Original Study

Markers of Impaired Decision Making in Nursing Home Residents: Assessment by Nursing Home Staff in a Population-Based Study

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ABSTRACT

Keywords:
Nursing homes
National Nursing Home Survey
decision-making performance
depression
anxiety

Introduction: Many nursing home residents have cognitive impairment that affects their decision making. In order to identify potential markers of impaired decision making, we investigated the association between a range of nursing home resident characteristics and impaired decision making in a population-based sample.

Methods: Participants were 13,013 residents in the 2004 National Nursing Home Survey. We used logistic regression to determine the association between resident characteristics (ie, gender, age, race, mood, recent pain, falls, fractures, or hospitalizations, length of stay, number of activities of daily living (ADL) requiring help, and diagnoses of dementia, anxiety disorders, and depression) and impaired (vs independent) decision making.

Results: After controlling for depression and anxiety diagnoses, as well as gender, age, race, and recent hospitalization or pain, characteristics associated with impaired decision making included depressed, sad, or anxious mood ["mild" odds ratio (OR) = 1.39, 95% confidence interval (CI) = 1.23−1.58; "severe" OR = 2.69, 95% CI = 2.27−3.20]; diagnosed dementia or living on a dementia hall (OR = 5.07, 95% CI = 4.52−5.67); number of ADL requiring assistance (with 5 ADL, OR = 10.69, 95% CI = 6.82−16.75); length of nursing home stay [101−365 days (OR = 1.60, 95% CI = 1.36−1.89); 366 days-2 years (OR = 1.60, 95% CI = 1.34−1.90); >2 years (OR = 2.25, 95% CI = 1.92−2.63)]; and history of falls or fractures in the last 6 months (OR = 1.19, 95% CI = 1.07−1.32)]. Residents reporting pain in the last week were less likely to have impaired decision making (OR = 0.58, 95% CI = 0.52−0.66).

Conclusions: We found several independent markers of impaired decision making in nursing home residents, including depressed, sad, or anxious mood (independent of depression or anxiety diagnosis); dementia; and greater need for ADL assistance. Some of these factors, in particular mood, are modifiable and addressing them may help improve decision making. These markers should be explored further to help identify residents with impaired decision making.

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In 2009, over 2.8 million Americans aged 65 years and older resided in nursing homes,[1] and this number is expected to grow as the population ages. Nearly three-quarters of nursing home residents need assistance with at least 1 of the activities of daily living (ADL) and one-half need assistance with at least 4.[1] In addition, approximately one-half of nursing home residents have mild or moderate cognitive impairment, and 17% have severe impairment that could affect decision making.[1]

Nursing home residents have daily opportunities to make many decisions that affect their lives. These can range from important medical considerations to more routine decisions, such as choices about social activities and content of meals.[2] Even if a resident's cognitive status interferes with decision-making ability in 1 area, that resident might still be able to make other types of decisions.[3] Active participation in decision making can strengthen residents' sense of well-being and enhance their quality of life.[2]

Several factors are known to be associated with poorer decision-making ability. These include cognitive impairment[4] (particularly

dementia[5]) and older age.[6] By contrast, Christensen et al[6] found that depression is not associated with a reduced ability to make decisions among nursing home residents. These findings notwithstanding, there is a need for additional research on nursing home resident characteristics that may be associated with impaired decision-making ability.[5] Indeed, the identification of impaired decision making is critical for striking the correct balance in the latitude provided each resident to make particular decisions.[7] We used data from a large nursing home survey to identify correlates of impaired everyday decision making in nursing home residents, beyond cognitive status.

Methods

Participants

We analyzed data from the National Nursing Home Survey (NNHS), a nationally representative, cross-sectional, 2-stage probability sample survey conducted in 2004.[8] In the first stage, 1500 nursing homes were randomly sampled from a total of 16,328 nursing homes in the sampling frame, constituting almost all US nursing homes. In the second stage, up to 12 residents were randomly selected per sampled nursing home. The final sample contained 13,507 residents from 1174 nursing homes. More information about the NNHS methods can be found on the National Center for Health Statistics website at http://www.cdc.gov/nchs/nnhs.htm.

