Comparison of social functioning in community-living older individuals with schizophrenia and bipolar disorder: a catchment area-based study

Article *in* International Journal of Geriatric Psychiatry · April 2016

DOI: 10.1002/gps.4490

CITATIONS
8

READS
135

5 authors, including:

Saskia van Liempt
GGZ inGeest
13 PUBLICATIONS **388** CITATIONS
SEE PROFILE

Annemiek Dols
GGZ inGeest
145 PUBLICATIONS **1,784** CITATIONS
SEE PROFILE

Sigfried N T M Schouws
GGZ inGeest
43 PUBLICATIONS **620** CITATIONS
SEE PROFILE

Max L Stek
GGZ inGeest
274 PUBLICATIONS **4,977** CITATIONS
SEE PROFILE

RESEARCH ARTICLE

International Journal of Geriatric Psychiatry

Comparison of social functioning in community-living older individuals with schizophrenia and bipolar disorder: a catchment area-based study

Saskia van Liempt[1], Annemiek Dols[2,3], Sigfried Schouws[2,3], Max L. Stek[2,3] and Paul D. Meesters[2,3]

[1]GGZ Dijk en Duin, Parnassiabavogroep, Castricum, The Netherlands
[2]GGZ inGeest, Amsterdam, The Netherlands
[3]Department of Psychiatry, EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, The Netherlands
Correspondence to: S. van Liempt, MD, PhD, E-mail: s.liempt@parnassiabavogroep.nl

Objective: Preserved social functioning is of utmost importance for older individuals living in the community to maintain independency. However, in patients with schizophrenia or bipolar disorder, it remains unclear which factors influence social functioning in later life.

Methods: In a catchment area-based study in Amsterdam, The Netherlands, 120 older (>60 years) community-living patients with schizophrenia ($n=73$) and with bipolar disorder ($n=47$) were included. Clinical interviews on social functioning and psychometric measurements were applied.

Results: Patients with schizophrenia scored lower on all social measures (social functioning, social participation, network size, availability of confidants) compared with their peers with bipolar disorder. In patients with schizophrenia, lower social functioning was associated with having more negative symptoms and depressive symptoms. Age of onset was also associated with social functioning in schizophrenia, with higher scores in very late-onset schizophrenia-like psychosis. Unfavourable social functioning in patients with bipolar disorder was associated with lower cognitive functioning. Furthermore, in both groups, social functioning was not related to age, having offspring or the presence of a partner.

Conclusions: In community-living older patients, schizophrenia has a more disruptive effect on social functioning than bipolar disorder, except in those with a very late-onset schizophrenia-like psychosis. Minimizing residual depressive symptoms and optimizing cognitive functioning may be targets for improving social functioning and independent-living in older patients with severe mental illness.

Key words: older age; older adults; social functioning; bipolar disorder; schizophrenia; serious mental illness
History: Received 23 September 2015; Revised 10 March 2016; Accepted 17 March 2016; Published online in Wiley Online Library (wileyonlinelibrary.com)
DOI: 10.1002/gps.4490

Introduction

Because of demographic changes and a greater emphasis on outpatient care, the number of older community-living patients with serious mental illness will increase rapidly (Jeste *et al.*, 1999; Vahia and Cohen, 2007). Lower levels of social functioning have been associated with premature institutionalization and increased temporary hospitalization (Meeks *et al.*, 1990; Bartels *et al.*, 1997; Bartels and Pratt, 2009). Thus, preserving social functioning in patients with schizophrenia and bipolar disorder may be an essential element for treatment programs to promote living independently. Determining factors that predict social functioning in older individuals with schizophrenia and bipolar disorder may contribute to a better understanding of how to stimulate autonomy and independency. Yet, predictors of social functioning in older individuals with schizophrenia and bipolar disorder are not yet understood.

In older patients with schizophrenia and bipolar disorder, social functioning may become limited as a

result of various factors, for example, smaller social network and reduced mobility. For older patients with schizophrenia, a lower level of social functioning in comparison to psychiatrically healthy peers is well-established (Meesters *et al.*, 2010), but in older patients with bipolar disorder, unfavourable social functioning has been reported (Tsai *et al.*, 2009). Age has been negatively associated with social functioning in adults with bipolar disorder (Guttierrez-Rojas *et al.*, 2010), suggesting that social functioning may further decline in older patients with bipolar disorder. This may also be the case in schizophrenia, were cognitive functioning, social skills and everyday functioning decline over time (Loewenstein *et al.*, 2012; Reichenberg *et al.*, 2014). Lower cognitive functioning, more negative symptoms and a history of a long institutional stay are factors that are associated with a decrease in everyday functioning in late-life schizophrenia (Harvey *et al.*, 2010; Reichenberg *et al.*, 2014; Kalache *et al.*, 2015).

