

Care Network Characteristics and Their Link with Potentially Preventable Health Services Utilization of Individuals With Dementia

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BACKGROUND

- Persons living with dementia (PLwD) have higher rates of Emergency Department (ED) visits (Feng et al., 2014) and potentially preventable hospitalizations (PPH) (Bynum et al., 2004; Phelan et al., 2011).
 - These services are associated with known harms (e.g., functional decline) for PLwD, and increased risk for institutionalization (Smith et al., 2000; 2001; Stern et al., 1997; Yaffe et al., 2002).
- Family caregivers play a critical role in healthcare decision-making for PLwD, such as deciding when to seek ED care.
 - Prior studies have shown associations between caregiver strain and potentially inappropriate health services utilization of PLwD (Bonin-Guillaume et al., 2015; Longacre et al., 2014; Maust et al., 2017; Sullivan et al., 2023).
 - Caregiving intensity and assistance with medical care tasks also increase risk (Amjad et al., 2020).
- However, most studies consider factors of a single, “primary” caregiver, ignoring the broader caregiver network that typically surrounds a PLwD.
- How characteristics of the caregiving network influence critical, potentially preventable, health services outcomes of PLwD (e.g., ED visits, PPH), which would impact both policies and interventions, is unknown.
 - We hypothesize that characteristics of more complex caregiving networks (e.g., larger size, more task sharing, more generalists) will be associated with greater odds of potentially preventable healthcare.

METHODS

- DATA:** 2019 National Health and Aging Trends Study (NHATS), a nationally representative sample of Medicare-eligible adults, and linked 2019 fee-for-service Medicare Claims files.
- Our sample includes 267 community-dwelling individuals with probable dementia who have at least one caregiver.
- NHATS categorizes *probable dementia* based on:
 - Respondent or proxy self report of dementia diagnosis
 - AD8 Dementia Screening Interview score
 - Cognitive testing of memory (immediate and delayed recall), orientation (date, month, year, day of week, president, vice president), and executive function (clock drawing test) (full details found in Kasper et al., 2013).
- Caregivers are identified by the NHATS participant as someone who assisted them with self-care, mobility, household, medical or transportation tasks for health or functioning reasons.

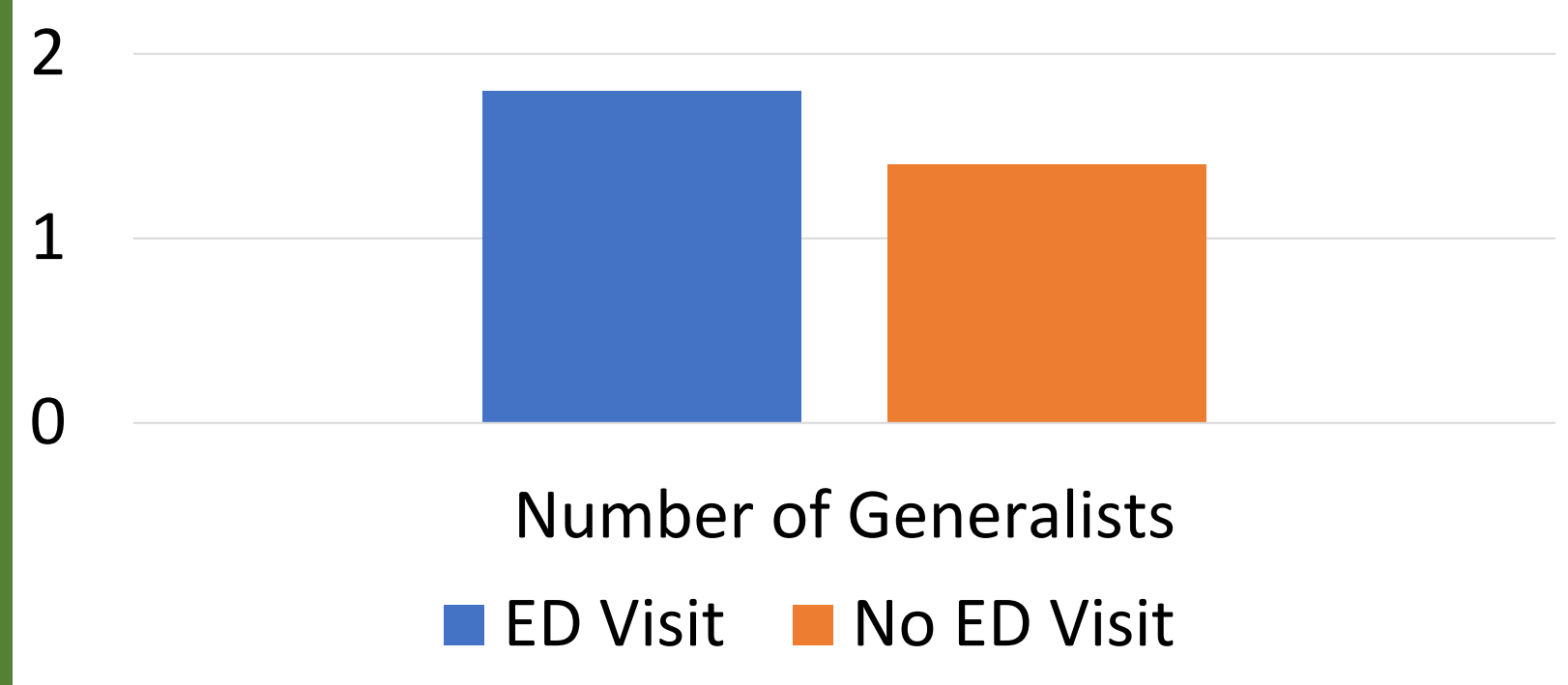
Accounting for demographics and health of individuals with dementia, aspects of their caregiver network complexity are associated with increased odds of potentially preventable hospitalizations and emergency department visits.

