of 44,6 percent. A total of 92,9 percent were filled in by women and 7,01 percent by men. The internal response frequency on individual questions was generally over 84,4 percent with the exception of two semi-structured questions in the third part of the questionnaire and one open question in the end of the questionnaire. The response frequency for the two semi-structured questions were 18,5 percent and for the open ended question 40,7 percent.

The age categories represented in the survey (n=58) showed that 7,4 percent of the respondents were between the ages of eighteen and thirty years old. There were 31,5 percent between thirty one and forty years old, 27,8 percent between the ages of forty one and fifty

and finally that 33,3 percent were over fifty years of age. The distribution of professional categories (n=56) showed the following; 23,1 percent worked as nurse's aids, 40,4 percent as practical nurses, 15,4 percent as registered nurses and 21,1 percent holding another health care position such as physiotherapists and occupational therapists. The result regarding the number of years worked at the nursing home (n=58) revealed that 9,3 percent had worked less than one year at the nursing home, 38,9 percent had worked between one and five years, 22,2 percent had worked between six and ten years and the last 29,6 percent had worked more than ten years.

4.3 Sense of Coherence

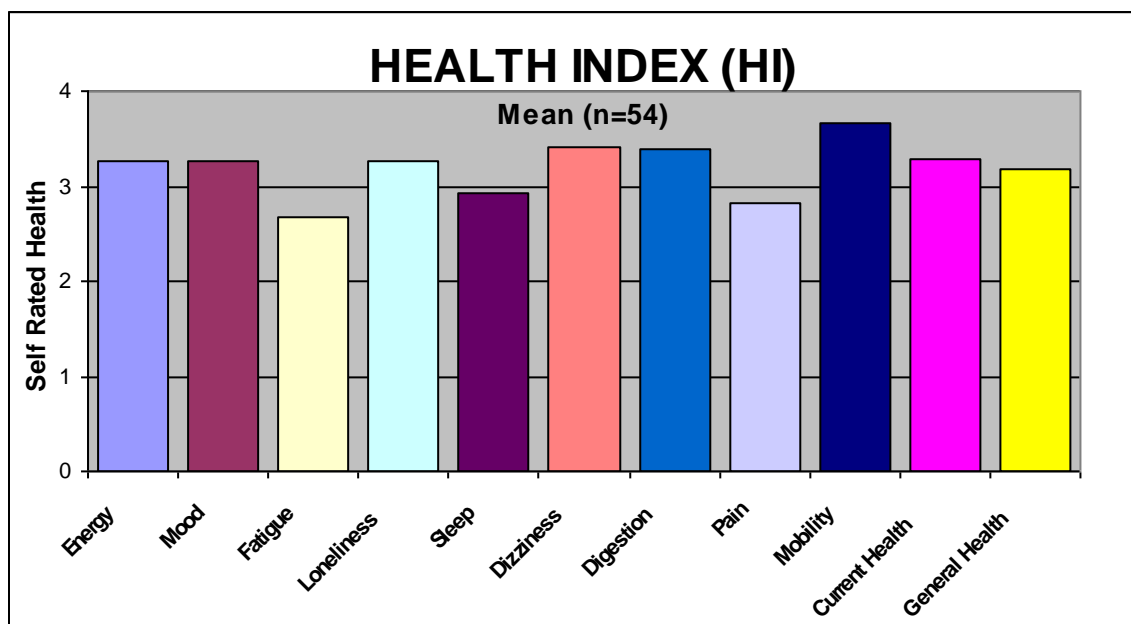
The short version of the Sense of Coherence Scale was used in the first part of the questionnaire with the purpose of measuring self rated general resistance maintaining health using Antonovskys' salutogenic model. A high score on the test indicates a strong sense of coherence. The result reflected that the employees on average rated their sense of coherence as somewhat higher than average (m=5, 29). The distribution of the three concepts included in the theory were; comprehensibility (m=5, 21), manageability (m=5, 39) and meaning (m=5, 27). Internal consistency was tested using Cronbach's alpha and indicated good reliability (alpha=, 82).



Sense of Coherence divided into comprehensibility, manageability and meaning illustrated with mean and standard deviation.

4.4 Health Index

The second part of the questionnaire measured employee self rated health using Health Index. High scores reflect experienced good health. By adding all eleven health factors, a general indication of the health status was determined ($m=3,19$) on a four graded scale (1-4). The results reflected experienced health symptoms with the lowest score for fatigue ($m=2,67$, $SD=0,64$) and with the highest score for mobility ($m=3,65$, $SD=0,64$). A number of correlations were identified. Current health status and general health status correlated significantly and positively ($p<0,01$). High scores on current health status also indicated high rated general health status. The general health status also correlated significantly to sleep and pain ($p<0,01$). Low scores for sleep and pain indicated low rated general health status. Individuals who experienced poor sleep and experienced more pain symptoms also rated their general health lower. The last question concerned current health problems or disorders. A total of 38,6 percent of respondents stated that they did experience current health problems. The most common type of symptoms was pain in the back and shoulders followed by difficulties concerning sleeping/fatigue. The third most frequent symptom reported was high blood pressure.



Self rated Health Index consisting of eleven health factors, illustrated in mean.

4.5 The Physical Working Environment

The result of measuring ten design components in the work environment showed an even distribution. All design components were rated on average between *somewhat poor* and *somewhat good* on a four graded scale (1-4). The mean score for the lowest rated design component was ($m=2,21$, $SD=,71$) concerning air quality and for the highest ($m=2,75$, $SD=0,64$ respectively $m=2,75$, $SD=0,57$) regarding heating comfort and floor materials.