Studies comparing older patients with schizophrenia and bipolar disorder show that patients with bipolar disorder tend to be less impaired in cognitive and psychosocial functioning than their peers with schizophrenia (Bartels *et al.*, 1997; Gupta *et al.*, 2007; Bartels and Pratt, 2009). However, these studies selected a mixed group of both community-living and hospitalized older patients with schizophrenia and patients with bipolar disorder. We aimed to repeat this comparison in a catchment area study, in which we contacted all older patients with schizophrenia or bipolar disorder living in a distinct catchment area and currently in contact with the local mental health organization. Furthermore, we evaluated predictors for social functioning in both groups of patients separately.

We hypothesized that social functioning would be worse in patients with schizophrenia in comparison with patients with bipolar disorder. Furthermore, we hypothesized that better social functioning would be associated with better cognitive functioning, a later age at onset, less affective and negative symptoms and fewer hospitalizations in the past. Additionally, we expected that individuals without a partner or offspring would be more socially isolated and would exhibit lower levels of social functioning.

Methods

Study sample

The psychiatric catchment area of the southern district of Amsterdam is a geographically well-defined urban area, comprising 18.4% of the total Amsterdam population. Of all catchment area inhabitants, 27 199 (19.8%) were aged 60 years and over on 1 January 2012. Psychiatric services for older individuals in the area include clinical facilities, sheltered accommodation and outpatient services and are mainly delivered by the local mental health organization (GGZ inGeest).

For the present report, data were used from a study conducted between March 2006 and September 2008 (recruitment details described elsewhere; Meesters *et al.*, 2012). In this study, all older patients with schizophrenia spectrum disorders were screened if they were in contact with the local mental health organization, had a home address in the catchment area and were aged 60 years and over. They were eligible if they were community-living and had been diagnosed with schizophrenia (DSM-IV-TR: 295.10, 295.20, 295.30, 295.60, 295.90; APA, 2000), which was determined through the Mini-International Neuropsychiatric Interview Plus (Sheehan *et al.*, 1998). Of 136 eligible patients, 73 provided written informed consent (53.7%).

Additionally, data were analysed from a similar study amongst patients with bipolar disorder from the same catchment area who were in contact with the same mental health institute (recruitment details described elsewhere; Dols *et al.*, 2014), using the same screening method. They were eligible if they were community-living and were diagnosed with bipolar 1 disorder (DSM-IV-TR: 296.00–296.06, 296.40–296.46, 296.50–296.56, 296.60–296.66, 296.7), bipolar 2 disorder (DSM-IV-TR: 296.89) or bipolar disorder not otherwise specified (DSM-IV-TR: 296.80), which was confirmed through a Mini-International Neuropsychiatric Interview Plus interview. Of the 72 eligible patients, 47 provided written informed consent (65.3%).

Both studies were approved by the Medical Ethics Committee of the VU University Medical Centre, Amsterdam, The Netherlands.

Measurements

Demographics. Demographic data were derived from the patients' medical records and confirmed in the face-to-face interviews. Education was coded into categories ranging from 1 (no school or less than 6 years of primary education) to 8 (university degree).

Clinical characteristics. Information on past illness course (number of admissions, age at onset) was obtained through screening of the medical files and additionally by interviewing the patients. Global

cognitive status was assessed through the mini-mental state examination (MMSE; Folstein *et al.*, 1975). The assessment of affective symptomatology consisted of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) in all the participants and the Young Mania Rating Scale (YMRS; Young *et al.*, 1978) in the participants with bipolar disorder. The CES-D is a 20-item self-report scale, measuring the presence of depressive symptoms during the previous week. The summation results in scores ranging from 0 to 60. A score ≥16 is considered indicative of clinically relevant depression. The CES-D was administered orally by the interviewer. The YMRS has 11 items and is based on the patient's subjective report and clinical observations made during the course of the clinical interview, measuring manic symptoms on a scale from 0 to 60. A score ≥12 is considered indicative of clinically relevant (hypo) mania.

