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Characteristics and Service Use of Older Adults with Schizoaffective Disorder Versus Older Adults with Schizophrenia and Bipolar Disorder

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Abstract

Objective—The purpose of this study was to determine if schizoaffective disorder in older adults is differentiated from schizophrenia and bipolar disorder with respect to community functioning, cognitive functioning, psychiatric symptoms, and service use.

Design—Secondary analysis of baseline data collected from the Helping Older People Experience Success psychosocial skills training and health management study.

Setting—Three community mental health centers in New Hampshire and Massachusetts.

Participants—Adults over the age of 50 (N = 139, mean age: 59.7 years, SD: 7.4 years) with persistent functional impairment and a diagnosis of schizoaffective disorder (N = 52), schizophrenia (N = 51), or bipolar disorder (N = 36).

Measurements—Health status (36-Item Short Form Health Survey [SF-36]), performance-based community living skills (UCSD Performance-Based Skills Assessment), neuropsychological functioning (Delis-Kaplan Executive Functioning subtests), psychiatric symptoms (Brief Psychiatric Rating Scale, Center for Epidemiologic Studies Depression Scale, Scale for the Assessment of Negative Symptoms), medical severity (Charlson comorbidity index), and acute service use.

Results—Older adults with schizoaffective disorder had depressive symptoms of similar severity to bipolar disorder, and thought disorder symptoms of similar severity to schizophrenia. Schizoaffective disorder compared with schizophrenia was associated with better community functioning, but poorer subjective physical and mental health functioning as measured by the SF-36. Older adults with schizoaffective disorder had greater acute hospitalization compared with

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adults with schizophrenia, though their use of acute care services was comparable to individuals with bipolar disorder.

Conclusions—Findings from this study suggest that schizoaffective disorder in older adults occupies a distinct profile from either schizophrenia or bipolar disorder with respect to community functional status, symptom profile, and acute services utilization.

Keywords

Schizoaffective disorder; older adults; bipolar disorder; functioning; diagnostics

Schizoaffective disorder is a psychiatric diagnosis consisting of psychotic features more typically associated with schizophrenia, along with affective symptoms characteristic of bipolar disorder.¹ First introduced as a distinct diagnosis in 1933,² the recently released DSM-5 retains schizoaffective disorder as a discrete diagnosis.¹ There has been a long-standing debate in the research literature on whether schizoaffective disorder most accurately shares features of a chronic affective disorder,^{3,4} or more commonly, if it is best considered a variant of schizophrenia.^{5–7} Dating back to Pope and Lipinski's seminal paper suggesting that schizoaffective disorder reflects "good prognosis schizophrenia",⁸ research has found that schizoaffective disorder is associated with better long-term functional outcomes and cognitive functioning compared with schizophrenia.^{4,9–12} Research on the clinical characteristics of schizoaffective disorder has generally suggested that these individuals have less cognitive impairment than adults with schizophrenia but possibly more than individuals with bipolar disorder.^{6,9,12} Other studies have suggested that schizoaffective disorder is associated with higher occupational functioning, more social contact, higher quality of life, more insight into the disorder, and are healthier overall than individuals with schizophrenia;^{4,5,10,13} nevertheless, individuals with schizoaffective disorder tend to be hospitalized more frequently.^{13,14} On the other hand, neuroimaging studies have suggested widespread similarities between the brains of individuals with schizophrenia and schizoaffective disorder, distinct from the brains of individuals with bipolar disorder,^{15,16} which could suggest similar long-term outcomes.