Specific Design Components	n=	m=	SD=
Available daylight	57	2,71	0,97
Lighting	58	2,66	0,89
Ait Quality	57	2,21	0,71
Heating Comfort	57	2,75	0,64
Noise Levels	58	2,74	0,79
Functional Bathrooms	53	2,54	0,85
Spaces for Staff	57	2,39	1
Interior Decorating	56	2,36	0,78
Floor Materials	58	2,75	0,57
Choices of Color	58	2,51	0,63

Specific design components in the physical work environment, illustrated in numbers, mean and standard deviation.

The results of six non-specific design components in the physical work environment were also evenly distributed. All components rated between *somewhat poor* and *somewhat good* on a four graded scale (1-4). The lowest rated component (m=2,37, SD=0,62) was the inviting entrance and the highest (m=2,84, SD=0,63) was the walking distances for staff.

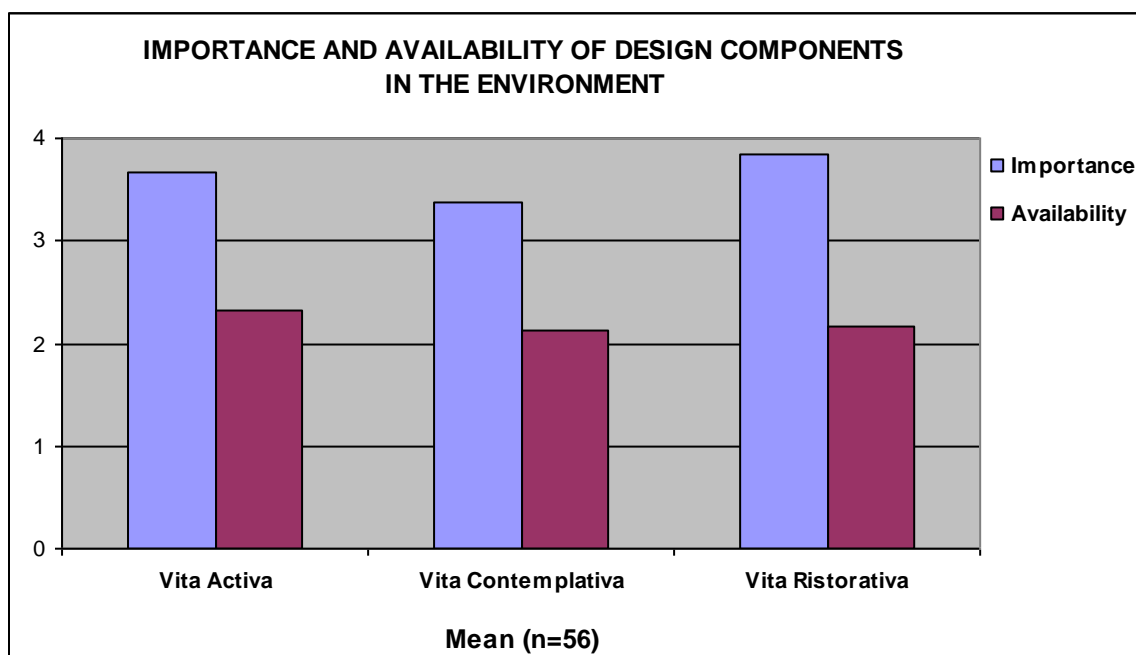
Non-specific Design Components	n=	m=	SD=
Inviting Entrance	57	2,37	0,62
Unit space	57	2,82	0,69
Ability to overlook	56	2,69	0,60
Walking distances	57	2,84	0,63
Placement of rooms for function	56	2,58	0,66
Overall Satisfaction	57	2,41	0,73

Settings based design components in the physical work environment. Illustrated in numbers, mean and standard deviation.

