

Mid-life Disability, Cognitive Impairment and Multimorbidity Predict Subsequent Acute Care Hospitalization

Augustine Cassis Boateng, MPH

Background

- ✓ Aging affects healthcare utilization, cost and health outcomes especially among older adults (Sisko et al., 2019)
- ✓ The onset of difficulties of aging begins in middle age though symptoms might not be evident
- ✓ Studies show multiple reasons for hospitalization among all age groups (Covinsky, Pierluissi & Johnston, 2011; Salah et al., 2021)
- ✓ None focuses on reasons for hospitalization from midlife into old age

Significance

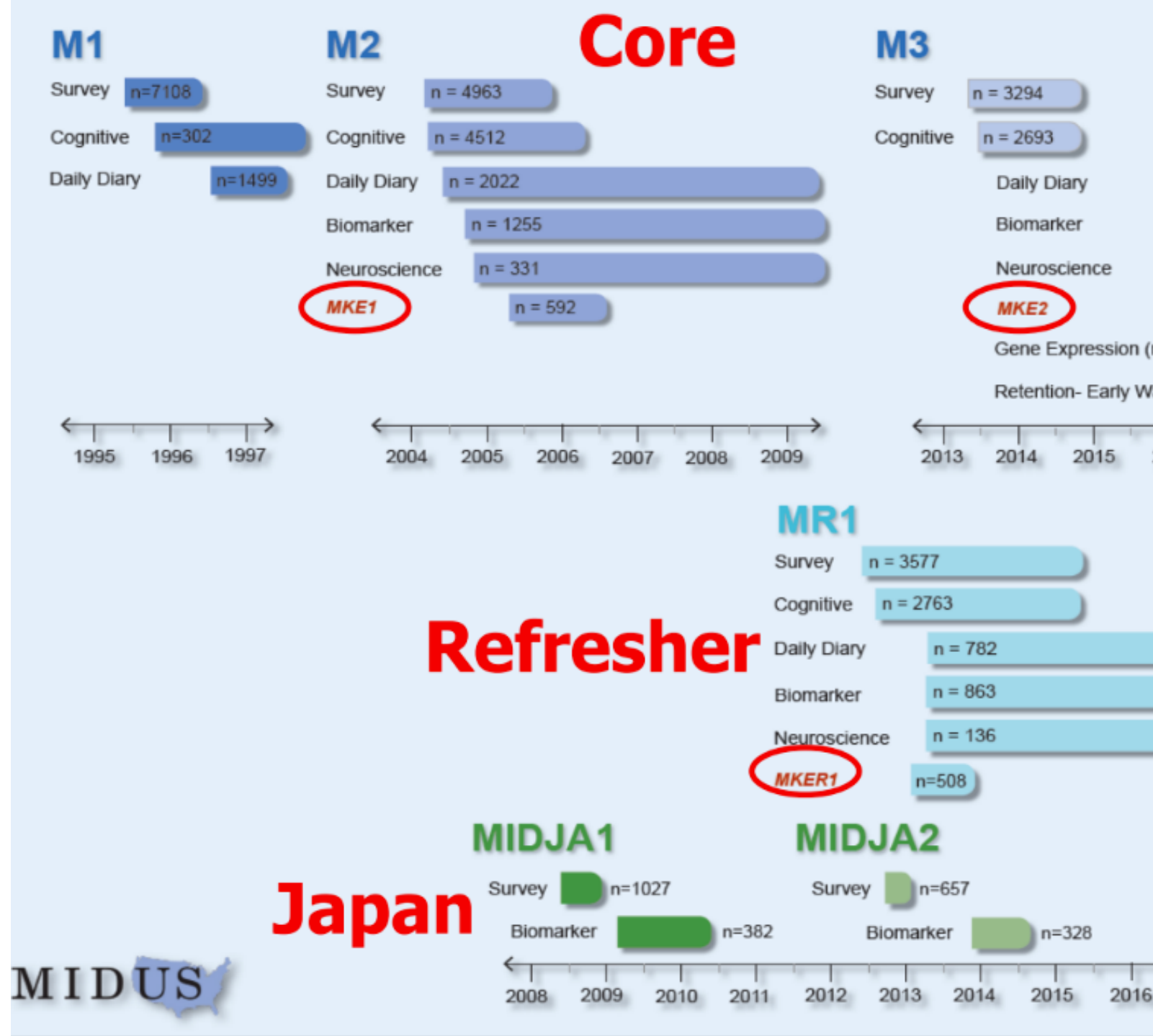
- ✓ Longer time periods than prior work with HRS
- ✓ Separate examination of mid-life and later-life effects
- ✓ Simultaneous examination of disability, cognition, socioeconomic determinants of health, and multimorbidity
- ✓ Pathways for targeted interventions during midlife

