

Activities of Daily Living in Residents of Nursing Home and Assisted Living Facilities: A Multilevel Analysis

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BACKGROUND AND PURPOSE

- The ability to perform ADLs is the most basic function for older adults in long-term care (LTC).¹ Many personal and institutional factors can be associated with function in performing ADLs among LTC residents.²⁻³
- It is imperative to understand the factors that influence function in performing ADLs using a multi-level perspective, so as to develop and implement effective interventions to maintain the highest level of function possible among residents.
- The purpose of the study was to: 1) explore the trajectory of function over time; 2) examine the variance in function that is attributable to individual and institutional variations; and 3) evaluate the impact of individual and institutional characteristics on function.

METHODS

- This study was a secondary analysis of longitudinal data of 788 residents from 8 Nursing Home and 16 Assisted Living facilities from 4 cluster-RCTs⁴⁻⁷ (Table 1). The final analytic sample was 1898 observations at five time points (Level 1), which were nested within 755 residents (Level 2) from 24 LTC facilities (Level 3).

- Multilevel modeling:** random intercept (RI) models
- Independent variables (covariates)**

Level 3: Facility level

- ✓ type of facility [Assisted Living (AL) vs. Nursing Home (NH)]
- ✓ intervention type [function focused care (FFC) vs. education⁴⁻⁷]

Level 2: Resident level

- ✓ demographics (age, gender, race, education, marital status)
- ✓ balance [subscale of Tinetti Gait and Balance scale]
- ✓ cognition [MMSE]
- ✓ length of stay in LTC

Level 1: time

- Dependent variable**

Level 2: Resident function [Barthel Index]

Table 1. Resident Characteristics (N = 788)

Characteristic	M	SD	Range
Age, years	84.71	8.17	58-105
Education, years	12.03	3.71	0-20
Years of LTC stay	2.62	2.24	0-14.39
Function	67.99	30.15	0-100
Cognition	17.65	7.98	0-30
Balance	4.67	5.25	0-16
	n	%	
Female	614	77.9	
Widowed	484	61.4	
White	553	70.2	
NH	521	66.1	
FFC	416	52.8	



RESULTS

Variance in function

The 3-level RI model with both individual and institutional covariates achieved the best fit to the data. More than 78% of variance in function was accounted for by the resident (28%) and facility (50.5%) level variations. The covariates captured around 20% of the variance, mostly from the facility level (Figure 1).

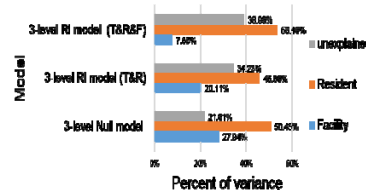


Figure 1. Percent of variance in function attributable to covariates at different levels

Factors at facility level

Function was 16.78 points lower among NH residents (95%CI = 10.36, 23.20) compared to AL residents, and such difference increased by .45 points per year (95%CI = .11, .78) between NH and AL residents (Figure 2).

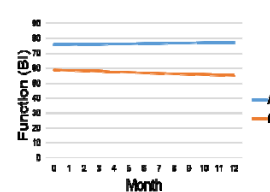


Figure 2. Trajectory of function by type of facility

Trajectory of function

Function declined by .31 points on BI every year (95%CI = -.48, -.13).

Factors at resident level

Function was 4.33 points higher among white residents than their non-white peers (95% CI= -.44, 8.21). Function was 10.16 points higher among males than their female peers (95% CI= -18.39, -2.00), but such difference decreased by .16 points (95% CI= .04, .34) as residents aged by 1 year (Figure 3). Function decreased as years of education (Coef= .14, 95% CI= -.02, .25), balance (Coef = 2.22, 95% CI= 1.98, 2.46) and cognition (Coef =.57, 95% CI =.38, .76) increased (Figure 4), and as residents stayed longer in the facility (Coef=-.88, 95% CI=-1.52, -.25).

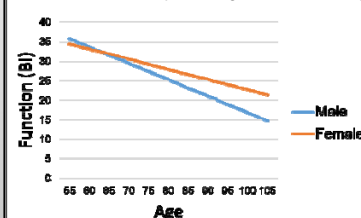


Figure 3. Trajectory of function by gender

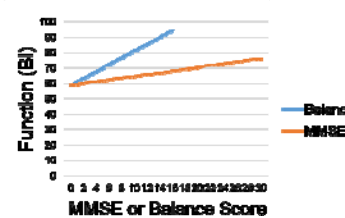


Figure 4. Change of function by MMSE and balance

CONCLUSION

Implication for clinical practice

Pay attention to LTC population with higher risk of function decline:

- Male, non-white, NH residents
- Residents with impaired balance
 - ✓ Engaging residents in self-care and physical activities
 - ✓ Using exercise training strategies (e.g., resistance, endurance, balance, chair sit and stand) and mimicked movements used in everyday ADL tasks
- Residents with cognitive impairment
 - ✓ Task-specific training techniques to enhance procedural memory and practice
 - ✓ Cognitive training

Limitations

- Sample was mostly women; mixed sample of residents with and without cognitive impairment in different studies
- Limited number of resident and institutional variables

Implication for research

- Sample with more men distributed along the range of cognition
- Additional data reflecting factors at inter-personal, institutional environment and policy levels

Acknowledgement: The poster is selected as a Rising Star of Research and Scholarship Invited Student Poster. The authors acknowledge the presentation was partially sponsored by University of Maryland, Baltimore, School of Nursing.

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