Contributions of Environment, Comorbidity, and Stage of Dementia to the Onset of Walking and Eating Disability in Long Term Care Residents


Key Concepts/Context

Research defines the characteristics of dementia as a progressive and irreversible loss of cognitive and physical activity of daily living (ADL). Dementia usually begins slowly and worsens over time. There are several factors, such as symptoms of other diseases, adverse effects of medications, pain, depression, or features of the social and physical environment that accelerate the loss of activity among dementia patients. Research shows that some of these factors are hard to recognize during the progression of dementia that lead to accessing disability for patients, caregivers, and for healthcare system, cost. Several conceptual models have been developed to explain the environmental factors associated with disability. However, more empirical studies are needed to understand the effect of individual and physical factors and stages of dementia on the beginning stage of disability.

Methods

- The study used a one-year prospective cohort study where walking and eating disabilities of long-term care residents were observed every two weeks during a specific meal time (breakfast, lunch, and supper) for data collection.
- The data was collected from residents of 15 nursing homes located in Calgary, Alberta and Canada.
- Among them three were publicly owned, having 33 residents, five were private for-profit, having 34 residents, and seven were voluntary nonprofit, having 53 residents.
- 120 residents with middle-stage Alzheimer’s disease were recruited for this study.
SYNOPSIS

DESIGN IMPLICATIONS

Designing smaller long-term care facilities could lead to better patient outcomes related to onset disability.

The facility should be designed with higher staffing levels to improve quality of care.

The environmental design features of nursing homes that provide privacy, a balance between activity and rest, choice, familiar furniture and decor, social opportunities, safety, and meaningful activity may be supportive for people with dementia.

- Criteria for selection of residents included diagnosis of Alzheimer’s, vascular, mixed, or unspecified dementia; were in the middle stage of dementia measured by global deterioration scale score, indicating that they were at risk for loss of activity of daily living; and were able to walk to dining room and feed themselves.
- The process of sample recruitment included identifying residents who met the study inclusion criteria by nursing staff; contacted authorized representatives of eligible residents to request permission for the lead investigator by telephone; and obtained resident consent while completing the global deterioration scale.
- The structural equation model was developed to assess the potential effect of direct and indirect factors associated at the beginning stage of walking and eating disability.
- The direct factors that influence to start disability include sex, age, initial dementia stage of residents, and different classes of psychotropic medication.
- The indirect factors that influence to start disability include the size of facility and the voluntary or private nature of the facility.
- Disability onset was measured by direct observations of resident disability in walking and eating at meal time.
- Comorbidity was measured by Charlson Comorbidity Index prepared from resident lists of comorbidities abstracted from the health record at baseline.
- The quality of dementia care environments was measured by the professional environmental assessment protocol (PEAP) based on biweekly unstructured observation of each care facility over the year and on a semi-structured interview with each nursing unit manager at year end.

Findings

- A better environment as assessed by PEAP score tended to delay disability onset.
- The initial severity of a resident’s dementia, the extent of the resident’s comorbidities, and the quality of the resident’s environment had significant effects on onset of disability.
- More advanced dementia and greater comorbidity at baseline accelerated the onset of walking and eating disability.
- Neuroleptic drugs, acetylcholinesterase inhibitors, and N-methyl-D-aspartate inhibitors tended to accelerate the onset of disability, whereas benzodiazepines delayed the onset of disability, but all of the medication effects were far from significant.
- Neither age nor education significantly influenced comorbidities or the contribution of comorbidities to disability onset.
- Environmental quality was lower for residents in the larger facilities and lower in private and voluntary facilities than in publicly owned facilities.
• Facility size and ownership affect the onset of disability through the environment provided for residents.

Limitations

Limitations identified by author include:

• Environmental design features such as privacy, a balance between activity and rest, choice, familiar furniture and decor, social opportunities, safety, and meaningful activity influenced disability outcomes identified by total score on the PEAP. But the study did not identify which specific aspects of the environment accelerate the onset of disability.
• Other potential causes of disability such as sensory impairment and pain were not included in the model.
• Staffing level as a mediating variable linking long-term care facility ownership and resident disability outcomes was not studied.
• Comparison of resident outcomes based on unit size, facility size, and organization size was not studied.

The reviewer identified additional limitations in the study including:

• The study did not measure the physical distance between the resident’s private room and dining room to define the walking disability.
• The study only mentioned about the nine dimensions of Professional Environmental Assessment Protocol (PEAP) to assess environmental features but did not clearly define these nine dimensions in this study.