In the patients with schizophrenia, the Positive and Negative Syndrome Scale (PANSS; Kay *et al.*, 1987) was administered to assess current symptoms. The PANSS is a structured interview and consists of 30 items, with seven items measuring positive symptoms (PANSS-P), seven items measuring negative symptoms (PANSS-N) and 16 items measuring general symptoms (PANSS-G).

Social functioning. The Social and Occupational Functioning Assessment Scale (SOFAS; APA, 2000) was scored by a research nurse in the patients with schizophrenia and by the treating psychiatrist in the patients with bipolar disorder. This instrument assesses the level of social functioning in the previous week ranging from 1 to 100, with scores ≥61 indicating little or no social impairments. Self-report of involvement in 10 different social activities (e.g. visiting someone, going to church) was measured through the Social Participation Scale (Depla *et al.*, 2003), with scores ranging from 0 (no activities) to 20 (regular participation in all activities). With regard to their social network, the participants were asked to estimate the number of persons outside of their household, with whom they had regular and meaningful contact. Also, the number of persons (partner not included) whom they regarded as confidants was reported.

Statistical analysis. Data were analysed using the Statistical Package of the Social Sciences (version 21.0, SPSS Inc., Chicago, IL, USA). Group differences between the patients with schizophrenia and those with bipolar disorder were determined by ANOVA. If a variable was not normally distributed after log-transformation, a Mann–Whitney test was used. Group differences in categorical variables were calculated using a χ^2 test. A p-value of <0.05 was considered statistically significant.

Because we used several measures of social functioning, we performed correlation analyses to preclude that the different scales would measure identical phenomena. All social functioning scales were significantly related, and all correlation coefficients were between 0.3 and 0.5, indicating low to moderate associations.

For analysing which variables were associated with the SOFAS scores, linear multivariate analysis was performed in the patients with schizophrenia and in those with bipolar disorder, separately. We first performed univariate analyses in the patients with schizophrenia and those with bipolar disorder separately, with the SOFAS score as the dependent variable and the following variables as predictors: 'age', 'sex', 'education', 'partner', 'offspring', 'number of admissions', 'age of onset', 'MMSE', 'substance abuse', 'anxiety disorder', 'total CES-D scores', 'YMRS' (only bipolar disorder), 'PANSS-P' (only schizophrenia), 'PANSS-N' (only schizophrenia) and 'PANSS-G' (only schizophrenia). All variables which were associated with the SOFAS score with p-values <0.1 were selected for the multivariate analyses. This allowed us to limit the number of variables in the multivariable regression analyses, as our groups were relatively small. Variance inflation factors (VIFs) were reviewed to screen for multicollinearity problems. Multicollinearity was considered absent when variables had a VIF < 5 (Cohen *et al.*, 2003).

Finally, to compare the SOFAS scores within the three schizophrenia age of onset groups, 'early onset' (<40 years), 'late onset' (40–60 years) and 'very late-onset schizophrenia-like psychosis' (>60 years) (Howard *et al.*, 2000), an ANOVA test was performed, with a Bonferroni post hoc test to compare the SOFAS scores between the three separate groups.

Results

Group differences

Group differences in demographics, clinical data and social functioning are presented in Table 1. The patients with schizophrenia were more often women, were lower educated and were less likely to have a partner and offspring compared with the patients with bipolar disorder. Social functioning of the patients

Table 1 Group differences in demographics, clinical data and social functioning between older patients with schizophrenia and bipolar disorder