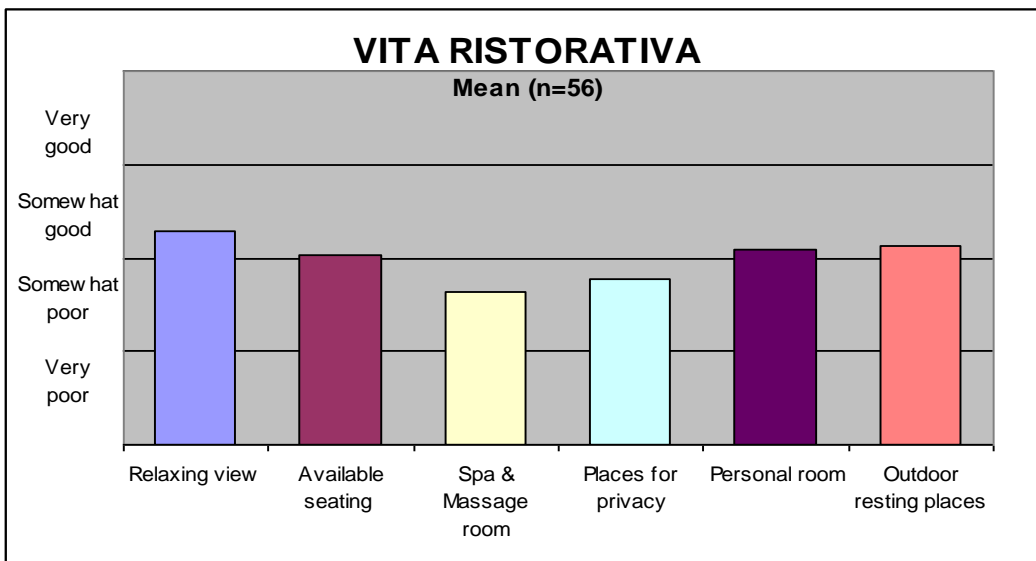
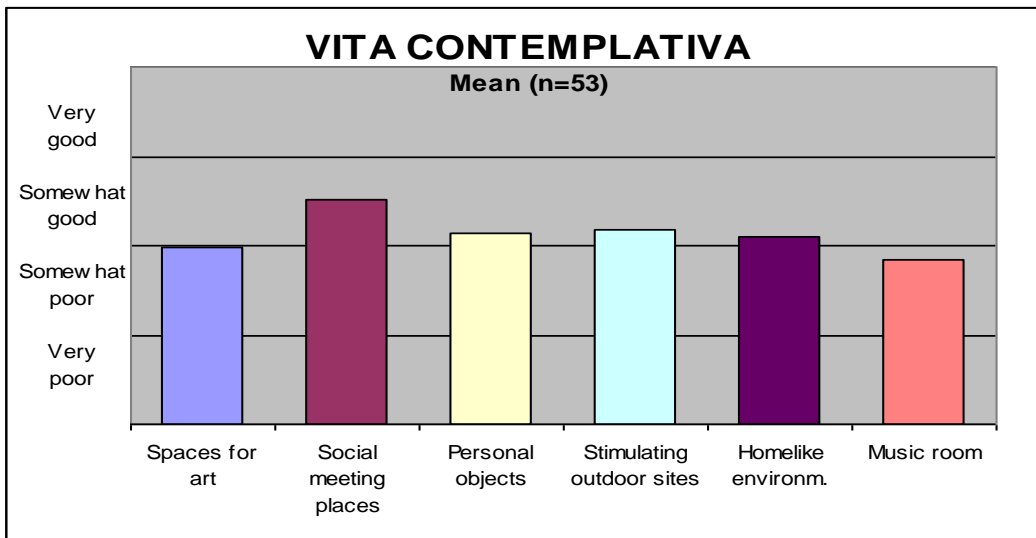
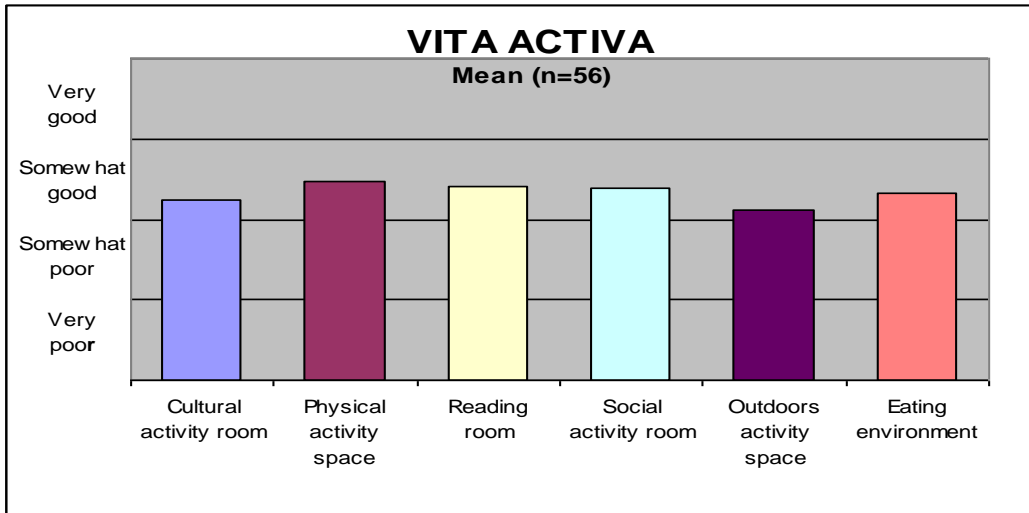
4.6. Physical and Psychosocial Residential Environment

The results of three questions regarding the importance of the three concepts, *Vita Activa*, *Vita Contemplativa* and *Vita Ristorativa* indicated that employees valued all of the concepts as *somewhat important* or *very important* on a four graded scale (1-4). The average scores were for *Vita Activa*, ($m=3,67$, $SD=0,47$) for *Vita Contemplativa*, ($m=3,38$, $SD=0,77$) and for *Vita Ristorativa*, ($m=3,84$, $SD=0,37$).

When all six components constituting each concept were added, the results pointed to a discrepancy between the rated importance of each concept and the available conditions for the same concepts (*Vita Activa*, *Vita Contemplativa* och *Vita Ristorativa*). The discrepancy was particularly evident and most significant for *Vita Ristorativa*. Its qualities were rated very important and the availability of these qualities was at the same time rated the lowest of the three concepts.



Importance and availability of Vita Activa, Vita Contemplativa and Vita Ristorativa in the physical environment from an employee perspective, illustrated in mean.



Employee ratings on Vita Activa, Vita Contemplativa and Vita Ristorativa in the physical environment, illustrated in mean.

4.6.1 Overall Satisfaction in the Physical Environment

Overall satisfaction among employees in the physical work environment (n=56) was rated on average as *somewhat good* (m=2,84, SD= 0,63). Only 1,8 percent of respondents stated that their overall satisfaction was *very poor*, 23,2 percent indicated their satisfaction as *somewhat poor*, 64,3 percent as *somewhat good* and 10,7 percent reported their overall satisfaction as *very good* in the physical environment.