Despite these research findings, there is a remarkable paucity of data comparing characteristics and service use of older adults with schizoaffective disorder, schizophrenia, and bipolar disorder, as studies frequently focus on a younger population. Furthermore, outcome studies commonly group schizoaffective disorder under the larger subheading of "schizophrenia-spectrum" or "psychotic disorders",^{17,18} limiting knowledge on the specific long-term prognosis of schizoaffective disorder. Given the rapid growth in the population of older adults with serious mental illness with schizophrenia, schizoaffective disorder, or bipolar disorder,¹⁹ it will be increasingly important to clarify if substantive differences exist between these disorders in older age as this has implications for treatment and related outcomes. The purpose of this study was to address this gap in the research literature by comparing demographic characteristics, community functioning, cognitive functioning, psychiatric symptoms, and service use of older adults (age 50 years and older) diagnosed with schizoaffective disorder, schizophrenia, and bipolar disorder.

METHODS

We conducted a secondary analysis of baseline data collected from a treatment study of Helping Older People Experience Success (HOPES), which was designed to promote social rehabilitation and integrated healthcare for adults age 50 years and older with serious mental illness, including schizophrenia, schizoaffective disorder, major depressive disorder, and bipolar disorder.^{20–23} The study consisted of a 12-month social skills training program conducted at three mental health centers in New Hampshire and Massachusetts. All measurements presented in this study were conducted at baseline, prior to treatment randomization. Study protocol was approved by the Dartmouth Committee for the Protection of Human Subjects and the New Hampshire Bureau of Behavioral Health Committee for the Protection of Human Subjects, as well as by the institutional review boards at the two additional study sites in Boston, Massachusetts.

Participants

Study participants were recruited from three community mental health centers, one in Nashua, New Hampshire, and two in Boston, Massachusetts. Study participants were eligible for participation if they were aged 50 years or older; had a diagnosis of schizoaffective disorder, schizophrenia, bipolar disorder, or major depressive disorder based on the Structured Clinical Interview for DSM-IV (SCID); had persistent impairments in several areas of functioning (i.e., certified as seriously mentally ill by the state, and thus eligible for certain state services);²⁴ were enrolled in community mental health center for more than 3 months; were fluent in English; and had the ability and willingness to provide informed consent. Participants were excluded if they currently resided in a nursing home or other institution; had significant cognitive impairment (Mini-Mental State Examination <20) or a diagnosis of dementia; had terminal physical illness with life expectancy <12 months; and had current substance dependence, as determined by the administration of the substance abuse module of the SCID or active alcohol or substance use noted by referring clinicians.

A total of 183 older adults enrolled in the HOPES study. The subgroup of older adults with major depressive disorder (N = 44) were excluded from this analysis because the primary focus of the study was a comparative analysis to test hypothesized differences between three specific diagnostic groups (i.e., schizophrenia, schizoaffective disorder, and bipolar disorder). The present study included 139 participants with a mean age of 59.7 (SD: 7.4) years. There were approximately equal numbers of individuals with schizoaffective disorders (N = 52, 37%) and individuals with schizophrenia (N = 51, 37%), with the remainder (N = 36, 26%) with bipolar disorder. The majority of individuals in this sample were white (84%), had at least a high school education (76%), and were never married (58%). There were slightly more men (53%) than women, and the majority of participants resided in community-based supported housing (55%). All participants in this sample were taking at least one psychotropic medication. With the current sample size of diagnosis groups, there was 80% power to detect a Cohen's d effect size of 0.557 between schizophrenia and schizoaffective disorder, a Cohen's d effect size of 0.618 between schizophrenia and bipolar disorder, and a Cohen's d effect size of 0.615 between schizoaffective disorder and bipolar disorder. These represent medium effect sizes.²⁵

Measures

Trained research interviewers administered all measures with high interrater reliability. A comprehensive description of the measures used in this analysis is described in a prior study.²² For the purpose of this report measures of functioning include self-reported general functioning and subjective health status (the 36-Item Short Form Health Survey [SF-36]²⁶) and performance-based ratings of simulated community living skills (the UCSD Performance-Based Skills Assessment (UPSA)²⁷). The SF-36 consists of 36 questions covering three domains: functional status, well-being, and overall health evaluation. Scores range from 0 to 100 with lower scores indicating more disability. The UPSA is a performance-based task that involves role-plays that assess living skills. Scores range from 0 to 100 and higher scores on these scales represent better performance on the task.

