

Characteristics and Psychosocial Predictors of Psychiatric Emergency Center Transport and Length of Stay in Patients with Dementia and Alzheimer's Disease: A Preliminary Report

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Background. Agitation and aggression are common behaviors that often lead to psychiatric emergency center (PEC) admission of nursing home patients with dementia or Alzheimer's disease. However, few if any data are available that adequately describe characteristics and psychosocial triggers of agitation and aggression leading to transport and admission to a PEC. **Methods.** A preliminary investigation to explore all possible characteristics and psychosocial predictors of PEC transport and length of stay in men and women nursing home patients with dementia or Alzheimer's disease was designed. Frequency distributions, chi-square, analyses of variance, and regression analyses were used to analyze the data. **Results.** One hundred PEC patient charts were reviewed, of which 58 charts were missing information and 42 charts provided evaluable data. Nursing homes located in impoverished areas transported patients to the PEC significantly more often than those in affluent areas. A disconnect between the agitated/aggressive mental state reported by nursing home staff leading to the PEC transport and the calm/cooperative mental status PEC clinicians observed during the admission process was evident. Data from the charts also showed that 74% of patients received off-label antipsychotics rather than FDA-approved medications to treat dementia or Alzheimer's disease. **Conclusions.** This is one of the few studies to identify characteristics and psychosocial triggers of PEC use and length of stay in nursing home patients. We also highlight potentially dangerous antipsychotic use in dementia and Alzheimer disease. Thus, our data add to the existing knowledge base regarding PEC utilization, length of stay, and pharmacotherapy in nursing home patients with dementia and Alzheimer's disease. Given the preliminary nature of this study, however, the results should be interpreted with caution. (*Journal of Psychiatric Practice* 2011;17:251-257)

KEY WORDS: aggression, dementia, Alzheimer's disease, psychiatric emergency utilization

Roughly 25 million individuals in the world have dementia and up to 75% of those have Alzheimer's disease.¹ Patients with dementia and Alzheimer's disease most often reside in nursing facilities due to the progressive severity of their illness,² and experience potentially unwarranted hospitalizations.³⁻⁵ For example, one national study gathered data from 10 nursing homes in geographically diverse locations and found that 134 out of 200 hospitalizations of patients with dementia and Alzheimer's disease were unnecessary and avoidable.³ An epidemiology study found that nursing home patients comprised approximately 8% of the 110 million annual emergency department visits nationwide in 2004.⁴ Of these nursing home patients, 15% had more than one admission involving mental changes or psychiatric problems.⁴ Ouslander et al. found that 45% of 100 hospitalizations of nursing home patients were unnecessary and that 13% of these patients were admitted for psychiatric or mental status changes.⁵

With regard to unnecessary hospitalizations, there are few if any studies investigating psychosocial factors eliciting agitation and aggression in patients with dementia or Alzheimer's disease. While agitation and aggression are two of the most common psychiatric problems that are reported by nursing home staff who request patient transfers to emergency departments,² the triggers of agitation and aggression in these patients are poorly understood. Of the handful of studies that have examined circumstances associated with the onset of aggression in this population, one study found that most aggressive episodes in nursing home patients escalated during bathing and toileting.⁶ Other data suggested that agitation and aggression were significantly related to patient

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depression and patients' lack of understanding about why caregivers were tending to them.^{7,8} Beck et al.⁹ and Leonard et al.¹⁰ found that nursing homes with understaffed shifts and underpaid and poorly trained nursing staff have consistently high rates of patient aggression and subsequent hospitalization. Caffrey reported that emergency department admissions were preventable in 40% of nursing home patients.⁴

In our health network, we observed that many psychiatric emergency clinic (PEC) transports for agitation and aggression in nursing home patients were from facilities located in poverty level areas. A disconnect between the mental state reported by nursing home staff leading to the PEC transport and the mental status PEC clinicians observed during the admission process was also clearly evident. Moreover, many nursing home patients were discharged within just a few hours of their admission. Thus, we questioned what factors might underlie the agitation or aggression that resulted in these PEC transports. As there are few available data to answer this research question with testable hypotheses, our primary research goal was to explore all factors that might be related to or predict agitation, aggression, PEC utilization, and length of stay.

