PREDICTORS OF INSTITUTIONALIZATION IN DEMENTIA

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Abstract

In present time there are a growing number of people at older age. Dementia is strongly correlated with age. Delaying older adults' transition from living at their home to institutionalization is of major public health issue. Older individuals at the early stages of illness would prefer to remain living in the community. Our study aimed to determine predictors for institutionalization in patients hospitalized for behavioral and psychological symptoms of dementia (BPSD). Patients admitted to Psychiatry and Neurology Hospital Brasov for treatment of BPSD in dementia were evaluated regarding relationships between active behavioral problems and demographics at the time of admission, and institutionalization or discharge to the patient's own home. For the 127 study patients included in this study, median time to discharge was 23 days. Multivariate analysis identified higher Mini-Mental State Examination (MMSE) scores as independent clinical predictors for institutionalization, along with male gender and aggressive behavior. Clinical characteristics can be predictive of the time to discharge for patients with BPSD. Earlier interventions and enhanced care strategies may be needed for patients in order to delay institutionalization.

Keywords: Alzheimer's disease, dementia, institutionalization, discharge, aggressive behavior.

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Introduction

Worldwide there are currently 25 to 35 million individuals with these illnesses, with 5 to 7 million new cases diagnosed each year, or one new case every 7 seconds (World Health Organization, 2012). New reports estimate that more than 5 million people have Alzheimer's disease or another form of dementia in the United States. Projections indicate as many as 16 million older Americans will be affected by dementia by mid-century (Alzheimer's Association, 2008). New reports estimate that more than 5 million people are diagnosticaded with Alzheimer or another form of dementia in United States. The prognosis indicates that above 16 million older Americans will be affected by dementia by mid-century (Alzheimer's Association, 2008). As a consequence there will be a growing demand for assistance and educational programs for care givers. Also, it will be necessary that new shelter homes to be build. The goal of treatment for behavioral and psychological symptoms of admitted patients with dementia is the rapid remission of symptoms and then return patients to their home as soon as possible. Because of stigma (Graham *et al.*, 2003), many patients experience difficulties being accepted by their family or communities following their discharge from a psychiatric hospital, even if they are in remission. Self stigma (Corrigan, 2007) is another problem, even stronger if the patients are hospitalized for a long period. During hospitalization, some patients may die, others are transferred to medical hospitals due to somatic comorbidities and other are candidates for institutionalization. Family complains, residential circumstances, a patient's clinical characteristics strongly contribute to the decision of institutionalization. Findings suggested that predictors of institutionalization are mainly based on severe cognitive and functional impairment. Lack of support or assistance in daily living (Luppa *et al.*, 2010) is another contributing factor. To our knowledge, there are no studies for demented people in Romania for investigation of factors contributing to prolongation of hospitalization or institutionalization. The aim of the present study was to determine the predictive factors for institutionalization in patients hospitalized for the treatment of other symptoms than cognitive decline.

Methods

127 consecutive patients who meet DSM-IV criteria (APA, 2004) for dementia hospitalized in the Psychiatry and Neurology Hospital Brasov between January 2010 and December 2011 were enrolled in the study. The study was approved by the institutional ethics committee board. In all eligible patients, the following items were evaluated: demographics, reason for admission, type of dementia, cognitive status, daily living activities, BPSD, and treatment. Information was obtained for each patient regarding gender, age, education, marital status, living

situation, and care caregiver. Data were provided by patients, family members or staff employed caregivers, and psychiatric social worker. Residency prior to hospitalization was classified in: living in their own home, care facility, or medical hospital. The relationships between the patient and primary caregiver were categorized as partner, son or daughter, other family member or relative, or staff. Behavioral problems causing distress for the caregiver, which had become the primary reason for hospitalization, were recorded on the basis of interviews conducted with the caregiver. The reasons for hospitalization include aggressive behavior, over activity, psychosis and delirium. Aggressive behavior comprised physically or verbally aggression towards patient or others. Over activity included non-aggressive behavior that required constant monitoring, such as aimless wandering, trying to reach a different place, and restlessness. Delirium was also evaluated as an important factor for admission in acute psychiatric setting. A diagnosis of dementia was made according to DSM-IV criteria following interviews with patients and family members or staff, as well as on the basis of psychiatric, psychological and neurological findings, laboratory data, and head CT scans.