Aim

- ❖ **Predict determinants of hospitalizations in midlife and later-life (old age)**

Methods

- ❖ Longitudinal analysis of MIDUS study
- ❖ $N(5868)$, years (1995-2014)
- ❖ Inclusion: 45+, Multi morbidities, MCI, Disability, Social support, Religion
- ❖ Descriptive stats, regression (GEE)



Findings

Relationship between Hospitalization and Independent Variables (baseline: Wave 1)

Hospitalization	Middle age Column %	Old age Column %	Test Chi-square Test
Male	47.5	48.7	0.28
Married	71.5	65.9	7.11**
Nonwhite	7.9	4.0	10.63**
Social Support	68.7	57.4	27.03***
Strain	99.7	99.8	0.46
Contact	94.6	95.5	0.71
Conversation	57.7	73.3	48.32***
Multimorbidity	25.1	27.7	1.74
<i>Education</i>			20.217***
High School/GED	37.6	41.8	
College	44.3	40.4	23.04***
Graduate school	16.2	13.0	
<i>Income</i>			13.242***
Just Enough Money	56.8	62.9	28.15***
Not Enough Money	24.5	14.4	
	Mean	Mean	T-Test
IADL	1.35	2.15	-8.0993***
ADL	1.65	1.98	-9.0196***
N	2,572	577	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Regression results for Hospitalizations with Covariates

	(Model 1)	(Model 2)	(Model 3)
Age: (base: Middle age)			
Old age	2.171*** (0.150)	2.136*** (0.151)	2.037*** (0.185)
Male	1.022 (0.0760)	1.040 (0.0766)	1.242* (0.118)
<i>Education: (base: Grade school)</i>			
High School/GED	0.518*** (0.0917)	0.524*** (0.0917)	0.620* (0.132)
College	0.463*** (0.0825)	0.471*** (0.0831)	0.647* (0.139)
Graduate school	0.414*** (0.0798)	0.423*** (0.0808)	0.587* (0.136)
Married	0.981 (0.0766)	0.970 (0.0765)	1.131 (0.109)
<i>Income: (More money than you need)</i>			
Just enough money	1.122 (0.0985)	1.132 (0.0993)	1.017 (0.103)
Not enough money	1.984*** (0.210)	2.029*** (0.216)	1.647*** (0.210)

Support from family		0.842 [*] (0.0601)	0.853 (0.0742)
Strain from family		1.077 (0.571)	2.409 (1.282)
High contact with neighbors		0.775 (0.119)	0.806 (0.167)
High conversation with neighbors		1.058 (0.0773)	1.101 (0.0947)
Multimorbidity			1.830 ^{***} (0.168)
Lag IADL			1.131 ^{***} (0.0276)
Lag ADL			1.335 [*] (0.158)
Observations	8464	8464	5074
chi2	236.1	246.4	496.9

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Role

- ❖ Data mining and analysis
- ❖ Manuscript preparation
- ❖ Role in conceptualization of paper

Lessons

- ✓ Modifiable health risk in middle age can significantly improve health outcomes in old age
- ✓ Opportunity to save healthcare associated cost in aging
- ✓ Health behaviors have consequences and can impact the trajectory of hospitalization in later life

Acknowledgement

- ✓ Ari Friedman, MD, PhD
- ✓ Johanne Levy, MBA, MPC
- ✓ Rebecca Brown, MD, MPH
- ✓ Fellow Scholars

References

Covinsky KE, Pierluissi E, Johnston CB. Hospitalization-Associated Disability: “She Was Probably Able to Ambulate, but I’m Not Sure”. *JAMA*. 2011;306(16):1782–1793. doi:10.1001/jama.2011.1556

Salah, H. M., Minhas, A. M. K., Khan, M. S., Pandey, A., Michos, E. D., Mentz, R. J., & Fudim, M. (2021). Causes of hospitalization in the USA between 2005 and 2018. *European Heart Journal Open*, 1(1), oeab001.

Sisko, A. M., Keehan, S. P., Poisal, J. A., Cuckler, G. A., Smith, S. D., Madison, A. J., ... & Hardesty, J. C. (2019). National health expenditure projections, 2018–27: economic and demographic trends drive spending and enrollment growth. *Health affairs*, 38(3), 491-501.