The questions regarding elderly overall satisfaction with the physical environment from an employees perspective (n=56) yielded the following results. 16,4 percent responded by stating that their overall satisfaction would be very poor as an elderly resident. 49,1 percent answered *somewhat poor*, 34,5 percent *somewhat good* and no respondents, in other words 0 percent rated their overall satisfaction as *very good* being an elderly resident in the living environment (m=2,16, SD=0,71). The number of respondents who motivated their answers were 24 individuals, a response frequency of 42,1 percent. The reasons stated for overall satisfaction in the physical living environment were compiled and categorized illustrated in table 3 below:

Satisfaction in the Physical Living Environment	n=	%
Requesting private rooms not shared wards	6	25
Corridors are experienced as a negative design component	5	21
A homelike environment is preferred rather than the experienced hospital like environment	5	21
Personal integrity is limited in existing setting and must be promoted	4	16,5
The physical environment is generally experienced as being too dark	4	16,5

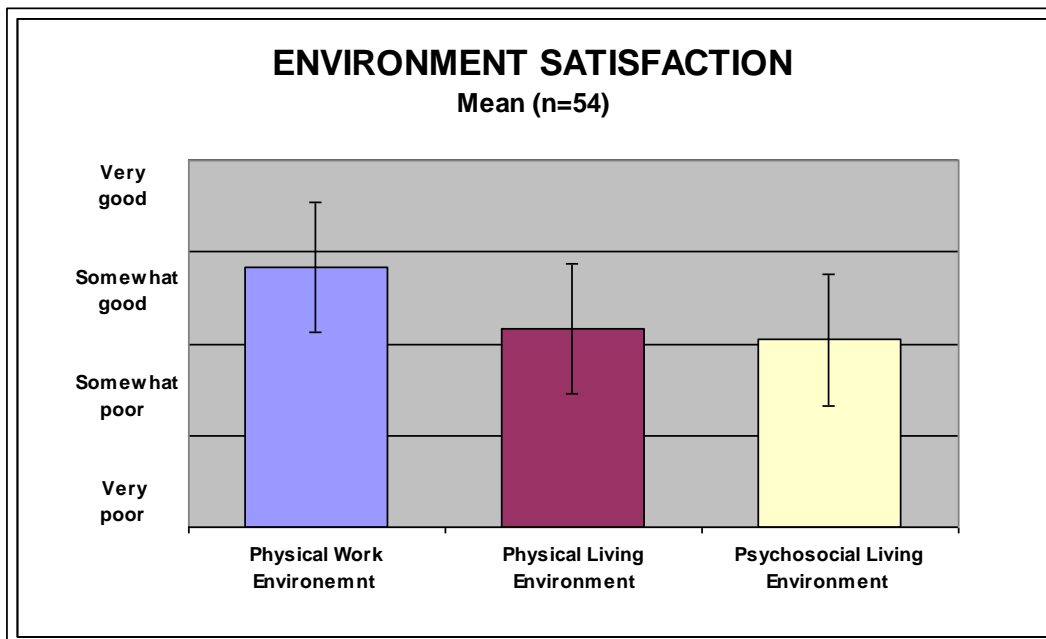
Motivating the degree of satisfaction with the physical living environment if you were a resident at the elderly care facility (n=24). Response frequency illustrated in numbers and percent.

Elderly overall psychosocial satisfaction in the nursing home from employee perspectives (n=54) resulted in 24,1 percent reporting that their satisfaction would be *very poor*, 53,7 percent answered *somewhat poor*, 16,7 percent *somewhat good* and 5,5 percent reported that their overall satisfaction would be *very good* (m=2,04, SD=0,8). The motivations to these answers regarding residents overall satisfaction concerning the psychosocial environment were also compiled. In total, 23 persons filled in their motivations which is a response frequency of 40,4 percent. The motivations are illustrated in Table 4 below.

Satisfaction with the Psychosocial Living Environment	n=	%
More activities and stimulation is suggested	8	35
Smaller units are needed to create a more personal atmosphere	6	26
Compromised integrity leads to feelings of fear and insecurity	5	22
Categories of elderly are mixed in too much within each unit causing anxiety	4	17

Motivations to the degree of satisfaction with the psychosocial living environment if you were a resident at the elderly care facility (n=23). Response frequency illustrated in numbers and percent.

Possible correlations between overall employee satisfaction in the physical environment, overall elderly satisfaction in the physical living environment as well as residents overall satisfaction in the psychosocial living environment were analyzed. The three variables were tested for possible significant correlations. The results pointed to a positive significant correlation between the overall satisfaction in the physical environment of the elderly and the overall satisfaction in the psychosocial environment of the elderly ($p < 0, 01$). Low overall satisfaction in the physical living environment of the elderly indicates low overall satisfaction with the psychosocial living environment of the elderly in the nursing home.



Ratings of satisfaction with the physical work environment, the physical living environment and the psychosocial living environment from an employee perspective are illustrated below including mean and standard deviation.

4.7 Staff Comments and Suggestions

The last open question in the questionnaire provided space for respondents to freely express their thoughts and opinions. Ten persons did complete this last question which is a response frequency of 17,5 percent. Here follow some examples of the comments and suggestions expressed in the last question of the questionnaire:

"Color and light is important, I wish for small units, professionally trained staff and good management."

"Don't cut back on staff or residents needs, they deserve a better life. We will all become old one day, even the politicians. No one deserves their breakfast served at ten or eleven in the morning or to wear an unclean diaper for several hours. We are all human beings; the employees have run out of energy."

"My hope is that health care will improve in the future and that there will be a sufficient amount of staff to sort out all that's not right."

"I think I would fade away if I ended up in a traditional elderly care facility. I want to live in a homelike facility when I get old and not be surrounded by staff in white outfits acting like strangers. It must feel like a home, we don't have that here."

"We all have to work for health care including more then physical care. To work for the psychological care is as important if not more important."

"I general I'm satisfied at my workplace. It is however desirable to have more private rooms. The situation is difficult with shared rooms when the elderly become very sick and are dying."

4.8 Summary

- Employee self rated Sense of Coherence was on the whole somewhat above mean.
- The overall rating for Health Index was somewhat higher than average. Current health problems were reported by approximately 38 percent of employees. The most common health complaints were; aching of shoulders and backs, sleep related difficulties/tiredness and high blood pressure.
- A significant positive correlation was identified between Sense of Coherence and four variables in the Health Index Scale. The lower the rating of Sense of Coherence, the higher frequency of experienced health problems concerning the following health variables; loneliness, dizziness, mobility and current health rating.
- All design components in the physical environment were evenly distributed and were in general rated just over or under the mean.
- The components *Vita Activa*, *Vita Contemplativa* och *Vita Ristorativa* were rated as *somewhat important* and *very important*. The availability of the components in the physical environment were rated lower than the importance of the same components. The discrepancy was most obvious for *Vita Ristorativa*.
- The level of satisfaction for staff in the physical work environment was rated to *somewhat good*. The physical work environment scored higher than the physical and psychosocial living environment seen from an employee perspective.