	Schizophrenia ($n = 73$)	Bipolar disorder ($n = 47$)	Statistics
Demographics			
Age M (*SD*)	67.56 (7.46)	68.15 (8.20)	$F = 0.16$, $p = 0.69$
Sex (men), *n* (%)	24 (33%)	25 (53%)	$\chi^2 = 4.88$, $p = 0.04$
Education, M (*SD*)	3.92 (2.09)	5.47 (2.15)	$F = 15.44$, $p < 0.01$
Partner (yes), *n* (%)	13 (18%)	27 (57%)	$\chi^2 = 20.22$, $p < 0.01$
Children (yes), *n* (%)	34 (47%)	34 (72%)	$\chi^2 = 7.73$, $p < 0.01$
Place of residence, *n* (%)			
General resident home	12 (16%)	4 (9%)	$\chi^2 = 1.56$, $p = 0.28$
Independent	61 (84%)	43 (91%)	
Clinical data			
Duration of illness, M (*SD*)	28.63 (15.00)	32.96 (15.61)	$F = 2.31$, $p = 0.13$
Age at onset, M (*SD*)	38.93 (18.00)	35.19 (17.20)	$F = 1.28$, $p = 0.26$
Number of admissions, M (*SD*)	2.44 (2.79)	2.96 (3.678)	$F = 0.22$, $p = 0.64$
MMSE, Median (IQR)	28 (4)	28 (2)	MW, $p = 0.94$
CES-D, M (*SD*)	14.24[1] (10.39)	10.33 (10.74)	$F = 3.81$, $p = 0.05$
YMRS, Median (IQR)		2 (4)	—
PANSS total score, M (*SD*)	58.68 (13.96)	—	—
PANSS-P, M (*SD*)	13.84 (4.78)		
PANSS-N, M (*SD*)	16.56 (6.92)		
PANSS-G, M (*SD*)	28.29 (6.89)		
Substance abuse, *n* (%)	7 (10%)	5 (11%)	$\chi^2 = 0.04$, $p = 1.0$
Anxiety disorder, *n* (%)	4 (5%)	2 (4%)	$\chi^2 = 0.09$, $p = 1.0$
Social functioning			
SOFAS	52.90 (13.05)	65.00 (13.17)	$F = 24.39$, $p < 0.01$
Social participation	9.01 (4.42)	12.15 (2.66)	$F = 19.12$, $p < 0.01$
Social network size	2.22 (1.11)	2.91 (1.16)	MW, $p < 0.01$
Confidant available, *n* (%)	44[1] (61%)	41 (87%)	$\chi^2 = 9.51$, $p < 0.01$

MMSE, mini-mental state examination; CES-D, Center for Epidemiologic Studies Depression Scale; IQR, interquartile range; YMRS, Young Mania Rating Scale; SOFAS, Social and Occupational Functioning Assessment Scale; M = mean; MW, Mann–Whitney test; PANSS, Positive and Negative Symptom Scale; PANSS-P, Positive and Negative Symptom Scale — positive symptoms; PANSS-N, Positive and Negative Symptom Scale — negative symptoms; PANSS-G, Positive and Negative Symptom Scale — general symptoms; *SD* = standard deviation.
[1]1 case missing.

with bipolar disorder was significantly better on all employed measurements (SOFAS, social participation, network size and number of confidants).

Predictors of social functioning in schizophrenia

In the patients with schizophrenia, the combined predictors sex, age at onset, MMSE, PANSS-P, PANSS-N, PANSS-G and CES-D explained 40.7% of the variance in the SOFAS scores ($F(7, 64) = 6.28$, $p < 0.01$). Higher SOFAS scores were associated with a later age at onset ($\beta = 0.27$, $t = 2.62$, $p = 0.011$), with lower PANSS-N scores ($\beta = -0.51$, $t = -4.13$, $p < 0.01$) and with lower CES-D scores ($\beta = -0.31$, $t = -2.98$, $p < 0.01$). All VIF scores were <5 (Table 2a).

Table 2a Regression analysis for SOFAS scores in schizophrenia ($n = 72$)

	Beta	*t*	*p*-value
Sex	0.08	0.76	0.76
Age at onset	0.27	2.62	0.01
MMSE (log transformed)	0.06	0.57	0.57
CES-D	−0.31	−2.98	<0.01
PANSS-P	−0.11	−0.92	0.36
PANSS-N	−0.51	−4.13	<0.01
PANSS-G	0.11	0.75	0.45

CES-D, Centre for Epidemiologic Studies Depression Scale; PANSS-P, Positive and Negative Symptom Scale — positive symptoms; PANSS-N, Positive and Negative Symptom Scale — negative symptoms; PANSS-G, Positive and Negative Symptom Scale — general symptoms; SOFAS, Social and Occupational Functioning Assessment Scale; MMSE, mini-mental state examination.

Predictors of social functioning in bipolar disorder

The combined predictor number of admissions and MMSE explained 24.3% of the variance in the SOFAS scores in the patients with a bipolar disorder ($F(2, 44) = 7.07$, $p = 0.002$). Only a positive relationship between the SOFAS score and the MMSE score was statistically significant ($\beta = 0.40$, $t = 3.00$, $p = 0.004$) (Table 2b).The VIF scores were <5.