RESULTS

Table 1. Sample Characteristics

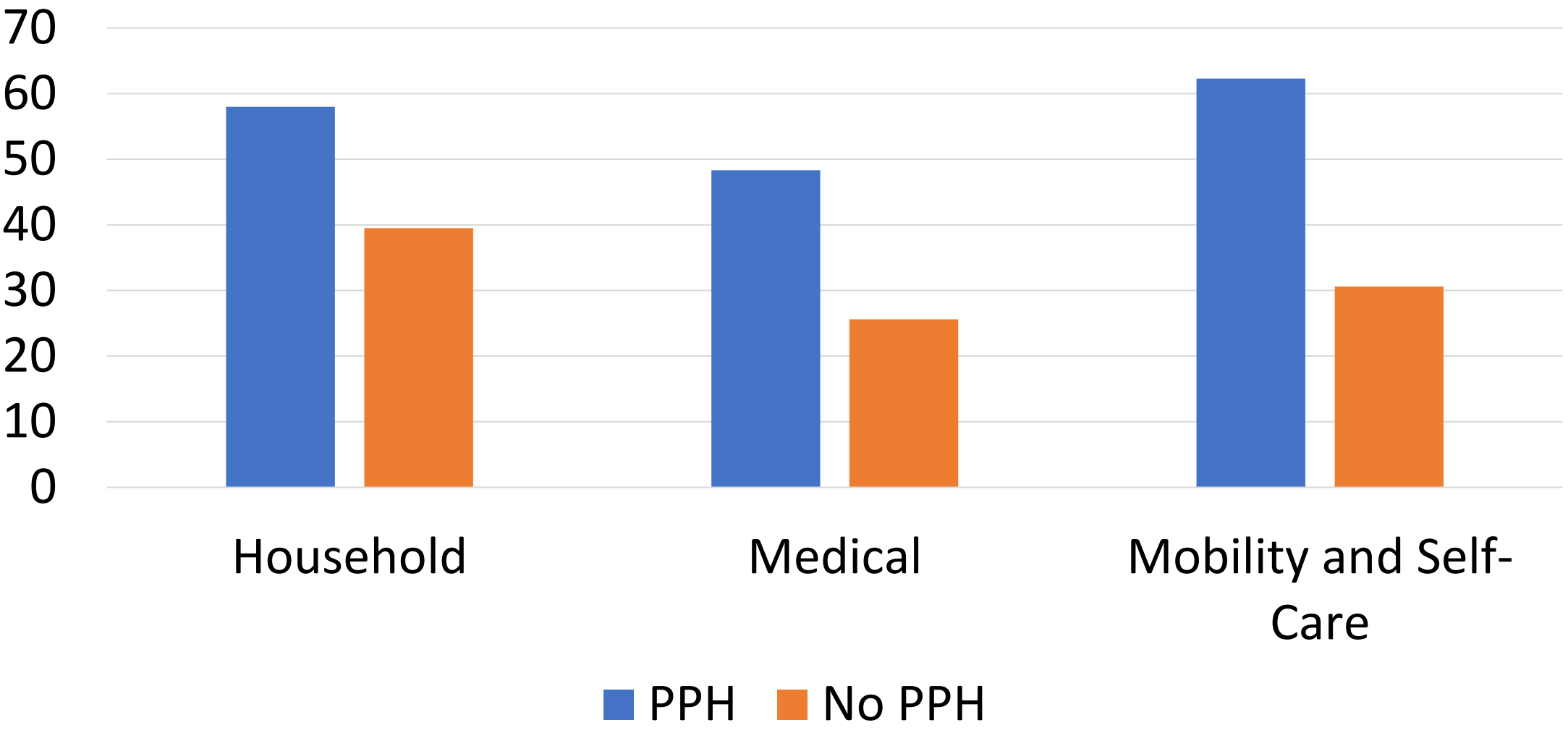
Sample Characteristic (N=267)	M/%, 95% CI
Age	84.1 (83.2, 85.0)
Gender	
Male	38.1 (31.1, 45.1)
Female	61.9 (54.9, 68.9)
Race	
White	75.7 (69.5, 82.0)
Non-White	24.3 (17.9, 30.5)
Education	
≥High school degree	72.4 (67.7, 77.0)
Below a high school degree	27.6 (23.0, 32.3)
Dual enrollment with Medicaid	20.8 (14.1, 27.4)
Chronic medical conditions	3.2 (3.0, 3.4)