METHODS

Study Design and Protocol

An exploratory, retrospective chart review of patients with a primary or secondary diagnosis of dementia or Alzheimer's disease who were admitted to the PEC for agitation or aggression over a 12-month period was conducted. Using information from the patients' medical charts, we analyzed the following data: sociodemographic information (e.g., age, gender, race, marital status), nursing homes from which patients were admitted, current diagnoses (including secondary and tertiary diagnoses), mental state, pharmacotherapy, psychosocial triggers of agitation and aggression leading to PEC transport, length of stay in the PEC, patient disposition after PEC release, and number of PEC admissions.

Participants

Approvals to conduct this study were obtained from the University of North Texas Health Science Center and John Peter Smith Health Network Institutional

Review Boards. Medical records of all patients admitted to the PEC between December 1, 2009 and December 31, 2010 with a primary or secondary diagnosis of Alzheimer's disease or dementia were examined. Inclusion criteria were men and women of all racial and ethnic origins between 30 and 90 years of age. Outpatients were excluded.

Mood Symptoms and Functional Severity

The Global Assessment of Functioning (GAF) is a well-known 100-point scale based on DSM-IV-TR Axis V criteria that was used to quantify each patient's psychiatric mood symptoms and general psychosocial and occupational presentation. The GAF is a rating scale that ranges continuously from 1, representing the most impaired functioning, to 100, which indicates superior functioning in a broad variety of domains.¹¹ All patients entering the PEC received a psychiatric evaluation to determine current diagnosis based on DSM-IV-TR criteria.

Data Analyses

Diagnostic frequency, prevalence, and descriptive statistics were used to describe the sample. Within-group differences in sociodemographic (e.g., gender, age, race) and quantifiable variables (e.g., GAF scores, length of stay, PEC utilization) were examined using chi-square or analyses of variance, as appropriate. Admitting geographic areas, PEC length of stay, number of PEC admissions within the past year, GAF scores at each PEC admission, and psychosocial triggers of agitation and aggression leading to PEC admissions were analyzed with categorical regression (CATREG) to explore all possible predictive relationships. All analyses were performed using the Statistical Package for the Social Sciences (SPSS) Predictive Analytics SoftWare (PASW) version 17. Significance was defined using a 95% confidence interval and $\alpha \leq 0.05$.

RESULTS

Participants

We reviewed 100 charts from patients admitted to the PEC with a diagnosis of dementia or Alzheimer's disease, 58 of which were missing information about admission mental status and length of stay. Thus,

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charts for 42 patients met study criteria. Table 1 shows characteristics of the sample. Analysis of variance showed that significantly more men than women were single (e.g., never married, widowed, or divorced) ($F(1,40) = 10.88, p = 0.002$). No other significant differences related to gender, age, or race/ethnicity emerged.

Diagnoses and Global Assessment of Functioning

The prevalence of psychiatric Axis I and co-occurring medical diagnoses is shown in Table 2. Comorbid mood disorders and medical illnesses were common in this sample. The total mean number of diagnoses per patient was 3 ± 0.9 . Men had significantly more comorbid illnesses than women ($F(6,12) = 20.57, p = 0.0001$). Mean GAF scores on admission to the PEC were 41.5 ± 9.7 for first admission to the PEC, 37.7 ± 8.0 for second admission, 50.0 ± 7.0 for third admission, and 32.5 ± 3.5 for fourth admission. GAF scores were not related to gender, age, race/ethnicity, number of diagnoses, prevalence or type of psychosocial triggers, admission mental status, or pharmacotherapy.

Pharmacotherapy

Primary, secondary, and tertiary medications were documented in patient charts. Table 3 illustrates that polypharmacy was common in this sample. Fewer than half of the patients (48%, 20/42) were receiving cholinesterase or glutamate inhibitors to treat their dementia or Alzheimer's disease, suggesting that many of these patients with dementia and Alzheimer's were not receiving the standard level of care necessary to adequately treat their neurological disease. Regression analyses revealed no significant predictors of psychotropic medication use with respect to diagnoses or mental state. Thus, it is troublesome to find that this patient population may be at risk for a poorer prognosis than if they received pharmacotherapy that was FDA-approved for dementia or Alzheimer's disease.

