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A descriptive study of older bipolar disorder residents living in New York City's adult congregate facilities

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Abstract

Objectives—Much of the research on geriatric bipolar disorder is from outpatient populations or epidemiological surveys with small samples. In contrast, this study conducted a descriptive analysis of geriatric and younger adult residents with bipolar disorder or mania in non-clinical adult congregate facilities (ACFs) in the greater New York City region.

Methods—A total of 2,602 ACF residents were evaluated in 19 facilities, across multiple demographic and health domains. Within this sample, 200 residents had chart diagnoses of bipolar disorder or mania. Among these, fifty geriatric residents (age ≥ 60) were compared with 50 younger adult residents (age < 50) on a number of demographic and health measures.

Results—Based on chart diagnoses, the overall prevalence of bipolar disorder was 7.8%. Compared to other studies of outpatient, epidemiological, and census samples, both older and younger residents with bipolar disorder had higher rates of cognitive impairment, impairment in executive functioning, vision impairment, and proportion of residents who were never married. The younger group also had higher rates of obesity, and the elderly group had a greater proportion of residents without high school education. Both age groups had rates of lithium or valproate use comparable to that of outpatient studies. Comparing the two age groups, the elderly sample had lower overall cognitive and executive functioning, and was using a larger number of medication classes than the younger group. The elderly also had a larger proportion of residents who were separated/divorced or widowed compared to the younger group, which had higher rates of never-married residents.

Conclusions—Overall, both age groups had relatively high rates of bipolar disorder, with significant cognitive impairment, medical burden, obesity, and service use, and lower education levels, as compared to outpatient, epidemiological, and census samples. Of note was the significant cognitive impairment across age groups.

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Keywords

Age; bipolar; geriatric; elderly; mania; adult congregate facilities

The research community is placing greater emphasis on understanding geriatric bipolar disorder across a variety of settings, as numerous questions remain unanswered about many aspects of the illness and its impact on patients' lives (e.g., lifetime course, psychiatric and medical comorbidity, mortality, etc.) (1-3). As the overall population ages in the United States, and as the number of elderly with severe mental illness grows, there is a need to better characterize this population in order to better understand the service needs of this group (4-6).

Among the few studies that have been conducted on elderly bipolar disorder patients in community (epidemiological) or clinical outpatient settings, prevalence rates vary between 0.15% and 9%. There have been relatively consistent findings that elderly bipolar disorder patients have significant cognitive and functional impairment. These patients also seem to have less substance abuse than a younger cohort (7, 8). In other health domains, findings have been less consistent. For example, compared to younger patients, elderly bipolar disorder patients appear to use similar inpatient and greater outpatient services in a veterans setting, but less inpatient and outpatient services (except case management) in a community health setting (7, 8). A few studies examining the relationship between symptom severity and age also have had mixed findings: in two separate studies, Young, et al. (9) found no decrease in overall severity with age among a mixed-age sample of manic bipolar disorder patients, but this was in contrast to Broadhead and Jacoby (10), who did find decreased overall severity with age among manic bipolar disorder patients. Given the dearth of information on elderly bipolar disorder patients— and virtually none on those dwelling in Adult Congregate Facilities [(ACFs) described below]— it is important to better characterize the health status and needs of this population.

ACF is an umbrella term whose precise definition varies somewhat from state to state, but which generally refers to senior-based housing that is publicly supported, provides apartments, suites and/or rooms for residents receiving some form of state assistance and who may need support in personal care or daily activities (11). Generally, these settings accept residents aged 55 years or older, although younger residents may be accepted if they meet physical or mental disability eligibility requirements. ACFs typically provide unskilled support, such as resident monitoring, congregate meals, and certain personal care services, but do not provide skilled nursing or other medical care. The size and organization of ACFs can vary substantially: while large metropolitan regions and states (e.g., New York, California) may have large ACFs housing up to several hundred residents, ACFs can also consist of small group home settings. For a more detailed description of New York's ACFs, see the New York Department of Health (DOH) website: www.health.ny.gov/facilities/adult_care.

