



KEY POINT SUMMARY

OBJECTIVES

The purpose of this study was (1) to examine the hazards of walking and eating disability associated with specific dimensions of the nursing home environment for residents with dementia, and (2) to contribute to the ongoing psychometric development of the PEAP instrument.

Functional Outcomes of Nursing Home Residents in Relation to Features of the Environment: Validity of the Professional Environmental Assessment Protocol

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Key Concepts/Context

Research conducted in different settings shows that specialized environments designed for people with dementia may reduce the rate of functional loss. Different measures have been developed to assess the nursing home environments focused on the features of specialized dementia units. Among them, the Professional Environmental Assessment Protocol (PEAP) was developed to assess the quality of dementia care environments on nine dimensions. Assessment involves subjective evaluation of the physical and social environment on a 5-point scale for each dimension. Research shows that a 13-point scale is more reliable to distinguish the supportiveness of nursing home environments than the 5-point scale. More research is needed to provide evidence to support the impact of specific design features on resident outcomes and to develop an appropriate tool to assess the features of specialized dementia units.

Methods

- The study used a one-year prospective cohort study method for data collection.
- 120 residents living in 15 nursing homes in a western Canadian city participated in this study.
- 15 nursing homes participated in the study, among them 20% were publicly operated (not-for-profit), 47% were operated by voluntary agencies (not-for-profit), and 33% were privately operated (for profit).
- Criteria for sample selection included: diagnosed with Alzheimer's disease, vascular dementia, or mixed dementia; were able to walk with or without a



- walking aid; were able to put food into their mouths and swallow; and were in the middle stage of dementia as measured by the Global Deterioration.
- The process of sample recruitment included identifying residents who met the study inclusion criteria by nursing staff; contacted the authorized representatives of eligible residents to request permission for the lead investigator by staff; obtained informed consent from the authorized representative and acceptance from the resident participant.
 - The ability of nursing home residents to walk and to eat was observed every two weeks during mealtime by one researcher.
 - The walking disability or eating disability was coded on an observational flow sheet when residents were no longer able to walk or required physical assistance to eat.
 - Nursing home environments were scored using the PEAP after semi-structured interviews with the unit managers and one year of unstructured observations.
 - The dimensions of PEAP used for environmental assessment included awareness and orientation, safety and security, provision of privacy, regulation of stimulation, quality of stimulation, support of functional abilities, opportunities for personal control, facilitation of social contact, and continuity of the self with the past through personal and familiar objects.
 - The environment was assessed using the PEAP measure, based on the 13-point scale and the 5-point scale.
 - At the end of year the study conducted semi-structured interviews with managers focused on the policies and practices pertaining to the use of the environment that are not easily observable.
 - Descriptive statistics were used to describe the characteristics of the sample of residents and nursing homes.
 - To determine the significance of the 13-point scale the analytical strategy used in this study included: (1) survival analysis with the Cox proportional hazards ratios to assess time to walking disability and time to eating disability; (2) generated a variable that differentiates the 13-point scale from the 5-point PEAP scale; (3) likelihood ratio test to compare the Cox proportional hazards models using the 13-point scale with nested models using the 5-point scale.
 - Bivariate Cox proportional hazard regression analysis was used to identify specific features of nursing home environments that affect the hazard of walking disability and the hazard of eating disability in residents with dementia.

Findings

- The findings of this research showed that environmental features that support functional ability (e.g., extensive grab bars; finger food availability) reduced the hazard of walking disability and the hazard of eating disability.



- The environmental dimensions of “maximizing awareness and orientation” and better “quality of stimulation” were significantly associated with a reduced hazard of walking disability.
- The dimensions of the nursing home environment that include “improved safety,” “opportunities for personal control,” and better “regulation of stimulation” were significantly associated with a reduced hazard of eating disability.
- Environmental design features supporting orientation and awareness affected resident mobility.
- The association of the “safety and security” dimension with walking disability and eating disability is not significant in this study.
- Privacy was not associated with walking or eating ability.
- The study showed that reduced distractions due to noise levels in the environment during mealtimes helped to maintain eating ability.
- The quality of environmental stimulation was significantly associated with a reduced hazard of walking disability, but not of eating disability.
- Competence-inducing features that support independence in activities such as toileting, bathing, grooming, dressing, and eating were associated with reducing hazards of both walking and eating disability.
- Opportunities for personal control were associated more with improved eating disability outcomes than walking disability outcomes.
- Encouraging residents to feed themselves using verbal cues rather than feeding residents improved eating disability outcomes.
- In terms of walking, avoiding use of physical restraints would support control and independence, enhanced mobility, and reducing walking disability.
- The extent of personalization and homelike qualities of the setting, and policies that support continuity of familiar activities were not associated with walking or eating ability.
- The study showed that facilitation of social contact was not helpful for walking or eating outcomes. Environments and programs aimed at engaging residents in social interaction might be expected to improve walking and eating outcomes.
- The 13-point PEAP scale did not differ from the 5-point PEAP scale in its associations between the environmental dimensions and resident functional outcomes.
- The 13-point PEAP scale were not significantly different from the 5-point PEAP scale, indicating that the two scales did not differ in their ability to differentiate between more and less supportive environments for residents with dementia.

Design Implications

- Low noise levels in the dining area may reduce distractions in the environment during mealtimes and may help to maintain eating ability.



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- The small-scale floor plan, straight circulation systems with direct visual access to dining area, appropriate signage system on the corridor, and specific rooms with appropriate furnishings for specific activities may improve mobility by encouraging residents to leave their rooms and move about the setting, thus maintaining walking ability.
- Availability of toilets and bathing facilities in each room with extensive grab bars, and color contrasts in the bathroom may help to reduce the hazard of walking disability.
- Adjustable table height in dining area may improve eating ability.

Limitations

Limitations identified by author include:

- The person collecting the outcome data and PEAP data was not blind to the environment.
- The study only focused on understanding the influence of the dimensions of the PEAP instrument on residents' functional ability rather than other patient outcomes.

The reviewer-identified additional limitations in the study include:

- The study identified that the environment could be more supportive for residents with dementia depending on the policies governing the use of space and how staff members are expected to use the space. However, the perception of staff members about the nine dimensions of the PEAP instrument to improve walking and eating disability was not explored in this study.
- For understanding the association between orientation and awareness and resident mobility by using PEAP, the study did not consider the lighting conditions, floor finish, color, and landmark, which is important to orient oneself in an environment.