Admission to PEC and Disposition

The patients in this sample were admitted to the PEC from 20 local nursing facilities. Using zip code

Table 1. Sample characteristics (N = 42)

Race/ethnicity	Age range (years)					Σ
	30-40	41-50	51-60	61-70	71-89	
Female						
African American	0	1	3	3	1	8
Caucasian	0	0	1	2	2	5
Asian	0	0	0	0	1	1
Total	0	1	4	5	4	14
Male						
African American	1	0	2	4	0	7
Caucasian	1	2	7	5	3	18
Hispanic/Latin	0	1	0	2	0	3
Total	2	3	9	11	3	28
Mean age (years \pm standard deviation): 61.4 \pm 12.6						
Marital status distribution						
			n (%)			
Married			8 (19%)			
Single, divorced, widowed			34 (81%)			
Insurance distribution						
			n (%)			
Medicaid			26 (62%)			
Medicare			10 (24%)			
Private pay			6 (14%)			

information, we found that 64% (27/42) of the patients were admitted from geographically impoverished areas (annual income \$20,844-\$29,000¹²) within a 6 mile radius of the PEC. Race/ethnicity significantly predicted the geographic area from which patients were admitted ($F(3,30) = 9.34, p < 0.0001$).

Patients were discharged to a different nursing home than the one from which they came 22.3% of the time; to a psychiatric inpatient unit 11.9% of the time, to their personal residence 9.5% of the time, and 2 patients were referred to the hospital medicine service for further treatment for comorbid medical illnesses. All other patients were returned to the nursing home from which they were transported. No variables significantly predicted discharge disposition.

Predictors of Length of Stay in the PEC

The relationship between the geographical location from which patients were admitted and length of stay in the PEC was significant. Patients from nursing homes located in impoverished areas had significantly shorter lengths of stay than those residing in more affluent area nursing facilities

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Table 2. Clinical diagnoses (N = 42)

	<i>n (%)</i>
Primary Axis I psychiatric disorder	
Dementia NOS	15 (35.7)
Alzheimer's	10 (23.8)
Schizophrenia	5 (11.9)
Mood disorder NOS	4 (9.5)
Psychosis NOS	4 (9.5)
Bipolar disorder	2 (4.8)
Major depressive disorder	2 (4.8)
Secondary Axis I psychiatric disorder	
Dementia NOS	17 (40.5)
None	14(33.3)
Mood disorder	4 (9.5)
Psychosis NOS	3 (7.1)
Schizoaffective disorder	2 (4.8)
Bipolar disorder	1 (2.4)
Primary Axis III medical illness	
None	21 (50.0)
Cerebral vascular accident	9 (21.4)
Hypertension	7 (16.7)
Urinary tract infection	1 (2.4)
Cancer	1 (2.4)
Respiratory conditions	1 (2.4)
Hepatitis C	1 (2.4)
Huntington's disease	1 (2.4)
Osteoarthritis	1 (2.4)

Table 3. Pharmacotherapy (N = 42)

	<i>n (%)</i>
Primary psychotropic	
Atypical antipsychotic	15 (35.7)
Cholinesterase inhibitor	12 (28.6)
Mood stabilizer	8 (19.0)
Conventional antipsychotic	4 (9.5)
Sedative	1 (2.4)
Antidepressant	1 (2.4)
Anxiolytic	1 (2.4)
Secondary psychotropic	
Antidepressant	9 (21.4)
Atypical antipsychotic	9 (21.4)
Cholinesterase inhibitor	6 (14.3)
Mood stabilizer	6 (14.3)
Benzotropine	4 (9.5)
Anxiolytic	3 (7.1)
Glutamate inhibitor	2 (4.8)
None	3 (7.1)
Tertiary psychotropic	
Antidepressant	9 (21.4)
Anxiolytic	8 (19.0)
Atypical antipsychotic	4 (9.5)
Mood stabilizer	4 (9.5)
Sedative	2 (4.8)
None	15 (35.7)

($F(5,28) = 2.85, p < 0.03$, effect size = 0.58). To test the effect of covariates on zip code areas predicting length of stay, we entered age, gender, and race/ethnicity into the regression model. We found that impoverished zip code areas significantly predicted the shortest lengths of stay ($F(8,33) = 5.10, p = 0.012$, effect size = 0.68) while no other variables were significant predictors.