Table 2b Regression analysis for SOFAS scores in bipolar disorder ($n = 47$)

	Beta	t	*p*-value
Number of admissions (log transformed)	−0.26	−1.94	0.059
MMSE (log transformed)	0.40	3.00	0.004

SOFAS, Social and Occupational Functioning Assessment Scale; MMSE, mini-mental state examination.

Social functioning in relation to age at onset in schizophrenia

In very late-onset schizophrenia-like psychosis, the SOFAS scores ($n = 10$, mean 64.5, *SD* 15.5) were significantly higher than in the early onset ($n = 45$, mean 50.9, *SD* 12.1) and late-onset schizophrenia ($n = 18$, mean 51.4, *SD* 11.0) (ANOVA $F(2, 70) = 5.11$, $p = 0.009$, post hoc Bonferroni test respectively, $p = 0.007$ and $p = 0.027$). The patients with a very late schizophrenia-like psychosis were significantly older (mean 78.8 years, *SD* 8.9) than the patients with early onset and late-onset schizophrenia-like psychoses (mean 65.11, *SD* 5.37, mean 67.39, *SD* 6.14 respectively, $p < 0.01$), and more often had offspring (90%) than the patients with early onset and late-onset schizophrenia-like psychoses (36% and 50% respectively, χ^2 $p < 0.01$), while other demographic and psychometric variables were similar amongst the three groups.

Discussion

In this study, we compared social functioning in community-living older patients with schizophrenia and bipolar disorder in a catchment area design. Our results indicate that social functioning is decreased in the older patients with schizophrenia as compared with those with bipolar disorder. This is consistent with previous studies in older patients with schizophrenia and those with bipolar disorder Bartels *et al.*, 1997; Gupta *et al.*, 2007; Bartels and Pratt, 2009).

Earlier age of onset, negative symptoms and depressive symptoms were associated with poorer social functioning in schizophrenia. Furthermore, social functioning was higher in very late-onset schizophrenia-like psychosis compared with early and late-onset schizophrenia. This is in agreement with a previous study that showed stable everyday functioning in very late-onset schizophrenia-like psychosis in contrast to early onset or late-onset schizophrenia (Mazeh *et al.*, 2005) and supports the idea that very late-onset schizophrenia-like psychosis is a different diagnostic entity with less functional deficits. In our study, cognition was not a predictor of social function in schizophrenia, while Kalache *et al.* (2015) found cognitive functioning to be a strong predictor of functional competence, amongst which planning of social activities. This discrepancy may relate to the fact that the MMSE scores in our sample were relatively high. This ceiling effect may have prevented us from finding a significant association between cognition and social functioning in schizophrenia. In contrast, despite relatively high MMSE scores, a significant positive association between social functioning and cognition was found in the patients with bipolar disorder. This is in line with a study amongst middle-aged adults with bipolar disorder, in which the relationship between cognitive impairment and social functioning was stable over time (Depp *et al.*, 2012).

We found that age was not a predictor of social functioning in this cross-sectional study, while previous longitudinal studies found a decline in social functioning over time in schizophrenia (Harvey *et al.*, 2010; Reichenberg *et al.*, 2014; Kalache *et al.*, 2015). We did not exclude 'recovered' patients, in contrast to the studies of Reichenberg *et al.* (2014) and Harvey *et al.* (2010). This suggests that patients with schizophrenia with current symptoms are at risk for functional deterioration over time, and that increasing age by itself is not necessarily related to poorer social functioning.

Surprisingly, we did not find a relationship between social functioning and depressive symptoms in the participants with bipolar disorder. This is in contrast with the study of Judd *et al.* (2005), which showed that depressive symptoms fluctuated in parallel with decreased psychosocial functioning in adults with bipolar disorder. The relatively high SOFAS scores and relatively low CES-D scores and YMRS scores may have led to a ceiling effect, preventing us from detecting a relationship between social functioning and mood symptoms.

