

Hierarchical Decline of Independence in IADLs According to Cognitive Dysfunction in Early Stage of Alzheimer's Disease

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Daiki Ishimaru¹⁾²⁾, Maki Suzuki²⁾³⁾, Hideki Kanemoto²⁾⁴⁾, Kunihiro Katsuki²⁾, Yuma Nagata²⁾, Natsuho Hirakawa³⁾, Yuto Satake²⁾, Rei Takahashi⁵⁾, Daiki Taomoto²⁾⁶⁾, Kazue Shigenobu³⁾⁷⁾, Manabu Ikeda²⁾⁴⁾⁸⁾

1) Department of Medical Technology, The University of Osaka Hospital, 2) Department of Psychiatry, The University of Osaka Graduate School of Medicine, 3) Department of Behavioral Neurology and Neuropsychiatry, The University of Osaka United Graduate School of Child Development, 4) Health and Counselling Centre, The University of Osaka, Osaka, Japan, 5) Department of Psychiatry, Nippon Life Hospital, Osaka Japan, 6) Dementia Disease Medical Center, Higashikouri Hospital, Osaka Japan, 7) Department of Psychiatry, Asakayama General Hospital, Osaka, Japan, 8) Department of Psychiatry, Osaka Psychiatric Medical Center

INTRODUCTION

Current Challenges:

- Some Instrumental Activities of Daily Living (IADLs) are known to deteriorate from the early stage of Alzheimer's disease (AD).
- However, the hierarchical order of independence across different IADLs remains unclear.

Study Aim:

This study aims to reveal the order of decline in IADL independence according to cognitive dysfunction inferred from cross-sectional data.

METHODS

Participants:

- 1) Early AD patients (CDR = 0.5/1) without significant language or visuospatial impairments
- 2) Healthy volunteers (EMC score $\geq 10/39$, MMSE-J score $> 27/30$, WMS-R LM II score $\geq \text{age} - 1.5 \text{ SD}$ and Lawton IADL full score)

Assessment:

- Demographics: age, sex, living situation, years of education
- Clinical variables: Cognition (MMSE-J) and ADL (ADCS-MCI-ADL-J)

Statistical Analysis

- Ten items corresponding to IADLs were selected from the 24 ADCS-MCI-ADL items based on Reuben's conceptual framework (1989).
- Logistic regression: independence of each items as the dependent variable and MMSE-J score as the independent variable.
- If the association is significant, the probability of independence predicted by MMSE-J was estimated. The order of decline across IADLs was examined at the point with probability < 0.50 .

Abbreviation of assessment scale

ADCS-MCI-ADL, Alzheimer's Disease Cooperative Study – Activities of Daily Living for Mild Cognitive Impairment; CDR, Clinical Dementia Rating; EMC, Everyday Memory Checklist; MMSE-J, Japanese version of Mini-Mental State Examination; WMS-R LM II, Wechsler Memory Scale-Revised Logical Memory II

RESULTS

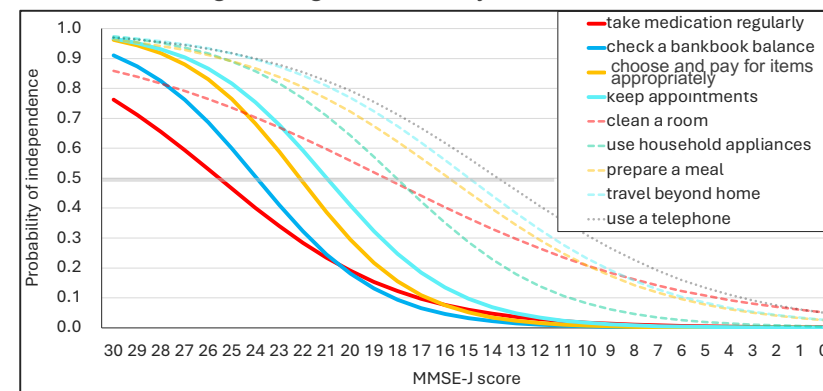
Table Demographic and clinical characteristics of participants

	Early AD (n=69)	Volunteers (n=29)	P	Effect size
Sex (female), n (%)	42 (60.9%)	16 (55.2%)	.600	–
Age (years), mean (SD)	74.1 (8.9)	69.8 (8.9)	.026	.230 ¹⁾
Living situation (alone), n (%)	9 (13.0%)	0 (0.0%)	.041	.206 ²⁾
Educational history, mean (SD)	13.3 (2.7)	13.8 (2.1)	.407	–
MMSE-J, mean (SD)	22.1 (4.2)	29.5 (0.7)	<.001	.740 ¹⁾
ADCS-MCI-ADL-J, mean (SD)	37.1 (7.4)	48.9 (3.9)	<.001	.720 ¹⁾

1) r value with Mann-Whitney U test, 2) p value with Pearson's chi-square test

The Probability of Independence Predicted by MMSE-J score:

- All items except for doing laundry were significantly associated with MMSE-J in the logistic regression analysis.



CONCLUSION

Management-related IADLs showed decreased probabilities of independence even at higher MMSE scores. Focusing on these activities may be useful for detecting subtle IADL impairments in the early stage of AD.

This study was approved by The University of Osaka Clinical Research Review Committee (23274(T4)-7). Written informed consent was obtained from participants and/or caregivers. The authors have no conflicts of interest to declare.