SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The purpose of this study is to report the key findings of the Design of Caring Environments Study (DICE) that investigates relationships between the physical environment and the quality of life in long-term care settings for older people and to describe the development of a new environmental assessment tool, the Sheffield Care Environment Assessment Matrix (SCEAM).

Quality of Life and Building Design in Residential and Nursing Homes for Older People

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Key Concepts/Context

The design of care buildings is important to improving the quality of life of older people who spend most of their time within the boundaries of a residential and nursing care home. These residents may depend on the environment for support for their impaired mobility, sensory losses, or the cognitive impairments associated with dementia. However, to improve the quality of life of older people the building authority in the United Kingdom (UK) has placed more focus on physical and psychological needs of older people related to care issues, rather than on building features that facilitate the environmental needs of older people. In the architecture and design profession, little effort has been made to incorporate resident feedback in the design process. In addition, the development of building design research is also limited due to lack of suitable measures. So there is a need to develop a research tool that will improve the physical design features and the quality of life of older people living in long-term care settings in the UK.

Methods

- For data collection, the study used Sheffield Care Assessment Matrix (SCEAM), developed by reviewing the Multiphasic Environmental Assessment Procedure (MEAP), the Therapeutic Environment Screening Survey (TESS-NH), the Professional Environmental Assessment Procedure (PEAP), and the scales for the Assessment of Environments for the confused elderly, together with care industry standards and professional guidelines.
- The data was collected from 38 residential and nursing homes registered in Sheffield in May 2000, of which 11 were small (bed size less than 31), 14 were medium (bed size 31-40), and 13 were large (bed size 41 and more).
- 452 randomly selected residents and 1066 nursing and care staff in the selected homes participated in this study.

DESIGN IMPLICATIONS

Incorporating design features for choice and control that provide access to various indoor and outdoor space may improve observed well-being.

Incorporating design features for high-activity levels that include sleeping and dozing, eating and drinking, and receiving personal care may help residents with continued social integration and the maintenance of existing social networks.

Incorporating design features to improve reduced mobility, sensory impairment; sensory stimulation, and ease of way-finding may help residents to have more control over their immediate environment.

Reducing building features related to safety and health such as reducing barriers in gardens and open space and, it is possible to improve residents' enjoyment of activities and to give residents control over their environment.

- At the participating homes, consent was obtained from managers and residents following the guidelines set by the local research ethics committees.
- Data was collected on 11 resident domains clustered into four groups: **universal requirements** (privacy, the ability to personalize their surroundings, choice and control, and the connection with the wider community); **physical requirements** (safety and health, support for physical frailties and comfort); **cognitive requirements** (support for cognitive frailties, awareness of outside world, and normalness and authenticity); and **staff** (provision for staff).
- The majority of the individual features assessed by direct observation using a structured checklist and those which involve room dimension that means amount of lounge space per resident were formatted into a protocol for analyzing the building plan.
- Each individual feature was scored as present (1) or absent (0) in each domain. For a final score the scores of individual features were summed and expressed as a percentage of the total number of items.
- For collecting the data on the quality of life of residents, researcher observation and information from a proxy method was used.
- Dementia care mapping technique and coding structure was used to collect data during observation.
- The observations were made every 15 minutes during two-hour periods of the morning and afternoon.
- The activity code was used to calculate the proportion of time the residents were involved with any activity, using an A-Z coding framework, e.g., N for sleeping and dozing, F for eating and drinking, and P for receiving personal care.
- Resident health and well-being was calculated by questionnaire survey completed by caregivers who knew the residents well. A mean well-being and ill-being score was also calculated for each resident at each interval on a six-point scale.
- The CAPE Behavior Rating Scale (CAPE-BRS) was used to establish level of independency that includes items on physical, cognitive, and social functioning.
- The Pleasant Events Schedule-AD (PES-AD) measured the residents' participation in enjoyable activity.
- The Affect Rating Scale (ARS) was used to capture the positive emotion (pleasure, interest, and contentment), and negative emotion (anger, anxiety, and depression).
- To assess the individual resident's ability to choose and control his or her immediate environment a 14-item scale was developed, including freedom of movement around and outside the home; use of garden accompanied by staff; controlling of heating, lighting, and ventilation in their own room; and choosing their own bedroom furniture and décor.

