Dementia Prevalence and Healthcare Use Patterns in Rural North Carolina

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Background: Dementia is more prevalent in rural and remote communities.[1] Moreover, these communities have limited access to high quality dementia care, prompting a need for innovative solutions to meet the health care needs of affected older adults.

Methods: As part of a study aimed at implementing a telehealth intervention for primary care patients with dementia in two rural North Carolina counties, we examined baseline dementia prevalence and compared health care use between patients with and without dementia. Electronic health records from January 2018 to December 2018 were examined for 2,288 patients aged 65 or older. A zero-inflated Poisson regression model was used to compare healthcare use between patients with and without dementia adjusting for patients' demographic and clinical characteristics.

Results: Dementia prevalence was 8.7% based on diagnosis codes. Most patients with dementia were women (70%), not married (55%), Medicare-insured (78%), and had more comorbidities (mean: 2±2) than non-dementia patients. Dementia patients had a significantly higher number of primary care visits, emergency department visits, inpatient visits, and preventable hospitalizations than patients without dementia (risk ratio = 1.1, 1.8, 2.18, and 1.3, respectively; all $P < 0.05$).

Conclusions: Dementia burden was higher among women and use of acute care services by patients with dementia in this rural setting was higher than patients without the disease, similar to urban settings. These findings suggest opportunities to improve care coordination and access to resources to help reduce the need for acute care services among patients with dementia and can help tailor interventions to address the health care needs of this group.

Reference:

1. Steenland, K., Goldstein, F. C., Levey, A., & Wharton, W. (2016). A Meta-Analysis of Alzheimer's Disease Incidence and Prevalence Comparing African-Americans and Caucasians. Journal of Alzheimer's disease : JAD, 50(1), 71–76. doi:10.3233/JAD-150778

Table 1. Patient demographics

	All patients	Non-dementia	Dementia	P-value
All	2,288	2,090 (91.3)	198 (8.7)	
Age, mean (SD)	74 (7.4)	73.3 (6.9)	81.9 (7.4)	< 0.001
Female, n (%)	1,411 (61.7)	1,272 (60.9)	139 (70.2)	0.009
Insurance, n (%)				< 0.001
Commercial	758 (33.1)	734 (35.1)	24 (12.1)	
Medicare	1,264 (55.2)	1,110 (53.1)	154 (77.8)	
Medicaid	25 (1.1)	24 (1.1)	1 (0.5)	
Other	241 (10.5)	222 (10.6)	19 (9.6)	
Race/Ethnicity, n (%)				0.788
White	2,001 (87.5)	1,825 (87.3)	176 (88.9)	
Black	254 (11.1)	235 (11.2)	19 (9.6)	
Other	33 (1.4)	30 (1.4)	3 (1.5)	
Married, n (%)	1,285 (56.2)	1,196 (57.2)	89 (44.9)	< 0.001
Clinic 1, n (%)	1,513 (66.1)	1,385 (66.3)	128 (64.6)	0.638
Charlson Comorbidity Index, mean (SD)	1.6 (2.1)	1.6 (2)	2 (2.2)	0.018
PCP visits, mean (SD)	4.9 (4.3)	4.8 (4.2)	6.1 (4.8)	< 0.001
ED visits, mean (SD)	0.6 (1.3)	0.5 (1.2)	1.4 (1.9)	< 0.001
Inpatient visits, mean (SD)	0.2 (0.6)	0.2 (0.5)	0.6 (0.9)	< 0.001
ACSC, mean (SD)	1.5 (1.1)	1.4 (1.1)	2.1 (1.3)	< 0.001
ANHAC, mean (SD)	1.1 (1.5)	0.9 (1.2)	3.1 (2.5)	< 0.001

Table 2. Risk of healthcare utilization using zero-inflated Poisson Model

	Inpatient visits			ACSC			ANHAC			PCP visits			ED visits		
	RR	95% CI	p	RR	95% CI	p	RR	95% CI	p	RR	95% CI	p	RR	95% CI	p
Dementia	2.2	(1.7-2.8)	< 0.001	1.3	(1.1-1.4)	< 0.001	2.5	(2.3-2.8)	< 0.001	1.1	(1.1-1.2)	< 0.001	1.8	(1.6-2.1)	< 0.001
Age	1.0	(1.0-1.0)	0.003	1.0	(1.0-1.0)	0.084	1.0	(1.0-1.0)	< 0.001	1.0	(1.0-1.0)	0.046	1.0	(1.0-1.0)	0.721
Female	1.1	(0.9-1.3)	0.545	1.0	(1.0-1.1)	0.282	1.1	(1.0-1.2)	0.050	1.2	(1.1-1.2)	< 0.001	1.1	(1.0-1.3)	0.053
Insurance															
Commercial	0.9	(0.7-1.2)	0.483	0.9	(0.8-1.0)	0.017	0.8	(0.7-0.9)	0.003	0.9	(0.9-1.0)	0.016	0.8	(0.7-1.0)	0.012
Medicare	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Medicaid	1.3	(0.7-2.6)	0.363	1.0	(0.8-1.3)	0.872	1.5	(1.1-2.1)	0.012	1.1	(0.9-1.2)	0.466	1.2	(0.8-1.6)	0.353
Other	1.2	(0.9-1.7)	0.210	0.9	(0.8-1.0)	0.140	0.9	(0.8-1.1)	0.311	0.9	(0.8-0.9)	< 0.001	1.1	(0.9-1.4)	0.412
Not married	1.4	(1.1-1.7)	0.002	1.1	(1.0-1.2)	0.023	1.1	(1.0-1.2)	0.010	1.0	(1.0-1.1)	0.317	1.6	(1.4-1.8)	< 0.001
Clinic 2	1.2	(1.0-1.5)	0.045	1.0	(1.0-1.1)	0.298	0.9	(0.8-0.9)	0.002	1.0	(1.0-1.1)	0.018	1.1	(0.9-1.2)	0.273
Charlson Comorbidity Index	1.2	(1.2-1.3)	< 0.001	1.1	(1.1-1.2)	< 0.001	1.1	(1.1-1.1)	< 0.001	1.1	(1.1-1.1)	< 0.001	1.2	(1.1-1.2)	< 0.001