In 2002, the state of New York undertook a large evaluation of the state's ACFs due to concerns related to a steady change in the population over the past 30 years: although originally oriented toward supportive care for the elderly, approximately 25–30% of the

resident population has a psychiatric disability, with a substantial proportion also having medical comorbidities (11). The state evaluation was initiated in order to better understand the needs of these residents, and to determine if the ACF setting was adequately in meeting those needs (11). Under state contract, New York Presbyterian Hospital conducted evaluations of over 2,600 ACF residents between February 2003 and February 2004, examining a full spectrum of resident health status, preferences, needs, and services. In order to meet the needs of the state contract, a large number of residents had to be assessed within a one-year period of time. A full report of the New York ACF project can be found at: www.health.ny.gov/facilities/adult_care/workgroup_report/10-2002/report.htm.

The goal of this analysis was to better characterize the demographic and health-related features of the geriatric bipolar disorder residents of these New York ACFs. Based on chart diagnoses of bipolar disorder, we conducted an estimate of the prevalence of the illness among the full sample of residents. We then analyzed data from a subgroup of 100 residents who were either elderly (age ≥ 60) or young (age 18-49), comparing them across (i) demographic characteristics, (ii) clinical features (cognitive status, chronic disease burden, and medical status), (iii) benefit and service use, and (iv) medication use. Based on other studies of geriatric bipolar disorder and the nature of the adult home population, we expected that the prevalence of bipolar disorder would be 5–9%, with lower education levels than those found in other studies of general or outpatient bipolar populations. We also expected higher rates of cognitive impairment and increased medical burden. Between the two age groups, we expected the elderly sample to have greater cognitive impairment and medical burden; a larger number of services and medications used (and more classes); and greater sensory impairment. Given other studies [e.g., Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD)] showing lower lithium use among elderly patients, and the potential for lithium to worsen cognitive status among the elderly, we expected lower rates of lithium use among this group compared to the young cohort (6, 12)

Materials and methods

Adult homes and subjects

This study was approved by the Weill Cornell Institutional Review Board. A total of 19 large ACFs (population range: 117–356 residents; total population = 3,886) in the New York metropolitan region participated in the original study. The selection of ACFs was based on several criteria within the limits of the time and resources allocated for the contract. First, due to the specific concerns about the needs of the psychiatric population, all but one of the selected homes had 25% or more of residents with a psychiatric disability diagnosis (*impacted* homes). Second, for contract feasibility, DOH chose the New York City metropolitan region because it had the largest concentration of large, impacted homes. Finally, in order to obtain geographical representation, DOH selected the largest homes from six different counties. A total of 19 homes were included in the project from six New York City boroughs and outlying counties. The goal was to assess all 3,886 residents in each of the 19 ACFs, across seven domains (described below), and there were therefore no exclusion criteria other than residents' refusal to participate.

Assessment and measures

In collaboration with the New York DOH, the project team selected and organized measures that assessed residents across a comprehensive range of health domains, including demographics, chart records of diagnoses and medications, service use, quality of life and preferences, functional status, mental health status, cognitive status, and physical status (nursing exam). Nurses collected demographic data, medical and psychiatric diagnoses, service use, and medications from chart records and then reviewed these with residents and ACF Directors of Service in order to confirm this data as best able. Psychiatric diagnoses had previously been made separately by the community psychiatrists providing services to these residents. Given the large scale and short timeline of the project, the need to assess across a wide range of health domains, and to evaluate a large number of residents, bipolar disorder diagnoses based on semi-structured research interviews was not possible. Nurses also did not assess current mood state, although they were trained to contact the research team if gross mania, suicidality, or other health issues created an emergent safety concern. Cognitive status was assessed via the Mini Mental Status Exam (MMSE) and executive functioning was assessed via the Initiation– Perseveration subscale of the Dementia Rating Scale (DRS-IP), with impairment levels as indicated by Twamley et al. (13-15). Total Chronic Disease Score was calculated using an algorithm based on the 2007 American Hospital Formulary Service Codes (16). Body mass index and blood pressure were measured directly on every participating resident by the nurse assessors.