Behavioral and psychiatric symptoms were evaluated using the Behavioral Pathology in Alzheimer's disease (BEHAVE-AD) rating scale (Reisberg *et al.*, 1987). The presence or absence of symptoms in each of seven clusters comprising a subscale of BEHAVE-AD was recorded, including psychosis, aggressiveness, activity disturbances, and agitation. Cognitive function was evaluated using the Mini-Mental State Examination (MMSE) by experienced psychiatrists (Folstein *et al.*, 1975). Activities of daily living were scored using ADL questionnaire (Katz *et al.*, 1970). Treatment was recorded in terms of type and dose.

Laboratory examination

Blood count, fasting glucose, throat swab, and pulmonary Xrays were performed during hospitalization.

Statistical Analysis

Statistical analyses were performed using SPSS version SPSS 15.0. The differences between the two groups were compared using Student's t test. The chi-squared and Fisher's exact tests were used to assess categorical variables. Age adjusted odd ratio (OR) and 95% confidence interval (CI) were calculated by multivariate analysis using multiple, unconditional, logistic regression. P values less than 0.05 were considered to be statistically significant.

The primary endpoint of the present study was the prevalence of institutionalization defined as patient transfer to chronic cases hospital or a private care facility. Patients' demographic and clinical characteristics at the time of hospital

admission were analyzed for their association with time to HD using univariate Cox's proportional hazards regression model.

Results

Demographic characteristics of the 129 patients identified as eligible for inclusion in the present study are list in table 1. Of these, 98 patients (76 %) were discharged to their own home), 29 patients (24%) were institutionalized or putted on the waiting list. There were 10 cases transferred to another hospital and 4 died during hospitalization which were not included in statistic. Analysis of the demographic characteristics revealed there were fewer men in the HD compared with INS (institutionalization) group, and that Alzheimer's disease was more frequent in the HD group. In the HD group, patients were more likely to have resided in their own homes with husband or wife as caregiver (p<0.001). Also, the BPSD symptoms at admission in the DH group were less likely to be aggressiveness and delirium. MMSE and ADL scores were higher in patients in this group. In Alzheimer's case the majority of patient were discharged to home (72.8%). high education level was strongly correlate with low risk for institutionalization as well as a high MMSE score (p<0.001), and good daily living activities (p<0.001).

Table 2 shows the psychotropic medications used during hospitalization. The daily dose of antipsychotics was equal in both, as well as cholinesterase inhibitor and NMDA. Remarkable is the low number of patient treated with antidementials such as donepezil, rivastigmine, galantamine or memantine despite their availability.

The univariate analyses revealed that patients living in their own home prior to hospitalization with high MMSE scores and well capacity of day living activities are predictors of a shorter hospital stay. Male gender, living with son or daughter, aggressive behavior as the reason for admission, was significant predictors of a longer hospital stay and institutionalization. Our results revealed that MMSE scores >16 predict the shortest hospital stay, whereas the combination of MMSE scores ≤ 12 and aggressive behavior as the reason for hospitalization predicts the longest hospital stay and institutionalization.

Table 1. *Demographics*

Variables	All patients N=127	Discharged patients				p value
		HD (N=98)		INS (N=29)		
		N	%	N	%	
Age (mean, SD)		70.6 (5.1%)		76.4 (5.5%)		0.005
Type of dementia						
AD	70	65	72.8	5	27.2	0.005
VaD	40	23	42.5	17	57.5	0.83
Other	17	10	58.8	7	41.2	0.19
Place before hospitalization						
home	110	95	86.7	16	13.3	0.005
hospital	5	2	40.0	3	60.0	0.27
care facility	15	9	60.0	6.	40.0	0.27
other	7	3	42.8	4	57.2	0.33
Pacient living						
alone	24	17	70.0	7	30.0	0.15
with husband/wife	67	65	97.0	2	3.0	0.001
with son or daughter	26	10	38.5	16	61.5	0.17
other	10	6	60.0	4	40.0	0.26
Caregiver						
Husband/wife	67	65	97.0	2	3.0	0.001
Son or daughter	20	8	40.0	12	60.0	0.005
relatives	30	17	56.6	13	43.4	0.45
employed caregiver	10	8	80.0	2	20.0	0.01
Education						
1-4 years	39	19	48.7	20	51.3	0.32
5-8 years	46	42	91.3	4	8.7	0.001
9-12 years	30	27	90	3	10.0	0.001
more than 12 years	12	10	83.3	2	16.7	0.18
MMSE						
21-25	5	5	100.0	0	0.0	0.001
12-19	42	30	71.4	12	28.6	0.06
<12	82	65	79.2	17	20.8	0.005
ADL						
5-6	10	10	100.0	0	0.0	0.001
3-4	40	35	87.5	5	12.5	0.005
0-2	79	55	69.6	24	30.4	0.36
Reasson for admission						
agitation	27	20	74.0	7	26.0	0.09
aggression	55	35	63.6	10	26.4	0.005
psychosis	20	15	75.0	5	25.0	0.1
delirium	14	8	57.1	6	42.9	0.57
alcohol	13	12	92.3	1	7.7	0.001