Figure 1. Significant Difference in Generalists in Network By Whether the PLwD had an Emergency Department Visit



Note: A similar difference was found for generalists by whether the PLwD had a PPH (M=1.90 vs. 1.48; p<.05)

Figure 2. Significant Differences in Proportion of Networks Engaging in Task Sharing by Whether the PLwD had a Potentially Preventable Hospitalization



Descriptive results.

As shown in Figure 1, there was a significant mean difference in the **number of generalists** by **ED visit** status.

For **PPH**, there were significant differences in the proportion of networks engaged in task sharing (Figure 2) and number of generalists (Figure 1 note) by PPH status. Additionally, individuals who had a PPH were more likely to have a **friend in their network** (55.8% vs. 35.1%, p<.05) and had a **larger network size** (3.04 vs. 2.4, p<.05).

Table 2. Caregiver Network Characteristics as Predictors of ED Visits and PPH of Individuals with Dementia

Covariates.

Older age (OR= 1.04, 95% CI= 1.01, 1.08) was associated with increased odds and being a dual enrollee was associated with decreased odds (OR=0.27, 95% CI= 0.11, 0.69) of an ED visit.

Older age (OR=1.07, 95% CI= 1.01, 1.12) and having more chronic medical conditions (OR=1.42, 95% CI= 1.15, 1.75) were associated with greater odds of a PPH, whereas having a high school degree (OR=0.41, 95% CI=0.18, 0.96) was associated with lower odds of a PPH.

Note: Each exposure is included in an individual model but results are combined in Table 2 above for parsimony. Each model adjusts for all covariates in Table 1 and applies survey design and weights. *p<.05

MEASURES

OUTCOMES (any use in 2019)

- ED visit:** Had an ED visit (yes/no; not resulting in an inpatient visit)
- PPH** (e.g., pneumonia, complications from diabetes; a prevention quality indicator defined by the AHRQ)

NETWORK CHARACTERISTICS

- Relationship type:** Presence of a spouse, daughter, son, non-immediate and/or non-family member in the network
- Living alone:** Whether the PLwD lives alone (yes/no)
- Generalists and Specialists:** The number of generalists (helps with multiple task domains) and specialists (helps with one task domain) in network
- Total network size**
- Task sharing:** 2 or more caregivers assisting within the same task domain (amongst medical, household, self-care/mobility, and transportation tasks)

COVARIATES

- Age, gender, race (White, non-White), education (less than a high school degree, high school degree or greater), count of chronic medical conditions (up to 8 possible conditions, e.g., cancer, hypertension), and dual enrollment in Medicaid

ANALYSIS

- Sample descriptive characteristics for all study variables
- We consider network characteristics as key predictors in separate models of any 2019 ED visit and PPH, adjusting for covariates, in logistic regressions.
- Survey data procedures (weights, stratification, and cluster variables) are applied to present nationally representative estimates of the Medicare-eligible population.

DISCUSSION

- The National Academies point to the need to understand caregiver’s impact on services utilization to better integrate them into healthcare interventions (Freund et al., 2013; NASEM, 2016; Toot et al., 2013).
- In general, we find that aspects of more complex caregiving networks, particularly having more generalist caregivers, increases risk for potentially preventable service utilization.
 - While more complex networks (e.g., bigger, more task sharing) may form around more care needs, these facets are associated with healthcare use even accounting for demographics and health.
- Care navigation interventions may help reinforce adaptive home care and help prevent avoidable service use.
- Caveats.* Some variables (e.g., race) had to be collapsed to maintain sufficient cell size for analyses given data rules.
- Supporting broader caregiving networks, beyond the primary caregiver, may help reduce unnecessary health services utilization and costs.

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