Nurse training

Nine nurses were hired specifically for the project. Minimal requirements were RN-level training and two or more years of experience in psychiatric nursing, geriatrics, and/or home health. The nurses were trained on-site at the New York Presbyterian Hospital in White Plains, NY, over the course of three days. Training faculty included a board-certified geriatric psychiatrist, three clinical psychologists, a doctoral-level nurse educator, and a board-certified psychiatric mental health clinical nurse specialist. Each of the training days covered specific modules on each of the assessment areas described above, and consisted of training elements that have demonstrated effectiveness in the professional education literature, including didactics, case examples, practice, and role-playing exercises (17, 18). Nurses had to demonstrate competence in assessments prior to beginning resident evaluations. In addition, each of the nurses was supervised on-site by a clinical psychologist and project coordinator for five initial assessments and periodically thereafter, in order to ensure a minimal level of competence, provide feedback, and ensure reliable data collection. Nurses could also contact the project principal investigator, nurse specialist, psychiatrist, and psychologist on an as-needed basis.

Analyses

We estimated the overall rate of bipolar disorder diagnosis for the entire sample, followed by comparisons between geriatric residents (age ≥ 60) and the young cohort (age 18–49). Residents were specified as geriatric for this analysis if they were age 60 years or older, consistent with numerous other studies of geriatric bipolar disorder (19-22). In order to better contrast geriatric and younger adult residents, residents age 50-59 were excluded in

the final analysis. Residents with bipolar disorder that were missing key data (e.g., cognitive status) were also excluded from the analysis.

As an exploratory investigation of this population, this analysis consisted of descriptive statistics with bivariate comparisons between the young and geriatric groups (*t*-tests, chi-square, Fisher's exact test). In order to control for type I error, significance tests were Bonferroni adjusted, with *p*-values of 0.004 or less considered significant. For descriptive purposes, trends and post-hoc comparisons are reported at the 0.05 level. We also qualitatively examined (no significance tests) rates of bipolar disorder, and demographic and clinical features of this sample with those of prior outpatient, epidemiological, and census samples.

Results

Among the 3,886 residents of the 19 homes, 1,284 were excluded because they were hospitalized or moved from the home (*n* = 194 residents), had communication/comprehension difficulties (*n* = 170), or refused participation (*n* = 929). A total of 2,602 ACF residents had assessments completed. Two-hundred (7.8%) of these residents had a chart diagnosis of bipolar disorder, considerably higher than community (epidemiological) samples and within the range of clinical settings (23-26). Among these 200, 56 (28%) were age 18–49, 77 (39%) were age 50–59, and 67 (34%) were age 60 or older. The 50–59 age group had a higher within-group proportion of residents with bipolar diagnoses (77/813 or 9.5%) than the 18–49 (56/730 or 7.7%), or 60+ (67/1050 or 6.4%) groups [$\chi^2(2) = 6.2$, *p* = 0.046]. There was no difference between the 18–49 and 60+ age groups on proportion with bipolar diagnoses [$\chi^2(1) = 0.29$, not significant].

As noted above, all subsequent analyses included only geriatric (age 60+) and young (age 18–49) residents with bipolar disorder who also had complete data for this analysis. Twenty-three participants were excluded due to missing demographic and MMSE data, for a final sample of 50 geriatric patients (age ≥ 60) and 50 young patients (age 18–49). There were no demographic differences between excluded and non-excluded participants. Bipolar type among these participants was recorded from chart diagnoses: 19 residents had bipolar I disorder specified, one had bipolar II disorder specified, and eight had schizoaffective disorder, bipolar type specified. Ninety-one patients had mood states specified: 85 manic (18 also specified as bipolar I disorder), four mixed state (one also as bipolar I disorder), and two depressed state. Thus, given that manic and mixed states would be viewed as bipolar I disorder, we estimated that 89 (87%) of the sample had bipolar I disorder, one (1%) had bipolar II disorder, eight (8%) had schizoaffective disorder, bipolar type, and two (2%) had unspecified bipolar disorder. The proportions of bipolar type between the old and the young patients were not significantly different [$\chi^2(3) = 5.0$, not significant]. As noted in *Methods*, the residents' current mood states were not assessed at the time of the nursing assessment.