Table 4 presents data concerning the patients' first admission to the PEC, including duration of stay on the PEC, mental status as evaluated by the PEC staff on admission, and psychosocial triggers of PEC transport reported by nursing home staff. By the time patients reached the PEC, the intake mental state on admission in 64% (27/42) of the sample was "calm/cooperative," followed by "confused/disori-

ented" in 11.9% (5/42), "anxious/agitated" in 9.5% (4/42), "sedated" in 7.1% (3/42), and "angry/aggressive" in 7.1% (3/42). Mental state significantly predicted the length of stay on the first admission (angry/ aggressive = 65.3 hours; confused/disoriented = 70.4 hours; sedated = 35.0 hours; anxious/agitated = 19.7 hours; calm/cooperative = 12.2 hours ($F(4,37) = 3.98, p = 0.009$; effect size = 0.30). In addition, having a secondary diagnosis significantly predicted length of stay on the first and subsequent PEC admissions. For instance, on the first admission, the mean length of stay (LOS) was 25.3 hours, the second admission LOS mean was 29.0 hours, the third admission LOS mean was 67.6 hours, and the fourth admission mean was 107.5 hours; ($F(18,5) = 4.52, p = 0.05$). The increasing LOS possibly shows

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Table 4. First admission to psychiatric emergency center (PEC) (N = 42)

	<i>n (%)</i>
<i>Length of stay in PEC (hours)</i>	
1–6	13 (31.0)
7–12	5 (11.9)
13–24	11 (26.2)
25–48	9 (21.4)
49–72	2 (4.8)
> 72	2 (4.8)
<i>Mental status as evaluated by PEC staff</i>	
Calm, cooperative	27 (64.3)
Confused, disoriented	5 (11.9)
Anxious, agitated	4 (9.5)
Sedated	3 (7.1)
Angry, aggressive	3 (7.1)
<i>Psychosocial triggers reported by nursing home staff</i>	
Angry with family or peer	9 (21.4)
Global anger/agitation	8 (19.0)
Angry with nursing home or staff	8 (19.0)
Angry with inanimate objects	5 (11.9)
Caught trying to elope	4 (9.5)
Refused medication	3 (7.1)
Missing chart information	5 (11.9)

illness progression over multiple admissions.

Patients with subsequent second ($n = 11$), third ($n = 5$), fourth ($n = 2$), and fifth ($n = 1$) admissions presented more frequently with a “calm/cooperative” mental state (63%; 12/19) rather than confused, anxious, sedated, or angry. The third PEC admission significantly predicted police transport ($F(3,38) = 3.06$, $p = 0.04$, effect size = 0.44). There were no statistically significant relationships among mental state, length of stay, or psychosocial triggers as a function of age, gender, race/ethnicity, or any other variable.

Psychosocial Triggers

Psychosocial triggers of agitation and aggression are reported in Table 4. Most patients had generalized

anger with family, peers, or nursing home staff. Significant within-groups differences in types of psychosocial triggers emerged ($\chi^2(6, N=42) = 16.99$, $p = 0.009$). Women ($n = 14$) became agitated when taking medication and they were generally in a persistent combative state during interactions with peers and nursing home staff. Men ($n = 28$) on the other hand, had problems with missing clothing and experienced family conflicts and conflicts with peers and nursing staff. These data suggest that patients may genuinely be frustrated with their existence, and having insufficient cognitive ability to appropriately respond to conflict, they were simply “acting out.”

DISCUSSION

To our knowledge, this is one of the few investigations to find that PEC admissions of patients with dementia or Alzheimer’s disease are significantly predicted by nursing home location, race/ethnicity, mental state, and comorbid diagnoses. In our study, most PEC admissions for agitation and aggression were from facilities geographically located in impoverished areas and the length of stay for 31% of the patients was only 1 to 6 hours. As documented by clinicians in the PEC, the mental state of 64% of the patients was “calm and cooperative,” and PEC clinician notes documented that medication changes were “not needed.” This finding raises critical concern about why these patients were transported to the PEC. If patients needed acute psychiatric crisis care, we would have expected to find evidence that they needed a substantially longer length of stay prior to discharge from the PEC.

Nursing home patients were transported to the PEC for reported agitation or aggression. However, hospital clinicians found that only 7 of 42 patients had unresolved agitation or aggression evident during the admission process. Five patients on their third admission to the PEC were transported to the PEC by police in handcuffs. Taken together, these results suggest that the PEC was utilized for potentially preventable behaviors. The prevalence of avoidable aggression, the standard level of care available, and the well-being and safety of these mentally challenged, physically frail patients during transport to the PEC are of serious concern.