Previous studies have shown that older individuals with schizophrenia and bipolar disorder can benefit from interventions directed at social skills and social rehabilitation (Granholm *et al.*, 2005; Mueser *et al.*, 2010; Bartels *et al.*, 2013). Interventions aimed at social functioning enhancement may be efficient in preventing relapse and maintaining independent-living (Granholm *et al.*, 2005; Castle *et al.*, 2007;

Mueser *et al.*, 2010). Our results indicate that better social functioning may be reached independently of age. Therefore, interventions to improve social functioning may be useful regardless of age. Furthermore, higher levels of social functioning may also be achieved in those living alone. It remains to be investigated whether these intervention programs are also effective in patients with schizophrenia with higher negative and depressive symptoms and patients with bipolar disorder with more cognitive problems.

There are some limitations to be acknowledged when interpreting our findings. First, we only included community-living patients that were in current psychiatric treatment with the mental health organization. Patients only attending a general practitioner or patients living in nursing homes were not included. However, we may not have included well-functioning individuals on the one hand, and more severely ill patients on the other hand. Secondly, the bipolar disorder group was relatively small ($n = 47$). This possibly limited statistical power to find weaker associations, for instance, between the SOFAS and the number of admissions in the patients with bipolar disorder, which was at borderline significance. Thirdly, the SOFAS scores were determined by different raters, and we did not perform inter-rater reliability tests. However, as differences in the SOFAS scores between schizophrenia and bipolar disorder were in line with the differences in self-reported social participation and network size (all lower in schizophrenia), we do not expect that the difference in the SOFAS scores is explained mainly by inter-rater variability.

In conclusion, our results indicate that in older age, schizophrenia has a more disruptive effect on social functioning than bipolar disorder, with the exception of social functioning in very late schizophrenia-like psychosis. In schizophrenia, social functioning was also related to depressive symptoms and negative symptoms; while in bipolar disorder, a positive relationship was found between social functioning and cognitive functioning. Interventions aimed at improving social functioning in older patients with schizophrenia and bipolar disorder may focus on improving depressive symptoms (in schizophrenia) and cognitive functioning (in bipolar disorder).

Conflict of interest

None declared.

Key points

- Social functioning is lower in older adults with schizophrenia as compared with those with bipolar disorder, except in those with very late-onset schizophrenia-like psychosis.
- In schizophrenia, lower social functioning is related to earlier age of onset and having more negative symptoms and more depressive symptoms.
- In bipolar disorder, lower social functioning is related to cognitive problems.

Acknowledgements

The authors would like to thank Hannie Comijs and Piet Eikelenboom for their helpful comments on the earlier versions of the manuscript.

References

APA. 2000. Diagnostic and Statistical Manual of Mental Disorders. American Psychiatric Press: Washington DC.

Bartels SJ, Mueser KT, Miles KM. 1997. A comparative study of elderly patients with schizophrenia and bipolar disorder in nursing homes and the community. *Schizophr Res* **27**: 181–190.

Bartels SJ, Pratt SI. 2009. Psychosocial rehabilitation and quality of life for older adults with serious mental illness: recent findings and future research directions. *Curr Opin Psychiatry* **22**: 381–385.

Bartels SJ, Pratt SI, Mueser KT, *et al.* 2013. Long-term outcomes of a randomized trial of integrated skills training and preventive healthcare for older adults with serious mental illness. *Am J Geriatr Psychiatry* **22**: 1251–1261.

Castle D, Berk M, Berk L, *et al.* 2007. Pilot of group intervention for bipolar disorder. *Int J Psychiatry Clin Pract* **11**: 279–284.

Cohen P, Cohen J, West S, Aiken L. 2003. Applied Multiple Regression/Correlation Analyses for the Behavioral Sciences. Lawrence Erlbaum: Hilsdale, NJ.

Depla MF, De Graaf R, Van Bussbach JT, Heeren TJ. 2003. Community integration of elderly mentally ill persons in psychiatric hospitals and two types of residences. *Psychiatr Serv* **54**: 730–735.

Depp CA, Mausbach BT, Harmell AL, *et al.* 2012. Meta-analysis of the association between cognitive abilities and everyday functioning in bipolar disorder. *Bipolar Disord* **14**: 217–226.

Dols A, Rhebergen D, Beekman A, *et al.* 2014. Psychiatric and medical comorbidities: results from a bipolar elderly cohort study. *Am J Geriatr Psychiatry* **22**: 1066–1074.

Folstein MF, Folstein SE, Mchugh PR. 1975. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* **12**: 189–198.

Granholm E, McQuaid JR, McClure FS, *et al.* 2005. A randomized, controlled trial of cognitive behavioral social skills training for middle-aged and older outpatients with chronic schizophrenia. *Am J Psychiatry* **162**: 520–529.