Measures

NNHS research staff obtained information about each sampled resident through interviews with facility staff familiar with the residents and their care. The facility staff obtained much of the requested information (ie, resident age; gender; race; date of nursing home entry; daily decision-making performance; indicators of depressed, sad, or anxious mood; ability to perform ADL; falls or fractures within the past 6 months) from each resident's most recent Minimum Data Set (MDS) 2.0 assessment.[8] MDS 2.0 items have been incorporated into other valid and reliable instruments (eg, MDS ADL Scale, MDS Cognitive Performance Scale) to measure resident characteristics, such as physical and cognitive functioning.[9–11] If the MDS assessment data were unavailable, the facility staff relied on "medical or other records or other knowledgeable sources" for the information requested by NNHS items.[8] Other data required by the NNHS were obtained exclusively from medical records, including whether the resident was hospitalized within the past 6 months or had diagnosed dementia, depression, or anxiety.[8] Finally, the facility staff relied on personal observation to complete an NNHS item regarding reports or evidence of pain within the past 7 days.[8]

Decision-making performance

The NNHS measured residents' degree of independence using an item from the MDS 2.0 assessment. Specifically, the NNHS asks staff members to "Please describe how [the resident] makes decisions regarding tasks of daily life. Is he/she independent, does he/she exhibit modified independence, is he/she moderately impaired, or is he/she severely impaired?" Possible responses were: "independent" (described as "decisions consistent/reasonable"); "modified independence" (described as "some difficulty in new situations only"); "moderately impaired" (described as "decisions poor; cues/supervision required"); and "severely impaired" (described as "never/rarely made decisions"). The MDS 2.0 instructions state that the question should be completed by staff based on review of clinical records, consultation with family and nurse assistants, and observation of the resident.[12] The MDS instructions also state that the measurement should be based on a resident's actual performance of decision

making and not the staff's belief about the resident's decision-making capability.[12] We combined the first 2 categories and last 2 categories of the response to create a binary outcome variable: "impaired" vs "independent" in daily decision making.

Covariates

We examined multiple potential correlates of reduced independence. In addition to demographic data (eg, gender, age, race), we included several health status variables: "depressed, sad, or anxious mood," measured in the survey as 3 categories, "no indicators of depressed, sad, or anxious mood"; "indicators present, easily altered" (referred to as "mild depressed, sad, or anxious mood" going forward); and "indicators present, not easily altered" (referred to as "severe depressed, sad, or anxious mood"); pain within past 7 days; fall or fracture within past 6 months; hospitalization within past 6 months; length of stay (LOS); and the number of ADL for which the resident received help (0–5). Further, we examined depression, anxiety, and dementia diagnoses, using the following International Classification of Disease (ICD), Version 9 codes: 296.2, 296.3, and 311 (for depression); 300.00 (for anxiety); 290.0-290.9, 294.10, 294.11, 294.8, and 331.0 (for dementia). We also categorized residents as having dementia if they were recorded as living in a dementia hall at the nursing home.

Statistical Analysis

To identify correlates of impaired daily decision making, we fit a series of logistic regression models, with impaired decision making (vs independent) as the outcome. The first models were univariate logistic regressions with one of the following predictors per model: gender; age at interview (which we categorized as <65 years, ≥65–74 years, ≥75–84 years, ≥85 years); race/ethnicity (White, Black, Hispanic, Asian, and other); depressed, sad, or anxious mood (categorized as none, mild, or severe); pain in the last week (yes vs no); fall or fracture within the last 6 months (yes vs no); overnight hospitalization in the last 6 months (yes vs no); LOS (which we categorized as ≤100 days, >100 days to ≤365 days, >1 year to ≤2 years, >2 years); number of ADL requiring help (which we categorized from 0–5); dementia status (ie, either dementia diagnosis per ICD code or residence on a dementia hall, yes vs no); anxiety disorder diagnosis (yes vs no); and depressive disorder diagnosis (yes vs no). The next model included all of these variables in a multivariable logistic regression. We also conducted a sensitivity analysis using a broader definition of anxiety, including diagnoses of phobic disorders, obsessive-compulsive disorder, and other related diagnoses (ICD version 9 codes 300.0–300.9) to cover any ambiguity in diagnosis. In addition, because anxiety and depression are more common among women,[13] we investigated whether gender interacted with depressed, sad, or anxious mood, such that its association with impaired decision making differed between men and women.

Data were analyzed using Stata 11 software (StataCorp, College Station, TX).[14] Variable weights were applied to adjust for the survey design (2 stages and 20 strata). We used an alpha value of < .05 as the threshold for statistical significance.

Results

Decision-making performance and depressed/sad/anxious mood data were missing for 68 of the 13,507 participants (<1% of the sample) and 426 others (3.2%) had a "don't know" or "refuse to answer" response for at least one other covariate. We dropped these subjects from the analysis, leaving an analytic sample of $N = 13,013$. Overall, a total of 42% of participants were independent with respect to decision making and 58% were impaired. Participants with