Compared to studies of outpatient samples (no significance tests conducted), residents in both the young and the elderly age groups had greater proportions of participants who were never married (young: 66% versus 36.6%; geriatric: 42% versus 2%); see Table 1 (20). The elderly group, but not the young group, also had a greater proportion of participants with no

high school education than an outpatient sample (16% versus 2%) (12, 20). Clinically, compared to other studies of outpatient samples, both age groups had higher rates of residents who were mildly impaired (MMSE ≥ 27) or worse (young: 56% versus 17.6%; geriatric: 64% versus 28%) and on the DRS-IP (young: 54% versus 18.9% for outpatients; geriatric: 76% versus 16.7% for outpatients) (20, 27). Compared to similarly aged groups in a census population, residents in both age groups had a greater proportion of participants with vision impairment (young: 16% versus 2.5%; geriatric: 34% versus 11.8%) (28). Rates of obesity were higher for the young group only (51% versus 35.3%) (29). Rates of mood stabilizer use (lithium or valproate) for both age groups were comparable to that of outpatient studies (young: 88% versus 90%; geriatric: 72% versus 70%) (6, 12, 23). Other demographic and clinical variables were comparable to those of other general population or outpatient samples of bipolar disorder patients.

Between the two age groups, there were statistically significant differences in marital status, overall cognitive status on the MMSE, executive functioning on the DRS-IP, and number of medication classes used. The young group had a higher rate of participants who were never married, while the elderly group had a larger proportion who were separated/divorced or widowed (see Table 1). The elderly group had lower overall scores on the MMSE as compared to the young group (Table 2), with 42% demonstrating moderate impairment or worse on the measure, compared to 25% of the young group [$\chi^2(1) = 4.9$, $p = 0.03$]. Likewise, the geriatric group demonstrated poorer performance on the DRS-IP than the young group (Table 2), with 76% performing in the *poor* or *very poor* range, compared with 54% of the young participants [$\chi^2(1) = 5.3$, $p = 0.02$]. Finally, these participants also were using a larger number of medication classes than the young cohort (Table 2).

While not statistically significant, Table 2 also indicates a number of trends in differences between the age groups, including among the older when compared to the young: greater sensory and mobility impairment, greater disease burden as indicated by chronic disease score and systolic blood pressure, higher number of benefits received, total number of medications used, and less use of mood stabilizers.

Discussion

Results of this study supported most of our expectations with respect to this population; overall, both age groups had relatively high rates of bipolar disorder, with significant cognitive impairment, medical burden, obesity, and service use, and lower education levels, as compared to epidemiological, census, and outpatient samples. The similar rates of lithium/valproate use may reflect the fact that these medications are the most efficacious forms of treatment for bipolar disorders and are likely to be prescribed for this illness regardless of setting. One of the most robust findings was the significant impairment in overall cognitive functioning, as indicated on the MMSE, as well as impairment in executive functioning, as measured by the DRS-IP. These findings are consistent with a number of recent studies that have found executive functioning deficits among elderly bipolar disorder patients (30-33). Of particular note is the level of executive impairment among the *young* group; with a mean DRS-IP score of 31.8, this group scored on-par with an elderly sample of symptomatic bipolar disorder patients recruited from the community, which had a mean

score of 31 (30). The sample of elderly bipolar patients, with a DRS-IP score of 27.8, was even more impaired. It is important to note that given these residents' need for support in areas of functioning that depend upon cognitive and executive capacities, it is possible that these results are related to ACF enrollment for these deficits. However, these characteristics also highlight the need to better understand this disorder among the elderly, and particularly how a subset of elderly bipolar disorder patients function in non-clinical community settings.