Table 2. *Treatment categories used in patients with dementia*

psychotropic medication	All patients	discharged patients				p value
	129	HD (N=98)	%	INS (N=29)	%	
antipsychotics	46	34	34.7	12	41.3	0.34
benzodiazepines	110	66	67.0	29	100.0	0.11
NMDA	10	7	7.0	3	10.3	0.23
cholinesterase inhibitors	22	17	17.3	5	17.2	0.46

Discussion

To our knowledge, the present Romanian study is the first to investigate the factors involved in institutionalization of patients hospitalized for the treatment of other symptoms than cognitive decline. In addition to family and residential factors, multivariate analysis identified three clinical factors independently associated with institutionalization: MMSE score, aggressive behavior as the reason for admission, and male gender. Cognitive function is strongly associated with performing ADL, which encompasses complex behaviors such as dealing money, cooking, cleaning, and taking medications (Stern *et al.*, 1990: Bennett *et al.*, 1977; Cahn-Weiner, *et al.*, 2007). The need for continues care is grater for patients with lower MMSE scores, and may be a major obstacle to discharging patients even after remission of BPSD. Our results shown that aggressive behavior is the primary reason for admission, and it is an independent factor for prolong hospitalization. Antipsychotics are currently widely used in treatment of aggressive behavior in psychiatric hospitals, even in demented people; however, the available data regarding the efficacy of antipsychotics are inconsistent (Gill *et al.*, 2007; Schneeweiss *et al.*, 2007) and the doses that can be used are small because of the potential risk of considerable side effects (Setoguchi *et al.*, 2008) or death (Wang *et al.*, 2005). Alternatives including sedative/hypnotics, anticonvulsants, serotonergic agents, lithium, â-blockers, may be used but there is insufficient evidence (Chertkow, 2008). Patients with lower cognitive function admitted primarily because of combative behaviour had the lowest likelihood of discharging to home. In patients exhibiting aggressiveness, pharmacological or non-pharmacological treatment involving both patients and caregivers may be required from the early stages of dementia before the BPSD. In terms of relationships between caregivers and patients, it has been reported that children are less strongly committed to the caregiving relationship than spouses (Pot *et al.*, 2001), and stronger support systems are needed for patients living alone. Other social factors that may have an impact on the time to SD could include economic status or the availability of care resources.

Our study has some limitations that are need to be acknowledged. As described above, the study included a relative small number of patients and we did not

evaluate caregivers despite findings indicating its potential association with time to discharge and institutionalization. Pharmacotherapy was optimized for demented patients to achieve remission of BPSD as soon as possible, but there is no protocol for routine practice and treatment option remain mainly to the responsibility of physicians. These issues need to be taken into consideration in future studies, as well as in clinical practice. Finally, despite the heterogenic population from Brasov, characteristic for the biggest cities in Europe, the present study was conducted in a single institution in Romania. Future well-designed prospective and larger-scale studies are warranted to confirm our results.

Conclusions

Clinical characteristics, such as lower MMSE scores, aggressive behavior as the primary reason for hospitalization, male gender and living with daughter or son, could be predictors of institutionalization in patients with BPSD. These findings should be taken into consideration when managing patients with BPSD to ensure administration of optimal treatment and care strategies to improve inpatient treatment outcomes. The pharmacological intervention with antipsychotic is recommended for patients who present severe agitation or violent behavior, for a short period of time and under specialized supervision. In clinical practice, the therapeutic choice between first or second generation antipsychotic should be focused on the risk-benefit balance. In the future, more research is needed in effort to identify optimal strategies, which may combine pharmacological therapy and other interventions both for patients and caregivers in order to maintain the individuals with dementia as long as possible in their settings.