Cognitive functioning was assessed with a brief battery of standardized neuropsychological measures (31). Subtests of the Delis-Kaplan Executive Functioning System were administered to assess cognitive function. Selected subtests included: 1) verbal fluency; 2) Color-Word Interference Test (based on Stroop test); 3) the California Verbal Learning Test-II; and 4) the Trails test. In consultation with a licensed neuropsychologist, representative indicators were chosen to create a composite score. The alpha coefficient for the composite score was 0.72, indicating good internal reliability.

Psychiatric symptom severity was assessed with the Center for Epidemiologic Studies Depression Scale (CESD),²⁶ Brief Psychiatric Rating Scale (BPRS),²⁸ and the Scale for the Assessment of Negative Symptoms (SANS).²⁷ The CESD questionnaire consists of 20 descriptions of depressive symptoms and individuals are asked to rate how often they experience each symptom (ranging from “rarely” to “all of the time”). Scores range from 0 to 60. The BPRS consists of 24 psychiatric symptoms (e.g., anxiety, depression, and hallucinations) and individuals rate each symptom on a 7-point scale. The total score ranges from 24 to 168. The BPRS consists of five subscales ranging from 1 to 7: affect, anergia, thought disorder, activation, and disorganization. The SANS measured negative symptoms (both observed and self-reported) on a scale, from absent (0) to severe (5). Total scores range from 0 to 120. On all of these psychiatric symptom severity scales, higher scores denote worse symptoms.

Physical health was assessed using the Charlson comorbidity index. Scores range from 0 to 35, depending on the number and severity of physical health conditions an individual has. Higher scores indicate a higher 1-year mortality risk and burden of disease.²⁹ Hospital utilization data was obtained by chart review. Information about hospital utilization (medical and psychiatric services) in the past 12 months was collected. Medical information abstracted included total number of emergency department visits, and total number of hospital admissions as well as the number of days an individual spent overnight in the hospital to examine overall utilization. Medical and psychiatric hospitalizations were combined at the time of data collection and are unable to be separated to examine the type of hospitalization.

Statistical Analyses

Multivariate statistical tests, including analysis of variance (for continuous variables meeting the assumptions of normality), the Kruskal-Wallis test (for continuous variables that were not normally distributed), and χ^2 tests (for categorical data), were used to compare the three groups of participants. Hospital utilization data was analyzed using Poisson regression with robust standard errors. Diagnosis was analyzed as the independent variable, with scores on the measures as dependent variables. Significant results were adjusted for age and sex. Post-hoc analyses were used to detect specific differences between groups, using the Dunn test for nonparametric variables and within Poisson regressions, tests of regression coefficient associated with diagnosis groups were used to determine group differences. No adjustments for multiple scale comparisons were done, potentially increasing the risk of a Type I error across multiple scales. Stata Windows version 10.1 and Statistical Package for the Social Sciences (SPSS) Windows version 19.0 was used for all statistical analysis.

RESULTS

Demographic Characteristics of the Study Sample

Study participants with schizoaffective disorder were younger than participants with schizophrenia or bipolar disorder (Table 1). A greater proportion of participants with schizoaffective disorder and schizophrenia were male and never married than those with bipolar disorder. All three groups were comparable on race, education, and illness duration. Participants with schizophrenia compared with participants with bipolar disorder differed most with respect to marital status and living situation, with individuals with schizoaffective disorder having approximately equal proportions ever versus never married, and equal proportions either in independent housing versus supported housing. Participants had similar levels of comorbid physical health conditions regardless of psychiatric diagnosis (Charlson comorbidity index, Table 1).

Self-Report—SF-36 scores demonstrated that schizoaffective disorder was associated with greater subjective impairment compared with schizophrenia with respect to subscales for general health and mental health (Table 2). After adjustments for age and sex differences in the sample, significant differences remained between the three diagnoses on the SF-36 mental health subscale.