PART 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Evidence Based Design in Elderly Care

Research based design in elderly care involves a contextual change of the physical environment which constitutes the framework of the operation. The physical environment contains design components which may create obstacles or provide opportunities within the organization. The setting also reflects the organizational values and its image. It is wisely recommended that organizations wishing to strengthen their image do this through well designed physical environments.

A marriage between the traditional health care system and a health promotion approach is the main requirement for a functional healthy living and working environment. This requires new values in future elderly care and may be achieved by using well integrated efforts and by changing organizational views on the interaction between the physical environment, the individual and the operation.

Traditional medical treatment methods still dominate elderly care today. This is a fundamental problem of a pathogenic perspective overshadowing the salutogenic approach of focusing on the health perspective supporting health promotion in elderly care. The non-pharmaceutical treatment methods are valuable optimizing tools, abilities and resources for both staff and residents. One consequence of the traditional medically oriented elderly care is the quality of the staff's competence built on professionals trained in the traditional medical school. Elderly care would actually benefit from including non-pharmacological approaches and care alternatives. This opens up possibilities for health promotion methods complementing the traditional medical views.

A systemic change on an organizational level is required. The cultural values guiding the organization must be addressed on high management levels. Achieving a sustainable change requires continuous support from management. The development of health promotion by design throughout the organization is essential. These values may only be established through the development of new competency relative to non-pharmacological approaches. The culture and values of management are often reflected in the design and physical environment throughout the organization.

The primary function of the physical environment is to support and maintain health, well-being and quality of life through a design which promotes healthy activities. A physically and psychosocially supportive designed milieu promotes non-pharmacological care and treatment. Supportive surroundings are experienced as satisfying and increase the feeling of well-being among both staff and residents. The physical environment also compensates for age specific loss of function.

A salutogenic health perspective in elderly care is necessary to meet the expectations of the residents. This outlook may be regarded as a shift of paradigm wherein non-pharmacological approaches are encouraged through supportive design for health promoting activities. Health among the elderly in a salutogenic perspective is viewed as possessing physical, mental, social and spiritual dimensions. The elderly are seen as living individuals with the right to individually tailor their own health care and treatment. The services in elderly care must meet individual needs and expectations for activity, stimulation and care. The organization and related activities should be shaped by the value concepts of; "Vita Activa", "Vita

Contemplativa” and “Vita Ristorativa”. These design components are also suggested for evaluations and work methods founded on the humane and dignified treatment of the elderly.

Research based design in elderly care includes the dimension of creating appropriate preconditions leading to a stronger sense of coherence among employees. This is achieved through an increased experience of comprehension, manageability and meaning. Distinct goals and values in the organization strengthen comprehension and manageability among employees. The physical environment creates the preconditions for easier management of work tasks making them more manageable. Working in elderly care must be experienced as meaningful. This may be accomplished through the creation of higher status in the health care profession. Offering competence development to employees and introducing health promotion work methods will also increase the experience of having a meaningful occupation.

There are correlations between the sense of coherence scale and self rated health among the health care staff. A higher sense of coherence rating is directly connected to high experience of health status. Economic consequences are in the form of savings which may be measured on a design level, an organizational and an individual level. The visions of an elderly care culture complementing traditional medical health care systems with non-medical alternatives will lead to economic savings on annual budget in the following ways:

- The initial one time cost for health promotion by design is regained within a 3-5 year period. This is due to lowered operational costs in a new facility or structure.
- Improved health status among employees leads to increased productivity and efficiency as well as a lower staff turnover.
- Improved health among the residents leads to maintained functional ability, self independence, experienced quality of life and an increased sense of dignity. Better health levels among the elderly result in a compressed and shortened health treatment, avoiding the additional care costs.
- Increased employee health elevates general well-being and satisfaction at the workplace which in turn lowers sickness absence.

A structure in elderly care based upon the above criteria constitutes a reasonable and long term proposal to elderly needs and societal requirements. This is a process of organizational development focusing on the importance of the physical environment concerning human health and well-being. The process of change must be analyzed and evaluated continuously in order to achieve the elderly care level proposed by the Swedish government. The political goal for elderly in Sweden includes the right to:

- Live an active life
- Have influence in society and over one’s own daily life
- Age safely with maintained independence
- Be treated with respect
- Receive good health care services

5.2 Design Criteria and Requirements in Elderly Care

Comprehensive knowledge of how the elderly experience their surroundings is a requirement in planning the design of a new elderly care facility. These care homes make up the dwellings during their last stages of life. It is therefore necessary to have an understanding and awareness of the natural functional losses specific to ageing. Residents in elderly care facilities have the right to feel safe and should be supported and encouraged to live as independently as possible in their environment.

The holistic perspective concerning the interactions between the elderly, the physical environment and the work conditions of health care staff constitutes the foundation for health promotion in elderly care environments. Recommendations for physical design components in elderly care are presented below. The criterion concerns future elderly care in general and the transformation of Vårberg Nursing Home specifically.