References

Alzheimer's Association (2008). *Voices of Alzheimer's disease: A summary report of the nationwide town hall meetings for people with early stage dementia*. Retrieved September 2, 2008, from http://www.alz.org/national/ documents/report_town-hall.pdf

American Psychiatry Association (1994). *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington, DC: American Psychiatric Association.

Avorn, J., Fischer, M.A., Mogun, H., Solomon, D.H., Brookhart, M.A. (2005). Risk of death in elderly users of conventional vs. atypical antipsychotic medications. *The New England Journal of Medicine*, *353*(22), 2335-2341.

Bennett, H.P., Corbett, A.J., Gaden, S., Grayson, D.A., Kril, J.J., Broe, G.A. (2002). Subcortical vascular disease and functional decline: a 6-year predictor study. *Journal of the American Geriatrics Society*, 50, 1969-1977.

Cahn-Weiner, D.A., Farias, S.T., Julian, L., Harvey, D.J., Kramer, J.H., Reed, B.R., Mungas, D., Wetzel, M., Chui, H. (2007). Cognitive and neuroimaging predictors

of instrumental activities of daily living. *Journal of the International Neuropsychological Society*, 13, 747-757.

Chertkow, H.(2008). Diagnosis and treatment of dementia: introduction. Introducing a series based on the Third Canadian Consensus Conference on the Diagnosis and Treatment of Dementia. *Canadian Medical Association Journal*, *178,* 316-321.

Corrigan, P.W. (2007). How clinical diagnosis might exacerbate the stigma of mental illness. *Social Work*, *52*, 31-39.

Folstein, M.F., Folstein, S.E., McHugh, P.R. (1975). 'Mini-mental state'. A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, *12,* 189-198.

Gill, S.S., Rochon, P.A., Hermann, N., Lee P.E., Sykora, K., Gunraj, N., Normand, S.L., Gurwitz, J., Marras, C., Wodchis, W., Mamdani, M. (2005). Atypical antipsychotic drugs and risk of ischemic stroke: Population based retrospective cohort study. *British Medical Journal*, *330*(7489), 445-450.

Graham, N., Lindesay, J., Katona, C., Bertolote, J.M., Camus, V., Copeland, J.R., de Mendonça Lima, C.A., Gaillard, M., Gély Nargeot, M.C., Gray, J., Jacobsson, L., Kingma, M., Kühne, N., O'Loughlin, A., Rutz, W., Saraceno, B., Taintor, Z., Wancata, J. (2003). Reducing stigma and discrimination against older people with mental disorders: A technical consensus statement. *International Journal of Geriatric Psychiatry*, *18,* 670-678.

Katz, S., Down, T.D., Cash, H.R., Grotz, R.C. (1970). Progress in the development of the index of ADL. *The Gerontologist*, *10*(1), 20-30.

Luppa, M., Luck, T., Weyerer, S., König, H.H., Brähler, E., Riedel-Heller, S.G. (2010). Prediction of institutionalization in the elderly. A systematic review. *Age Ageing*, *39*(1), 31-38.

Pot, A.M., Deeg, D.J., Knipscheer, C.P. (2001). Institutionalization of demented elderly: the role of caregiver characteristics. *International Journal of Geriatric Psychiatry*, *16,* 273-280.

Reisberg, B., Borenstein, J., Salob, S.P., Ferris, S.H., Franssen, E., Georgotas, A. (1987). Behavioral symptoms in Alzheimer's disease: phenomenology and treatment. *Journal of Clinical Psychiatry*, *48*(suppl), 9-15.

Schneeweiss, S., Setoguchi, S., Brookhart, A., Dormuth, C., & Wang, P.S. (2007). Risk of death associated with the use of conventional versus atypical antipsychotic drugs among elderly patients. *Canadian Medical Association Journal*, *176*(5), 627-632.

Setoguchi, S., Wang, P.S., Alan, Brookhart. M., Canning, C.F., Kaci, L., Schneeweiss, S. (2008). Potential causes of higher mortality in elderly users of conventional and atypical antipsychotic medications. *Journal of the American Geriatrics Society*, *56*(9), 1644-1650.

Stern, Y., Hesdorffer, D., Sano, M., Mayeux, R. (1990). Measurement and prediction of functional capacity in Alzheimer's disease. *Neurology*, *40*, 8-14.

World Health Organization (2012). *Dementia: A Public Health Priority*.