Performance-Based—Participants with schizoaffective disorder performed significantly better on simulated performance of independent living skills as measured by the UPSA compared with participants with schizophrenia (Table 2). Their performance was similar to the performance of participants with bipolar disorder.

Cognitive Functioning

Cognitive measures were comparable between the three groups of participants (Table 3).

Psychiatric Symptom Severity

Participants with schizoaffective disorder reported greater depressive symptoms than participants with schizophrenia, with a CESD score comparable to participants with bipolar

disorder (Table 3). The BPRS was comparable among groups, with the exception of the thought disorder and disorganization subscales, where respondents with schizoaffective disorder had similar symptomology to participants with schizophrenia, and which was worse than those with a diagnosis of bipolar disorder. Participants in all three diagnoses groups reported similar negative symptoms as measured by the SANS.

Hospital Utilization

Measures of hospital utilization, including total hospital admissions and number of hospital days differed between the three participant groups (Table 3). Individuals with either schizoaffective disorder or bipolar disorder had more hospital admissions and a larger amount of time spent admitted in the hospital than participants with schizophrenia. This remained significant after adjustment for age and sex. The number of emergency department visits was similar between individuals with schizoaffective disorder, schizophrenia, and bipolar disorder.

CONCLUSIONS

Findings from this study suggest that schizoaffective disorder in older adults is differentiated from schizophrenia with respect to symptom profile, functioning, and acute service use. Older adults with schizoaffective disorder had depressive symptoms of similar severity to bipolar disorder, but had thought disorder symptoms of similar severity to individuals with schizophrenia. With respect to functioning, schizophrenia was associated with greater impairment in community functioning compared with schizoaffective disorder and bipolar disorder on objective performance-based measures of community functioning as measured by the UPSA. In contrast, schizoaffective disorder was associated with poorer subjective physical and mental health functioning as measured by the SF-36. Older adults with schizoaffective disorder had higher use of acute care services than older adults with schizophrenia, though their use of acute care services were comparable to individuals with bipolar disorder. Despite these findings, many similarities between the three groups of participants exist and for a number of the measures utilized in this study—including emergency room visits, SF-36 general health scale, the overall BPRS score, and many of the BPRS subscales—no differences were detected.

In addition to confirming that selected features of schizoaffective disorder in older adults can be differentiated from schizophrenia and bipolar disorder, this report contributes to the long-standing debate on whether (or not) schizoaffective disorder can be considered “good prognosis” schizophrenia.⁸ We found that older adults with schizoaffective disorder compared with schizophrenia performed better on objective measures of community living skills. Community living skills are an important predictor of ability to reside independently in the community among older adults with serious mental illness, whereas poor community living skills are strongly associated with residing in a nursing home.³⁰ In this respect, schizoaffective disorder in older adults might appropriately be characterized as having a *better prognosis* compared with schizophrenia with respect to functioning independently in the community. In contrast, we also found schizoaffective disorder compared to schizophrenia was associated with worse subjective general health, worse subjective mental

health, greater severity of depressive symptoms, and greater number of hospitalizations and hospital days. It is possible that self-report of worse functioning (in contrast to objective findings of better functioning) reflects the greater severity of depressive symptoms in participants with schizoaffective disorder, or, conversely, poorer insight among older adults with schizophrenia into their level of impairment. Of note, greater hospitalizations and hospital days for older adults with schizoaffective disorder occurred despite comparable levels of medical severity to older adults with schizophrenia. In this respect, schizoaffective disorder in older adults might appropriately be characterized as having a *poorer prognosis* compared to schizophrenia with respect to subjective physical health, mental health, and acute hospitalizations.