Between the two groups, a few hypotheses also were supported, namely, the elderly group's worse overall cognitive and executive functioning and the greater number of medication classes that they were using. Some of the trends also were in the direction expected: higher sensory and mobility impairment, greater chronic disease burden, greater numbers of medications used, and a slightly lower use of lithium/valproate. Thus, also consistent with other studies, these elderly residents were more ill and impaired than their younger counterparts. The lack of differences between age groups in mental health and total services received may also be a setting-specific effect, in that the overall needs of the Adult Home population is such that once enrolled in this type of care, most residents receive a similar number of services (11).

Age-related cohort effects may also be reflected in the results: e.g., one would expect that a higher proportion of elderly residents would be widowed as compared to the young patients, and that more of the younger patients would be single and never married. However, the overall differences in marital status found between this sample and that of other studies of outpatients suggest that there may in fact be some impairment. Similarly, the elderly group would be expected to have somewhat higher sensory/motor impairment, disease burden, and lower levels of lithium/valproate use. Despite these differences, of note is the degree to which the two groups are similar with respect to psychiatric hospitalization history, number of benefits and services received, mental health service use, and obesity rates. These findings likely reflect the high degree of illness and impairment across the entire ACF population. Also indicative of illness severity and impairment is the high rate of bipolar I disorder found among both age groups. The low proportion of residents with bipolar II disorder may be indicative of the difference in illness severity and sequelae between bipolar I and bipolar II disorder, although the limitations of chart-based diagnoses would make this inference tentative.

With respect to generalization, large ACF's housing 100 residents or more are likely to be more common in large metropolitan regions and, moreover, the degree to which younger residents with bipolar disorder or other mental illness are included in this population is likely to vary considerably. The housing challenges of the mentally ill in the nation's large cities are well-known, particularly in the New York City region (34, 35). These study findings may have applicability to these contexts, but may not be as applicable in settings that, for example, are more rural and/or are smaller group homes, housing a dozen residents or less, for example. The results of this analysis must be viewed within the limitations imposed by a state-contracted study evaluating a large number of patients, across many domains, in a very short period of time. Most notable was the need to rely on chart diagnoses of bipolar disorder, which are notoriously less reliable and specific than research

interviews, although efforts were made to verify these diagnoses. A second limitation was that current mood states were not assessed during the evaluations, and therefore the comparisons with other studies, which typically evaluated euthymic or manic patients, should be viewed as tentative. However, it should be noted that studies have identified cognitive impairment across all mood states, although the more nuanced impact on particular cognitive functions is more complex (and beyond the scope of gross measures of impairment). As is often the case with cross-study comparisons, some of the other studies used measures other than the MMSE to determine global cognitive impairment, limiting comparisons. Another methodological weakness was that although nurse evaluators were carefully trained and supervised, this type of project precluded rater reliability monitoring that typifies more rigorous research studies. The use of multiple pairwise tests introduced risk of Type I error, although the purpose of this study was largely descriptive. Finally, this study was cross-sectional, and therefore inferences about the longitudinal course of bipolar disorder among this population are limited. A more rigorous study would be needed to replicate these findings.

In summary, our study of ACF residents with bipolar disorders suggests that this is a cognitively impaired group (across age groups), consistent with other findings, and that it has substantial clinical and service needs (36, 37). Our findings with respect to chronic disease burden and obesity, executive dysfunction, overall cognitive status, education, and medication use are consistent with much of the overall literature and may indicate a consistent characteristic of bipolar disorder patients in this setting, regardless of age. The age-specific differences we found also were largely consistent with the literature in other settings, and support the notion that as they become older, bipolar disorder patients may continue to decline and suffer from disproportionate cognitive impairment, functional decline, and growing health and service needs.