Gupta S, Steinmeyer CH, Lockwood K, *et al.* 2007. Comparison of older patients with bipolar disorder and schizophrenia/schizoaffective disorder. *Am J Geriatr Psychiatry* **15**: 627–633.

Guttierrez-Rojas L, Jurado D, Gurpegui M. 2010. Factors associated with work, social life and family life disability in bipolar disorder patients. *Psychiatry Res* **186**: 254–260.

Harvey PD, Reichenberg A, Bowie CR, *et al.* 2010. The course of neuropsychological performance and functional capacity in older patients with schizophrenia: influences of previous history of long-term institutional stay. *Biol Psychiatry* **67**: 933–939.

Howard R, Rabins PV, Seeman MV, Jeste DV. 2000. Late-onset schizophrenia and very-late-onset schizophrenia-like psychosis: an international consensus. The International Late-Onset Schizophrenia Group. *Am J Psychiatry* **157**: 172–178.

Jeste DV, Alexopoulos GS, Bartels SJ, *et al.* 1999. Consensus statement on the upcoming crisis in geriatric mental health: research agenda for the next 2 decades. *Arch Gen Psychiatry* **56**: 848–853.

Judd LL, Akiskal HS, Schettler PJ, *et al.* 2005. Psychosocial disability in the course of bipolar I and II disorders: a prospective, comparative, longitudinal study. *Arch Gen Psychiatry* **62**: 1322–1330.

Kalache SM, Mulsant BH, Davies SJ, *et al.* 2015. The impact of aging, cognition, and symptoms on functional competence in individuals with schizophrenia across the lifespan. *Schizophr Bull* **41**: 374–381.

Kay SR, Fiszbein A, Opler LA. 1987. The Positive and Negative Syndrome Scale (PANSS) for schizophrenia. *Schizophr Bull* **13**: 261–276.

Loewenstein DA, Czaja SJ, Bowie CR, Harvey PD. 2012. Age-associated differences in cognitive performance in older patients with schizophrenia: a comparison with healthy older adults. *Am J Geriatr Psychiatry* **20**: 29–40.

Mazeh D, Zemishlani C, Aizenberg D, Barak Y. 2005. Patients with very late-onset schizophrenia-like psychosis: a follow-up study. *Am J Geriatr Psychiatry* **13**: 417–419.

Meeks S, Carstensen LL, Stafford PB, *et al.* 1990. Mental health needs of the chronically mentally ill elderly. *Psychol Aging* **5**: 163–171.

Meesters PD, De Haan L, Comijs HC, *et al.* 2012. Schizophrenia spectrum disorders in later life: prevalence and distribution of age at onset and sex in a Dutch catchment area. *Am J Geriatr Psychiatry* **20**: 18–28.

Meesters PD, Stek ML, Comijs HC, *et al.* 2010. Social functioning among older community dwelling patients with schizophrenia: a review. *Am J Geriatr Psychiatry* **18**: 862–878.

Mueser KT, Pratt SI, Bartsels SJ, *et al.* 2010. Randomized trial of social rehabilitation and integrated health care for older people with severe mental illness. *J Consult Clin Psychol* **78**: 561–573.

Radloff LS. 1977. The CES-D scale: a self-report depression scale for research in the general population. *Appl Psychol Meas* **1**: 385–401.

Reichenberg A, Feo C, Prestia D, *et al.* 2014. The course and correlates of everyday functioning in schizophrenia. *Schizophr Res Cogn* **1**: 47–52.

Sheehan DV, Lecrubier Y, Sheehan KH, *et al.* 1998. The mini international neuropsychiatric interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* **59**(Suppl 20): 22–33.

Tsai SY, Kuo CJ, Chung KH, *et al.* 2009. Cognitive dysfunction and medical morbidity in elderly outpatients with bipolar disorder. *Am J Geriatr Psychiatry* **17**: 1004–1011.

Vahia IV, Cohen CI. 2007. Psychosocial interventions and successful aging: new paradigms for improving outcome for older schizophrenia patients? *Am J Geriatr Psychiatry* **15**: 987–990.

Young RC, Biggs JT, Ziegler VE, Meyer DA. 1978. A rating scale for mania: reliability, validity and sensitivity. *Br J Psychiatry* **133**: 429–435.