It is important to note that there were also significant similarities between schizoaffective disorder, schizophrenia, or bipolar disorder. For example, no differences were found with respect to severity of negative symptoms. Similarly, no differences were found between the three groups in cognitive functioning. In contrast, cognitive differences have been documented in multiples studies in younger adults with serious mental illness.^{4,9–12} It is possible that differences in cognitive functioning tend to abate with time as adults with serious mental illness experience age-related cognitive decline. The lack of differences in cognitive functioning across diagnoses may also be explained by our study criteria that excluded participants with Mini-Mental Status Examination scores less than 20. By excluding more cognitively impaired participants it is possible that we may have reduced the likelihood of detecting differences that might occur by diagnosis in the more severely impaired range. Finally, it is also possible that the relatively small sample size of our study limited our capacity to detect more subtle but clinically important differences in cognition.

Despite the strengths of this study, there are important limitations that warrant consideration in interpreting the findings. First, this report presents secondary analyses of data collected in a psychosocial skills training intervention study. Accordingly, the study sample may not apply to the broader population of older adults with serious mental illness that includes those who may not be likely to consent to participate in a research study. Similarly, the sample consists of participants with serious mental illness and functional impairment receiving treatment in the public mental health service sector. This patient population may be qualitatively different than older adults with mental illness who do not receive such services, as the sample is actively seeking treatment and intervention. Additionally, the sample size of study participants only allows for valid detection of relatively large differences between the different diagnoses. A power analysis suggests adequate power to detect effect sizes that are slightly larger than moderate (0.56–0.62),³⁰ indicating true differences of this size would be identified with good probability (80% power) and true difference smaller than this may be missed (Type II error). Next, this study presents cross-sectional data. Hence, we cannot conclude that schizoaffective disorder remains a distinctive diagnosis over the course of the aging process, and we are unable to characterize the long-term stability of our findings among older adults over time. Of note, changes from the DSM-IV-TR to the DSM-5 emphasize the likely instability of schizoaffective disorder over time.^{31–33} Also, the focus of the parent study on psychosocial variables did not include detailed data on medications, dosages, and side effects, potentially consisting of unmeasured factors that might affect differences detected in physical and mental health outcomes. In addition, our measures of

hospitalization did not differentiate between psychiatric versus medical hospitalization. Finally, within each measure we adjusted for multiple diagnosis comparisons, but we did not adjust for multiple comparisons across different measures between the diagnosis groups. This lack of adjustment increases the possibility of making a Type I error: finding a statistically significant difference between diagnosis groups on a measure where a true difference does not exist. Despite these limitations, this study is strengthened as it provides information about the diagnostic validity of schizoaffective disorder in older adults, as well as insight into function, prognosis, and cognition of these individuals.

In conclusion, findings from this study suggest that older adults with schizoaffective disorder compared with schizophrenia and bipolar disorder have a number of distinctive characteristics with respect to community functioning, subjective mental health status, symptoms, and acute hospitalization use. These differences have potential implications for clinical services and for designing and interpreting future research studies, as schizoaffective disorder in older adults most likely presents overlapping, but different, challenges in key clinical and functional outcome domains.

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Demographics of the Study Sample