- Residents' other information such as date of birth, gender, length of residence; a number of dimensions of dependency: communication, (able to indicate needs and understand simple verbal directions); orientation (able to find way around, recognize and name people seen regularly); mobility (able to get around independently, using stick if needed); emotion (generally cheerful with positive outlook); and socialization (established good communication with others) was collected from managers who provided information by binary indications (good/poor).
- The CAPE Information – orientation scale (CAPE-IO) and the Philadelphia Geriatric Centre morale (PGCMS) were used to assess the residents' cognitive and physical frailties.
- Staff job satisfaction was assessed by Work and Life Attitude Survey (WLAS), covering autonomy and responsibility, relationship with co-manager and coworkers, job security, and opportunities for promotion.
- The Nursing Stress Scale (NSS) was used to measure aspects of staff stress.
- To estimate the effect of building variables and residents and staff variables, multi-level regression method was used.

Findings

- The analysis showed that different aspects of the built environment were associated with different measures of quality of life.
- Small private homes had relatively high scores for choice and control, comfort, and three cognitive domains, but their staff provision is low.
- Large residential homes had relatively high safety/health scores and low scores for personalization and for three cognitive domains; had low quality of life score compared to medium and small nursing homes.
- The quality of life score tended to be highest in medium-sized residential homes with relatively high personalization and community scores, low levels of dependency among residents, and high level of in-service training among staff.
- Provision in the building design for choice and control, which include access to various indoor and outdoor spaces and facilities, was associated with observed well-being.
- The extent to which the building was connected to the wider community, e.g., in associations between quality of life and domain scores for residents in its location and provision for visitors, was associated with the observed level of activity among residents.
- Support provided by the building for residents with physical frailties, including reduced mobility and sensory impairment, was related to the residents' ability to control their immediate environment.
- Support for cognitive frailties, such as sensory stimulation and ease of way-finding, was associated with outward signs of positive emotion.

- Building features related to safety and health showed negative associations, with lower scores for the residents' enjoyment of activities and control of the environment.
- In homes with design features that support physical and sensory frailties, residents displayed the greatest control over their immediate environment, and where there were design features to support cognitive incapacity, residents displayed more positive effects.
- The findings suggest that through incorporating design features it is possible to achieve higher activity levels in care homes that offer their residents continued social integration and the maintenance of existing social networks.
- While the level of activity associated with community provision among low-dependency residents, a more influential building dimension for the high-dependency group was support for physical frailty.
- The negative association between safety/health features and quality of life was significant only among the low-dependency residents.
- Staff morale was associated not with better staff facilities but with a more personalized, less institutional environment for the residents.
- The findings suggest that SCEAM is a useful tool for assessing care buildings from the viewpoint of building users.
- Environmental features that improve cognitive impairment were more dominant in more domestic and recognizable layouts of small residential homes than in the large nursing homes that specialize in dementia care.

Limitations

Limitations identified by author include:

- The study faced the greater difficulty in recruiting the small homes because of unwillingness to complete the initial paperwork and an inability to provide architectural plans of the building.
- In the recruited homes, fewer than one-half of the randomly selected residents were able and willing to provide self-reports of their quality of life, with cognitive frailty being the most common reason for failure to achieve an interview. Therefore, the study interviewed those residents who were cognitively and physically fittest.
- The study measured the residents' participation in enjoyable activity (the PES-AD) from proxy information reported by caregivers. The analysis showed that the PES-AD score had a highly skewed distribution, with over 20% of the residents scoring zero. The reason may be that the care workers could not record residents showing enjoyment or may not have felt as qualified to judge the effect.
- The observation method was based on Dementia Care Mapping, a technique devised to study the experience of people with dementia with a view to improving the care they receive. It was found that the well-being/ill-being

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score computed in Dementia Care Mapping had a very peaked distribution, with around 50% of the residents scoring 'neutral.' Therefore, it was not a very discriminating outcome measure.