STRUCTURE:

- The physical structure of the facility should be built on the same scale as the surrounding environment. The aim is to eliminate the outward experience of an institution and to bring out qualities of a normal residential structure. Poor coordination between architects, electrical and plumbing entrepreneurs are relatively common leading to deficiencies throughout the building. Unfortunately there are many examples of constructing elderly care facilities with less than satisfactory results.
- The elderly care facility is first and foremost a home for the residents. The functional qualities within the structure of health care and treatment are subordinate. It is therefore important to avoid the impression of an institution or a hospital in the outer structure as well as in the interior layout/decor of the building.
- A day care, kinder garden or children's playground adjacent to the elderly care home provides contact and a pleasant view of playing children stimulating for the elderly. Activities may be planned and organized together with children creating stimulating cross generational interactions.

ENTRANCE:

- The main entrance must deliver an atmosphere of openness, brightness and clarity. It should be inviting and informative. The experience of calmness and guidance with clear directions creates a sense of safety and reduces stress reactions.
- Ordinary door handles in combination with coded door locks, intercom systems and various other technical equipments by the entrance doors are confusing to the elderly. It becomes difficult to interpret and sort information on how to enter or exit the facility. This is particularly complicated for the elderly with functional losses and dementia.
- A living entrance must convey a first impression of being welcomed and feeling secure. It must also bring a feeling of well-being and calmness. This may be accomplished through coloration, the use of plants, a water feature, an aquarium, background music and a personal greeting.

ENCLOSED GARDEN:

- The garden has many important functions in the elderly care home. It is a place for social contact, meditation, a nature experience and provides an opportunity for outdoor activities. A barbeque may stir associations to family and evokes memories of old friends. Access to nature has in American research proven to reduce symptoms of depression and lowered the need for anti-depressive medication in elderly care facilities. Having a room with a green view increases with more than one garden near the facility.
- The enclosed garden should include a water feature. The effect of water is stimulating to the eye and to the ear. Individuals are drawn to the sound of water according to research for its calming effects.
- Elderly care home gardens should be enclosed with a fence or a hedge in order to prevent the elderly from wandering off and getting lost. This generates anxiety and is distressing to the other residents and employees.
- A variation in seating arrangements is recommended to offer options of social interactions or time for privacy. Mobility and flexibility is recommended since needs and circumstances are in constant change.
- Spacious planting boxes of various heights with wheels for mobility will maximize accessibility and usability.
- Balconies are considered a compromise as many health promotion components of the garden are lost. The balcony space is quite restrictive and limits the possibilities for flexible usage.

ORIENTATION:

- Canadian research has shown that clear name signs with large fonts contribute to the elderly person finding their way home to their own private room. An illuminated name sign with a symbol will provide further assistance. The symbol should be an object which strongly reminds the elderly person of a central theme from their earlier life, perhaps associated to an earlier profession, a hobby, the home or a close family member.
- There is still much unexplored territory regarding the function of objects for orientation purposes. Further research is required to fully understand this important design component.
- It is known however, that too many objects surrounding the apartment doors add to confusion and uncertainty rather than facilitating orientation.

APARTMENTS:

- Wide doors into the apartment assist in maneuvering wheel chairs, walkers and beds both in and out of the apartments. The wide doors may be camouflaged by using a double door system (90 cm and 30 cm respectively) that gives the impression of one normal size apartment door. An additional positive function of the double doors is for observations by night staff opening the smaller door thereby increasing the sense of safety without disturbing the residents.

- Windows with low ledges are recommended as it makes a view from the bed position possible.
- There are conflicting theories on the use of mirrors in the apartments of the elderly with dementia. Some researchers claim that it is unsettling frightening not to be able to recognize oneself. Others state that the mirror is helpful as it starts a mental process activating the brain.
- Spacious closets are a recommendation by staff. In today's health care, a lot of disposable hygiene and bed products are used. These need to be located in close proximity to both the bed and the bathroom.
- Having a kitchenette creates a stronger sense of living in a private home. Personal tableware may also add a sense of recognition and integrity when it is used when family members visit. However, it is questionable as to what extent the kitchenette is actually used by the resident.

BATHROOMS:

- It is important that the toilet seat contrasts against the wall behind it to assist the elderly in understanding the object and its purpose. The toilet should be wall mounted to make cleaning easy. Supportive wall mounted arm rests with folding down legs are not recommended. These legs are according to staff dangerous as the elderly easily stumble on the fold down legs. Supportive arm rests without legs are therefore preferable.
- A free space of 80 cm measured from the wash basin middle to both sides is a requirement. This is to make room for staff assisting the resident with hygienic chores. Storage shelves should be centrally placed above the wash basin.
- Adjustable wash basins and bathroom mirrors are preferable in all bathrooms.
- Specialized bathtubs or jetted jacuzzis placed outside the units have limited use due to their location. These specialized bathing facilities must be situated closer to the units.
- Provision of at least one extra large bathroom per unit, suitable for shower stools, shower beds and mobile shower chairs is a staff requirement.
- Sliding bathroom doors are functional and save space, making it easier for wheel chairs and shower stools to enter and exit. However, this requires a fire protection system using sprinklers.
- Wall mounted shower stools are not recommended as many elderly residents also have physical restrictions making these seats unsafe.

LIVING ROOMS:

- The placement and usage of the TV is an interesting issue. Most elderly care facilities have a TV located in the living room. The TV is often turned on throughout the day regardless of anyone watching. One alternative is to have the TV placed in a cupboard to be used only as requested. The TV watching in this perspective is regarded as an activity and not a way of passing time.
- A proportionate fireplace adds a social dimension to the living room. It is an element contributing to general well-being and may function as a gathering place.
- Too many elements of decoration, pattern and color may leave an uneasy impression and should be avoided.
- Musical instruments may be an added feature as there often is someone in the staff who can play an instrument.