TABLE 1

	SZ (N = 51)	SA (N = 52)	BP (N = 36)	Test Statistic, degrees of freedom, overall p value for the differences between diagnoses	SZ vs. SA test statistic, degrees of freedom, p value	SZ vs. BP test statistic, degrees of freedom, p value	SA vs. BP test statistic, degrees of freedom, p value
Age [mean in yrs] (SD)	60.8 (8.0)	56.9 (5.9)	62.1 (7.5)	H(2) = 11.72 ^a p = 0.0028	z = -2.52 ^b p = 0.0058	z = -0.91 ^b p = 0.18	z = -3.20 ^b p = 0.007
Sex, %				$\chi^2(2) = 10.41^c$ p = 0.005	$\chi^2(1) = 2.86^c$ p = 0.091	$\chi^2(1) = 10.33^c$ p = 0.001	$\chi^2(1) = 3.03^c$ p = 0.082
Male	63	46	28				
Female	37	54	72				
Race, %				$\chi^2(2) = 1.05^c$ p = 0.590			
White, non-Hispanic	84	81	89				
Non-white	16	19	11				
Education, %				$\chi^2(2) = 0.55^c$ p = 0.759			
Less than high school	26	21	28				
Completed high school diploma	74	79	72				
Marital status, %				$\chi^2(4) = 18.90^c$ p < 0.001	$\chi^2(2) = 1.21^c$ p = 0.546	$\chi^2(2) = 16.65^c$ p < 0.001	$\chi^2(2) = 12.71^c$ p = 0.002
Never married	57	48	14				
Married	8	14	11				
Divorced, separated, or widowed	35	39	75				
Illness duration [mean in years] (SD)	29.8 (10.6)	28.4 (11.5)	29.9 (12.7)	H(2) = 0.588 ^a p = 0.745			
Living situation, %				$\chi^2(2) = 12.04^c$ p = 0.002	$\chi^2(1) = 5.51^c$ p = 0.019	$\chi^2(1) = 11.46^c$ p = 0.001	$\chi^2(1) = 1.66^c$ p = 0.197
Independent housing	28	50	64				
Supported housing	72	50	36				
Charlson comorbidity index [mean] (SD)	2.18 (2.26)	2.65 (2.57)	2.57 (1.90)	F(2,134) = 0.60 ^d p = 0.553			

Notes: SA: schizoaffective disorder; SZ: schizophrenia; BP: bipolar disorder.

^aKruskal-Wallis test for non-parametric continuous variables.

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^b Dunn test for post-hoc analyses without adjustment.
^c Chi-square test for categorical variables.
^d ANOVA for parametric continuous variables.

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TABLE 2

Functional Status of the Study Sample

	SZ (N = 51)	SA (N = 52)	BP (N = 36)	Test statistic, overall p value for the differences between diagnoses	Adjusted test statistic and p value ^a	SZ vs. SA test statistic, degrees of freedom, p value	SZ vs. BP test statistic, degrees of freedom, p value	SA vs. BP test statistic, degrees of freedom, p value
Functional status								
Self-report [mean] (SD)								
SF-36 General Health	64.1 (19.0)	53.3 (21.7)	60.6 (19.8)	F(2,136) = 3.77 ^b p = 0.026	F(2,136) = 2.11 ^b p = 0.126	t(101) = -2.70 ^c p = 0.008	t(85) = -0.80 ^c p = 0.425	t(86) = 1.65 ^c p = 0.101
SF-36 Mental Health	67.2 (18.4)	56.9 (21.7)	58.2 (20.1)	F(2,136) = 3.85 ^b p = 0.024	F(2,136) = 3.29 ^b p = 0.04	t(101) = -2.60 ^c p = 0.010	t(85) = -2.06 ^c p = 0.042	t(86) = 0.30 ^c p = 0.766
Performance-based [mean] (SD)								
UPSA Total Score	61.8 (19.4)	72.3 (15.0)	75.8 (16.7)	H(2) = 15.30 ^d p = 0.0005		z = -2.67 ^e p = 0.0038	z = -3.76 ^e p = 0.0001	z = -1.36 ^e p = 0.087
Cognitive function [mean] (SD)								
Overall cognitive function	-0.51 (0.51)	-0.37 (0.58)	-0.27 (0.56)	F(2,136) = 2.25 ^b p = 0.109				

Notes: SA: schizoaffective; SZ: schizophrenia; BP: bipolar.

ILSS Independent Living Skills Survey; SF-36 Short Form 36; UPSA UCSD Performance-Based Skills Assessment.

^a Adjusted for age and sex.

^b ANOVA for parametric continuous variables.

^c Post-hoc analyses without adjustment.

^d Kruskal-Wallis test for non-parametric continuous variables.

