

The physical environment for people with dementia

This is an excerpt from the full technical report, which is written in Norwegian.

The excerpt provides the report's main messages in English.

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Systematic Review

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Norwegian Knowledge Centre for the Health Services summarizes and disseminates evidence concerning the effect of treatments, methods, and interventions in health services, in addition to monitoring health service quality. Our goal is to support good decision making in order to provide patients in Norway with the best possible care. The Centre is organized under The Norwegian Directorate for Health, but is scientifically and professionally independent. The Centre has no authority to develop health policy or responsibility to implement policies.

We would like to thank all contributors for their expertise in this project. Norwegian Knowledge Centre for the Health Services assumes final responsibility for the content of this report.

Norwegian Knowledge Centre for the Health Services
Oslo, May 2009

Key messages

This systematic review examines effects of the built environment and elements therein on people with dementia.

Dementia diseases lead to degrees of disabilities that progressively involve caretakers up to stages of complete helplessness and are at present the most common reason for transfer of elderly to institutional care. 80% of institutionalized elderly in Norway have cognitive impairments.

We have summarized results from 106 single studies covered in 8 systematic reviews and 11 primary studies on the therapeutic design of environments for people with dementia. The results should be interpreted cautiously because of methodological limitations in the present studies. Adaptations in the physical environment can lead to positive effects on activities of daily life, behaviors, and quality of life among people with dementia.

- Small units with a noninstitutional environment and less crowding gave less behavioural challenges among people with dementia, but specific features are ill-defined.
- The overall configuration of a building can affect level of orientation. Spatial orientation and accessibility was better in small grouped units with associated common places and short corridors. Uniqueness in common rooms, calm surroundings and few decision points eased orientation.
- Surroundings can affect agitated behaviour, with high stimulus in bathrooms, in elevators and corridors, and with crowding or noise. Neutral design and colours, and low sensory stimulus are associated with fewer catastrophe reactions and less medication.
- Visual modification and adaptations can lead wanderers to move in safe areas. Signs and colour codes have small effects on people with cognitive impairments, depending on degree of dementia. There were not significant effects of fall prevention or subjective barriers amongst people with dementia. There is some evidence to support camouflaging exit door or doorknob against elopement.
- Increased environmental lighting (towards daylight levels) reduced behavioural disturbances, supported spatial orientation and had a modest effect on length of sleep.
- Single rooms with the opportunity for individual and home-like character, personal furnishing and objects resulted in less psychiatric symptoms.

Inhabitants without cognitive impairments were negatively affected by sharing rooms with people with dementia.

- Highly accessible toilets (visible, open-door and close to bed and common rooms) led to increased use among residents.
- Changes in the physical environment have not been shown to improve cognitive function. Purpose-built environment has positive effects on quality of life.

Executive summary

Background

This systematic review examines the effects of the built environment and elements therein on people with dementia when these are no longer able to take care of themselves.

Dementia is a collective term of several diseases that permanently and progressively reduce cognitive functions. In late stages dementia leads to complete helplessness and dementia is probably the most important factor leading to transfer to institutional care for the elderly. Dementia increases with age. 80% of institutionalized elderly in Norway now have cognitive impairments. The annual incidence of new cases of dementia is ca 10 000 cases in Norway. Approximately 68 000 people in Norway suffer from dementia, a figure that is expected to double the coming 30 years. We have focused on the therapeutic design of environments for people with dementia.

To enhance and adapt the communal care program for people with dementia and cognitive impairments, the Norwegian government initiated a study to develop the evidence base concerning the homes and institutional care for these patients. In the dementia plan 2015 "den gode dagen" one of the main goals is to build and modernize institutional care and home environments with features that are adapted for people with cognitive impairments. The guidelines for the Housing Bank's (Husbanken) funding of fulltime residential care in institutions and homes for the elderly require all new building projects using funds from the investment grant to be built and adapted for people with dementia and cognitive impairments.

Methods The following databases were systematically searched (last update 14.1.2009): Cochrane Database of Systematic Reviews, Cochrane CENTRAL, Database of Abstracts of Reviews of Effects, DARE, HTA, MEDLINE, EMBASE, PsycINFO, SveMed, OT Seeker and SINTEF Byggforsk to identify systematic reviews and primary articles. In addition, manual searches through reference lists in relevant reports and excluded reviews were performed. After selection from abstract and title, articles were assessed in full-text, and articles that met inclusion- and exclusion criteria were scored for quality in design and method.

Results 3388 unique titles were retrieved. After reading title and abstract, 192 articles were assessed in full-text, resulting in 8 systematic reviews and 11 research articles that met the inclusion criteria. Meta-analysis was not possible because of heterogeneity and the results are summarized in narrative with examples in figures and text.

Conclusions

The results should be interpreted cautiously because of methodological limitations in the present studies. Elements in the physical environment have positive effects on activities of daily life, behavioral aberrances, and quality of life.

- Small units with a noninstitutional environment and less crowding gave less behavioural challenges among people with dementia, but specific features are ill-defined. A homelike character was associated with less agitation and better social interaction.
- The overall configuration of a building can affect level of orientation. Spatial orientation and accessibility was better in small grouped units with associated common places and short corridors. Uniqueness in common rooms, calm surroundings and few decision points eased orientation.
- Less multipurpose rooms and more variation was associated with less depression, less social isolation and less hallucinations.
- Signs and colour codes have small effects on people with cognitive impairments, depending on degree of dementia. There were not significant effects of fall prevention or subjective barriers amongst people with dementia.
- Visual modification and adaptations can lead wanderers to move in safe areas. There is some evidence to support camouflaging exit door or doorknob against elopement.
- Surroundings can affect agitated behaviour, with high stimulus in bathrooms, in elevators and corridors, and with crowding or noise. Neutral design and colours, and low sensory stimulus are associated with fewer catastrophe reactions and less medication. Inhabitants had less inappropriate behaviors with moderate and meaningful sensory input (sound, smell, colour, temperature and tactile).
- Increased environmental lighting (2500 lux) at daytime reduced behavioural disturbances, supported spatial orientation and had a modest effect on length of sleep.
- Single rooms with the opportunity for individual and home-like character, personal furnishing and objects resulted in less psychiatric symptoms. Inhabitants without cognitive impairments were negatively affected by sharing rooms with people with dementia.
- Highly accessible toilets (visible, open-door and close to bed and common rooms) led to increased use among residents.

- Direct access to garden in immediate vicinity showed a significant effect on behavioural scales in one study (effect size 0,63).
- The physical environment has not been shown to affect the progression of dementia. Purpose-built environment has positive effects on quality of life.

For people with senile dementia the documentation points towards advantages with living in special care units compared to traditional care for the elderly and there is a similar potential in group living. The practical details of these are ill-defined. Elements of architecture and design have increased effects in concert with education of staff and specialized care program.

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