KITCHENS:

- The size of the kitchen is an important aspect since each unit generally services eight to sixteen residents. Food is cooked or warmed up, served and then afterwards cleaned up for a substantial number of individuals. Kitchens in elderly care facilities are often experienced as too small with limited work areas.
- Kitchens with an open layout enable staff to oversee most common areas of the unit and are recommended. Avoiding a closed-in kitchen makes the staff's duties easier to manage and contributes to a pleasing open atmosphere.
- Research has indicated that the design of the food tray upon which the meal is served has an impact on appetite and social behavior. Regular plain trays were compared to colorful patterned trays that actually increased appetite and the social interactions among the elderly at mealtime situations.
- Smaller design objects such as the choice of tableware may have implications affecting the resident's experience of the mealtime situation thereby contributing to health through food intake and experienced social well-being.

CONFERENCE ROOMS:

- A room with the capacity to hold the entire staff, residents and family members is important so that everyone may gather for special occasions or meetings. The location of this space should ideally be built into the elderly care home or situated as close by as possible. The closer that it is located to the facility, the more it will be utilized.

CORRIDORS:

- Corridors should be avoided or minimized as they obstruct and complicate the staff's duties, increasing walking distances and limiting observations.
- Corridors create a repetitive behavior among the elderly wandering back and forth. This often leads to agitation, confusion and anxiety which will negatively affect the overall psychosocial health within the unit.
- If corridors are unavoidable the effects may be reduced by installing bay windows. These spaces can be used as seating areas where residents and visitors may spend time together.
- Handrails are recommended and should be installed at a suitable height for the elderly who may need extra support as they move through these spaces. This creates a feeling of safety that is much needed for a more physically active life.

STORAGE SPACES:

- Private closets with lockable personal valuables safes are recommended. This contributes to the experience of integrity and control over the most private sphere. The key or code may be kept safe by a close family member and a contact person among the staff.
- The amount of residential storage space needed at the elderly care home depends on specific needs assessments and requires further discussions.

PHYSIOTHERAPY AND OCCUPATIONAL THERAPY ROOMS:

- These spaces must be carefully planned to properly serve their purpose. There are many examples of inadequate physiotherapy and occupational spaces in elderly care homes. When these rooms are placed out of context they tend to have a more limited usage. The sizes and equipment in these rooms should reflect the needs of the elderly and be relative to the amount of residents using these rooms for activities at one time.

STAFF ROOMS:

- A staff room designed and sized for the daily crew is recommended. This room should ideally be equipped with a proper kitchen, table and chairs as well as comfortable couches or arm chairs.
- Change rooms with appropriate lockers and a connected bathroom are a must.
- A relaxation room only for staff that may experience physical, social or mental strain should be available for recovery and retrieval.
- Closed off adequate offices equipped with chairs, desks and computers for documentation purposes and administrative duties are required.

USE OF COLORS:

- In order to guide and support the elderly residents, various steps may be taken to accommodate the physical environment by the utilization of contrasting colors, color themes and colors combinations. Each unit may have a certain color theme to inform residents of where they are.
- By using contrasting colors on floors, the elderly will be visually informed that they are actually leaving one room with a certain function and going to another room with a different function. However, using really dark areas of inlaid colors in the floors may not be a good idea, particularly in dementia units. These dark areas may be visually interpreted as holes in the floor, thereby evoking feelings of fear and insecurity
- Various colors can be used as inlay in the flooring material, replacing and imitate rugs which are often a source of falling accidents.

ART:

- It is recommended that the art motifs are of the realistic form with easily understandable motifs. Symbols evoking memories, associations, mental stimulation and recognition are preferable.
- It is important that the choice of art is based on knowledge and research of how the elderly with various functional losses understand and experience art. Unfortunately there often are artists or interested laypersons that choose the artwork from their own personal taste and aesthetic preferences with good intentions.
- The art must be fitted in size to the space it will decorate, at the same time that it is necessary to take the degenerated seeing ability among the elderly into consideration. Illuminated art may be one way of making them more obvious.

ADDITIONAL COMPONENTS:

- Pets constitute a health promotion factor and there is available a considerable amount of research in this field. There are many types of pets suited to the elderly care home; birds, cats, smaller dogs, aquarium and so on. The pets may live in the care facility or be brought there by staff or pet therapists. They fill a social function as a companion; they stimulate memories and thoughts and stir up communication. The contact with pets may awaken memories of past times. Touching pets releases the hormone oxytocin which brings an experience of well-being. The hormone has an anti-stress function as it lowers blood pressure and cortisol levels.

PART 6 FURTHER RESEARCH IN ELDERLY CARE

6.1 Proposal for Future Case Studies

Research regarding the planning and design of elderly care facilities are unusual in Swedish universities today. Sweden has not invested in research and development based on evaluation and follow-up research in spite of large investments made yearly for the construction and renovation of health care buildings.

A logical consequence in this context is to view this report as a contribution to the involvement of staff in the planning of their future work environment. This is motivated by relevant experiences of functional and appropriate spaces among health care professionals. This involvement also contributes to the development of new knowledge and services within elderly care.

Important questions are raised concerning the continued research and development process in this study. The examination of employee sense of coherence, the self-rated health and the assessment of design components in the physical work environment must be evaluated on a continual basis. The intention is to capture if and how changes in the work place environment may affect employee health and well-being.

The combination of workshops and questionnaire applied in this report is a way of making often concealed resources of health care employee knowledge visible. This use of competence must be developed and applied in future work. It should be considered a production of knowledge and a “nursing of knowledge” making continued international studies possible.

One of the fundamental questions is how to care for the elderly needs for safety, orientation and personal integrity through the design of the physical environment. This may at the same time be combined with employee needs of healthy physical work environments.

The elderly may be divided into separate categories such as, the elderly with dementia, the elderly with Parkinson’s disorder and the elderly with natural functional loss due to the aging process. All these groups have varying needs regarding the physical environment. The needs and requirements must be analyzed on different levels throughout the building structure and the design levels. It is the task of architectures and designs to unite and interpret translate and shape these criteria in the physical environment in order to satisfy contradictory requirements from staff and residents.