^e Dunn test for post-hoc analyses without adjustment.

TABLE 3
Psychiatric Symptom Severity, Hospital Utilization, and Cognitive Function of the Study Sample

	SZ (N = 51)	SA (N = 52)	BP (N = 36)	Test Statistic, overall p value for the differences between diagnoses	Adjusted test statistic and p value ^d	SZ vs. SA test statistic, degrees of freedom, p value	SZ vs. BP test statistic, degrees of freedom, p value	SA vs. BP test statistic, degrees of freedom, p value
Psychiatric symptoms severity								
CESD [mean] (SD)	15.9 (9.9)	23.0 (12.1)	22.3 (13.1)	F(2,134) = 5.51 ^b p = 0.005	F(2,134) = 4.66 ^b p = 0.0111	t(99) = 3.07 ^c p = 0.003	t(84) = 2.53 ^c p = 0.013	t(85) = -0.27 ^c p = 0.790
BPRS [mean] (SD)								
Total score	56.8 (14.1)	57.5 (15.0)	51.0 (11.4)	F(2,133) = 2.61 ^b p = 0.077				
Affect	2.27 (0.91)	2.69 (1.17)	2.71 (1.19)	F(2,136) = 2.50 ^b p = 0.086				
Anergia	3.20 (1.11)	2.72 (0.99)	2.84 (0.96)	F(2,136) = 2.87 ^b p = 0.060				
Thought disorder	2.77 (1.58)	2.62 (1.30)	1.72 (0.78)	H(2) = 11.98 ^d p = 0.0025		z = 0.16 ^e p = 0.43	z = 3.16 ^e p = 0.0008	z = 3.03 ^e p = 0.0012
Activation	2.21 (1.03)	2.35 (1.07)	2.00 (1.16)	H(2) = 3.36 ^d p = 0.19				
Disorganization	1.98 (0.94)	1.99 (0.92)	1.56 (0.73)	H(2) = 6.21 ^d p = 0.045		z = -0.14 ^e p = 0.45	z = 2.1 ^e p = 0.031	z = -2.25 ^e p = 0.026
SANS total score [mean] (SD)	2.56 (0.58)	2.47 (0.56)	2.36 (0.49)	F(2,133) = 1.43 ^b p = 0.243				
Hospital utilization								
Hospital admissions [mean] (SD)	0.9 (1.8)	1.9 (2.5)	1.9 (2.1)	Wald $\chi^2(2) = 6.46^f$ p = 0.0396	Wald $\chi^2(2) = 7.57^f$ p = 0.0228	z = 2.35 ^g p = 0.019	z = 2.34 ^g p = 0.020	
Number ED visits [mean] (SD)	1.7 (3.3)	3.7 (11.1)	2.3 (2.9)	Wald $\chi^2(2) = 2.76^f$ p = 0.25		z = 1.65 ^g p = 0.099	z = 0.90 ^g p = 0.366	
Number of hospital days [mean] (SD)	9.4 (14.5)	20.5 (28.9)	20.6 (30.4)	Wald $\chi^2(2) = 7.21^f$ p = 0.0272	Wald $\chi^2(2) = 7.11^f$ p = 0.0286	z = 2.46 ^g p = 0.014	z = 2.22 ^g p = 0.027	

Notes: SA: schizoaffective; SZ: schizophrenia; BP: bipolar; CESD: Center for Epidemiologic Studies Depression Scale; BPRS: Brief Psychiatric Rating Scale; SANS: Scale for the Assessment of Negative Symptoms; ED: emergency department.

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- ^a Adjusted for age and sex.
- ^b ANOVA for parametric continuous variables.
- ^c post-hoc analyses without adjustment.
- ^d Kruskal-Wallis test for non-parametric continuous variables.
- ^e Dunn test for post-hoc analyses without adjustment.
- ^f Wald χ^2 test for count data.
- ^g Test of regression coefficients associated with diagnosis groups.