Over 42% of the patients in this sample had been receiving antipsychotics as their primary pharmacotherapy. Recent data show that antipsychotic use

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has limited effectiveness in patients with dementia and Alzheimer's disease and, contrary to popular prescribing practices, these medications are not recommended first-line treatments for dementia or Alzheimer's disease.^{2,13-15} Moreover, cognitive decline, cerebral vascular accidents, extrapyramidal side effects, and death have been reported with antipsychotic use in geriatric populations.^{13,14,16} Study data indicate that medications specifically approved for dementia and Alzheimer's disease (cholinesterase or glutamate inhibitors) produce positive effects on patients' behavior.^{17,18} Off-label antipsychotic use in this population puts patients at risk for serious adverse events, and the finding that more than 40% of the patients in this sample were receiving antipsychotics as their primary pharmacotherapy highlights a critical area of concern that deserves further attention.

Agitation and aggression may have been overreported by nursing home staff since these behaviors seem to have easily resolved once patients were removed from the nursing home environment. Beck et al.⁹ and Leonard et al.¹⁰ found that aggression and hospital recidivism in nursing home patients are consistently related to understaffed shifts and underpaid and/or poorly trained nursing staff. Volicer et al. found that resistance to care is significantly related to patient abuse from nursing staff.⁸ In this study, however, we found no quantitative data to identify nursing home abuse or determine the level of staff training in the nursing homes from which this sample was taken. The medical records provided no information about the nursing home staff so that it was not possible for us to assess inadequate caregiving or evaluate the level of caregiving patients were receiving in the nursing homes. However, based on the literature, training the nursing home staff to serve as family mediators and teaching staff how to assuage and/or cognitively redirect patients' attention to more neutral and calmer emotions may help reduce agitation and aggression in nursing home patients such as those in this sample.

The high prevalence of patients admitted to the PEC in a calm and cooperative mental state is not consistent with nursing home requests for PEC transports via ambulance or under police arrest and the data do not support clinical necessity for acute crisis care in these cases. A disconnect between the agitated/aggressive mental state reported by nursing

home staff leading to the PEC transport and the calm/cooperative mental status PEC clinicians observed during the admission process was evident. As the PEC is a county-funded health network, unnecessary PEC utilization is not only a personal concern for patients and their families, but the costs associated with treatment of indigent, Medicaid, and Medicare patients may also be a burden to taxpayers. Taken together, these findings highlight several possible explanations: 1) the nurses and aides employed in impoverished nursing homes may have used the PEC as a "time out" for themselves and their difficult patients, 2) the nursing homes located in impoverished areas are so geographically close to the PEC that the nurses and aides overutilize emergency services rather than care for the patients themselves, 3) the nursing homes and staff do not have adequate resources or training to properly care for disruptive, mentally challenged patients, or 4) all of the above.

The prevalence of reported agitation, aggression, medication resistance, antipsychotic use, and emergency room recidivism found in our sample suggests that improved patient outcomes may depend on improving the knowledge of nursing home staff about caregiving in this special needs population. More research is needed to determine if caregiver psychoeducation may improve patient care and reduce the economic and psychosocial burdens of unnecessary PEC utilization by patients with dementia and Alzheimer's disease.

Limitations and Strengths

Limitations of the current study include its retrospective design, small sample size, lack of information concerning the onset and severity of the dementia or Alzheimer's disease, lack of quantitative rating scales for agitation or aggression, and subjective reports from nursing home staff concerning the patient mental state that led to PEC transport and admission. Our goals were to examine patient characteristics and psychosocial variables associated with PEC admissions and length of stay that supported our anecdotal observations. To that end, this is one of the few studies to add to the existing knowledge base regarding psychotropic medication use, characteristics and psychosocial triggers of PEC use, and length of stay. Given the preliminary nature of these data, they should be interpreted with caution.

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Future Research

A future extensive examination of patient characteristics and psychosocial triggers of PEC utilization and psychotropic medication use in a larger, prospective, longitudinal design comparing PEC use in nursing home patients with and without dementia or Alzheimer's disease would be an important addition to the literature. In addition, research should include a thorough evaluation of the breadth of knowledge and skills possessed by nursing home staff in relation to what they need to appropriately diffuse conflicts among patients, families, and peers.

CONCLUSION

Patients residing in impoverished nursing home locations seem to be transported to the PEC more often than those living in more affluent nursing homes. We also found a high prevalence of off-label antipsychotic use in patients with dementia and Alzheimer's disease. Finally, it appears that, in many cases, PEC utilization in our sample might have been prevented. Our results bring to the forefront a critical need to prevent inappropriate, unnecessary, and potentially dangerous transport of patients with dementia and Alzheimer's disease to psychiatric emergency departments.

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