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Table 1

Demographic characteristics of adult congregate facility residents with bipolar disorder, non-geriatric (age 18-49) and geriatric (age 60+)

Demographic	Non-geriatric (n = 50)	Geriatric (n = 50)	p-value
Age, mean (SD)	43.4 (4.6)	67.36 (7.3)	
Gender, female, n (%)	18(36)	22 (44)	0.54 ^a
Education, %			0.51 ^a
No formal education	0	0	
Grade 9	12	16	
High school	36	20	
Some college/technical school	24	18	
College	12	18	
Graduate school	4	10	
Other/unknown	12	18	
Race/ethnicity, %			0.17 ^a
White	50	66	
African American	14	12	
Hispanic (US native)	4	10	
Hispanic (immigrant)	8	6	
Asian	2	0	
Other	8	0	
Refused/unknown	14	6	
English as primary language, %	86	86	0.76 ^a
Unknown		4	
Marital status, %			0.004 ^a
Single, never married	66	42	
Married	8	10	
Separated/divorced	16	30	
Widowed	0	12	
Cohabiting	0	0	
Unknown	10	4	

^aTwo-sided Fisher's exact test.

Table 2

Clinical and service use characteristics of adult congregate facility residents with bipolar disorder, non-geriatric (age 18-49) and geriatric (age 60+)

Characteristic	Non-geriatric (n = 50)	Geriatric (n = 50)	X ² or t	p-value
Clinical status				
Cognitive status, MMSE total score, mean (SD)	26.38 (3.10)	23.98 (4.90)	<i>t</i> (97) = 2.9	0.001
Cognitive status, MMSE score range, %				0.03 ^a
No impairment (28+)	44	36		
Mild/possible impairment (24–27)	34	20.4		
Moderate impairment (18–23)	20	28		
Severe impairment (< 18)	2	14		
Missing		2		
Initiation-preservation, DRS-IP total score, mean (SD)	31.80 (4.63)	27.82 (7.96)	<i>t</i> (98) = 3.1	0.003
Initiation-preservation, DRS-IP score range, %				0.02 ^a
Above average (> 36)	26	18		
Average (34–36)	20	6		
Poor(27–33)	40	40		
Very poor (< 27)	14	36		
Impaired vision, %	16	34		0.04 ^a
Unknown		4		
Impaired hearing, %	0	8		0.05 ^a
Unknown		6		
Impaired mobility, %	4	18		0.03 ^a
Unknown		6		
Obese or very obese, %	52	34		0.37 ^a
Chronic disease score, mean (SD)	2.9 (2.3)	4.8(3.1)	<i>t</i> (98) = 3.5	0.01
Systolic blood pressure, mean (SD)	123.1 (14.1)	128.2 (18.5)	<i>t</i> (98) = -2.04	0.04
Diastolic blood pressure, mean (SD)	80.5 (9.7)	78.8(9.6)	<i>t</i> (98) = 0.87	0.38
Service use				
Past psychiatric hospitalization, %	84	82		1.00 ^a
Total no. benefits received, mean (SD)	2.4(1.1)	2.7 (1.1)	<i>t</i> (98) = 1.8	0.08
Total no. services received, mean (SD)	3.1 (2.2)	3.6 (2.0)	<i>t</i> (98) = 1.0	0.30
Using mental health day treatment, %	36	26		0.39 ^a
Using mental health clinic, %	26	38		0.284 ^a
No. medications, mean (SD)	5.4(2.8)	7.0 (3.4)	<i>t</i> (98) = 2.5	0.01
No. medication classes, mean (SD)	4.7 (2.5)	6.4(3.3)	<i>t</i> (98) = 3.01	0.003
Using lithium or valproate, %	88	72		0.08 ^a

MMSE = Mini Mental Status Exam; DRS-IP = Initiation-Perseveration subscale of the Dementia Rating Scale.

^aTwo-sided Fisher's exact test.