Evaluations must be developed in accordance with residents’ needs and requirements with the sole purpose of contributing to professional competence in elderly care. This must be done as an ongoing process and be utilized to eliminate poor design solution. Continuous follow-up work will also guide the organizational decision making process. New operational strategies, services and environments must be developed in elderly care in response to the residents needs for change in future elderly care.

Further research and development issues are presented in the following research projects:

Research Project 1: Staff Education - Health Promotion by Design in Elderly Care

The research report is to be used as the basis for an educational program. It will be presented to all elderly care organizations in Sweden. The purpose is to create an understanding and to strengthen the view of health promotion by environmental design in elderly care. An increased understanding is gained through the presentation of the report and through staff training resulting in the effective use of spaces.

Research Project 2: Creating Safety – Facilitating Orientation for the Elderly

Orientation ability among the elderly will be assessed in a series of action research studies through the use of observation methods. The purpose is to assess various design components, to facilitate orientation thereby supporting independence. This contributes to a reduction of symptoms such as depression, anxiety and agitation. The experience of increased control and independence in the physical environment may be obtained through orientation objects to help the resident finding the way home. Another example is a hand rail not yet on the market, which stimulates and encourages physical mobility thereby promoting health and quality of life. This may lower health care costs for hip replacements due to falling accidents. As stated earlier in this report, public health research shows that approximately 50 percent of falling accidents are due to inadequate design.

Research Project 3: Designing Mealtime Environment to Promote Appetite and Health

Nutrition is an important part of elderly health and quality of life. Mealtime situations are considered a social health factor in terms of shared practices and togetherness. Considerable research studies have established that the environment affects appetite and thereby nutritional status and body weight among the elderly. There is data showing that the elderly who eat alone have a more rapid weight loss compared to the elderly who eat together with others. The purpose of this research project is to compare two mealtime settings by observing one traditional setting and comparing it to observations of an optimal mealtime design setting. Design components are selected for health promotion such as music, aroma, flowers, adequate furniture, etc. to achieve a calm and relaxed environment. The hypothesis is that the two mealtime environments will lead to different results in appetite, satisfaction, maintained weight and indirectly better health. The methods include observations by video for analysis, regular weight check and assessments of food habits. The study aims to increase the understanding of the importance of diet among the elderly. It is also a method to achieve improved mealtime situation in elderly care future facilities.

Research Project 4: Prototype Residential Room for Elderly

There are today several designed products which would be of value for utilization in elderly care. This requires a residential room with an adjacent bathroom in a full scale model. The study aims for the examination, evaluation and further developments on a national and international marketplace. Trade and industry would be involved through this project to contribute with newly developed products. Universities may also contribute with new design products following the criteria of increasing independence, mobility and orientation for the elderly. In connection with the design year 2005 in Sweden, design schools will be invited throughout the country. Design students will be encouraged to participate with their design solutions and the results will be presented to staff and the general public at the end of the year

in Vårberg Nursing Home. Various universities and colleges will be invited to participate in the competition “Design and Care in Elderly Nursing Homes”.

Research Project 5: Developing Health Care Professions within Elderly Care

Swedish health care employees are trained through the traditional pathogenic school which still dominates elderly care in the country. These professionals lack adequate training and knowledge of non-pharmacological health promotion approaches. Building up the competence of registered nurses, practical nurses and nurse’s aids is necessary in order to underlining health promotion in elderly care. The professional group will focus on health and wellness factors rather than sickness and risk factors, shifting the perspective from prevention of injury to increased safety. It should be emphasized that the abilities and resources of the elderly must be maintained and developed by stimulation, activity and encouragement. The purpose is to reduce health care costs through prevention and promotion of health comprising and shortening treatment costs.

This is a new foundation of values in elderly care creating a more attractive profession with higher status in elderly care. Good working conditions and a higher value of the profession contributes to lower staff turn over and less sickness absence. This will in turn assist in the recruitment of competent health care employees.

6.2 EU Research Project for Prototype Elderly Care

Sweden should be a leading nation in elderly care with the ambition to create requirements for an active good life in later years. The physical environment is a precondition and has a decisive role for this purpose. This research study constitutes the foundation for an EU-project. The purpose is to apply every criterion for a unique prototype elderly care facility. Such a project must be developed in conjunction with a number of EU countries such as Italy, England and Germany. This knowledge is based on prior experiences of this and comparable projects in Europe.

A prototype project through EU is motivated by the fact that investments for new constructions have great implications for subsequent expenditure such as operating costs and organizational inefficiency. These costs endure for time periods of up to thirty or fifty years. An EU project will create improved conditions for decades to come and will contribute to a more health promoting organization. This project will invite businesses to take part in the cooperation using new design products and services to develop the organization.

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Health Promotion by Design in Elderly Care

The purpose of this study is to investigate the requirements of health promotion by design in elderly care. The overall goal of the study is to create conditions through supportive design for promoting healthy living and working environments. Initially the development of elderly care in Sweden is introduced. Some perspectives on ageing as a phenomenon and on elderly care in an organisational perspective are described. The results of this report points to a much needed development of new values in elderly care. This progress requires an integrated effort based on understanding the interaction between the physical environment and the human being. Today's elderly care is dominated by traditional medical treatment methods. Through the use of non pharmacological approaches the precondition of health for the elderly will be improved. The outcome is a presentation of essential design solutions including the requirements for healthy living and working environments in elderly care. The report is summed up with a number of suggestions for further research and future development of health promotion by design in elderly care. This report is addressed to researchers, health care professionals, decision maker, project coordinator, planner and developer working within elderly care as well as politicians, architects and those who care about health promotion by design in elderly care.

Keywords; Elderly care, Health promotion,
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