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ORIGINAL PAPER

Is personal and social functioning associated with subjective quality of life in schizophrenia patients living in the community?

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Abstract Subjective quality of life (QoL) and psychosocial functioning constitute important treatment outcomes in schizophrenia. We aimed to investigate the relationship between them in schizophrenia patients living in the community. Symptom severity and insight were assessed with the Positive and Negative Syndrome Scale (PANSS) in 76 community schizophrenia patients. Social functioning was measured with the Portuguese version of Personal and Social Performance (PSP) scale, and subjective QoL was measured with the Portuguese version of the WHO Quality of Life Measure–Abbreviated Version (WHOQOL–Bref). The majority of patients were single (78%) and unemployed/inactive (74%). Mean PSP total score was 55.5, and mean scores on WHOQOL-Bref domains ranged from 54.1 to 63.0. Greater symptom severity and worse insight were significantly associated with worse functioning in all PSP domains. Symptoms were more moderately correlated with QoL, with no significant correlations between QoL and positive symptoms and insight levels. Partial correlations controlling for symptom severity revealed no significant associations between social functioning and subjective QoL. Symptom severity may exert a greater influence on social functioning than on subjective QoL; however, social functioning was not associated with subjective QoL. The results suggest these constructs might be independent and should be assessed separately. A broader research approach, with increased attention to social and psychological factors, may help identify treatment targets to improve schizophrenia patients' social functioning and QoL.

Keywords Depression · Disability · Insight · Personal and Social Performance scale · Negative symptoms · Positive symptoms · Quality of life · Social functioning

Abbreviations

GAF	Global assessment of functioning
MINI	Mini-international neuropsychiatric interview
PANSS	Positive and negative syndrome scale
PSP	Personal and social performance
QoL	Quality of life
WHOQOL-Bref	World Health Organization Quality of Life measure—abbreviated version

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Introduction

Subjective quality of life (QoL) and psychosocial functioning are increasingly recognised as important treatment outcomes in schizophrenia [1–3].

Although there is no unanimous definition of QoL, it has been defined by the WHO as a broad ranging concept that considers the individual's perception of his or her position in life, within the cultural context and value system where he or she lives in, and in relation to his or her goals, expectations, parameters and social relations [4]. QoL usually involves objective and subjective indicators. Objective measures of QoL include indicators of health and living conditions, sociodemographic items and role functioning, whereas subjective QoL includes life satisfaction in general and within different life domains [5]. Although it is traditionally assumed that schizophrenia patients' self-report is unrealistic [6], it has been demonstrated that self-report measures of QoL are more valid than clinician-reported QoL evaluations, and that QoL can be accurately and consistently rated by patients [7, 8], especially in the non-acute phase of the disorder.

The concept of functioning is also complex, and there remains limited consensus about its definition and how it should be best assessed [9]. Social functioning includes the capacity of a person to function in different societal roles such as homemaker, worker, student, spouse, family member or friend. Deficits in social functioning are a core feature of schizophrenia and can be observed in all phases of the disorder [10] and are more marked compared to patients with affective or schizoaffective disorders [11].

Symptoms, especially negative and depressive ones, are known to negatively impact upon social functioning [12, 13]. However, some studies have found that negative symptoms were unrelated over time to scores on performance-based measures of functional capacity, indicating that the relationship between negative symptoms and functional outcome is complex [14].

Symptoms are also known to negatively impact subjective QoL [15–17], and depressive mood may be the most important determinant of subjective QoL [5, 18–21]. However, symptom reduction alone often does not result in meaningful improvements in QoL [22, 23]. This is probably due to the fact that other problems interfering with QoL persist even when patients are stable or in remission, such as lack of social contacts, unemployment, stigmatisation and difficulties in social functioning [22]. Therefore, it has been proposed that the major determinant of QoL in schizophrenia-medicated patients is the interaction between symptoms, the adverse effects of medication and psychosocial performance [24]. Previously, we found that QoL was more strongly related to the levels of psychopathology and that neurocognitive performance was not associated with self-reported QoL [25].

Nowadays, the aim of mental health clinicians is not just to ameliorate symptoms and functional outcome in schizophrenia patients but also to improve their QoL [26]. Recently, Melle et al. [27] have demonstrated that first-episode patients with improvements in global functioning, level of daily activities and of social activities had improvements in general QoL, over the first 2 years of treatment.

However, little is known about the impact of personal and social functioning on the patient's self-reported QoL. Although there is some overlap between QoL and functioning, often measured with the same instruments, these seem to be relatively independent concepts. Previous studies assessing this relationship have mainly used the Global Assessment of Functioning (GAF) scale [28]; however, the GAF includes symptoms that may affect scores independently of actual functioning. The Personal and Social Performance (PSP) scale [29] may offer several advantages over existing scales as it does not confuse symptoms and functioning, has specific operational definitions for scoring each domain, and allows for both a global score and more detailed consideration of functioning in different domains [30]. It has been validated in samples of acute and stabilised schizophrenia patients in several countries [10, 30, 31], and by our group in Portugal [32], showing good validity and reliability [33].

In the present study, we intended to investigate the relationship between clinician-rated social functioning and self-reported QoL in a sample of patients with schizophrenia living in the community. We hypothesised that patients with lower symptom levels would present higher functioning scores and self-report better subjective QoL; moreover, we hypothesised that patients with higher functioning scores would self-report better subjective QoL.

Methods

Study design

The present study is part of a study on the validation of the Portuguese version of the PSP scale [32], which received full approval by the two local ethics committees.

All those performing ratings received training on the PANSS and PSP scales. Prior to recruitment, the study was fully explained to patients and informed consent was obtained. All tests were administered on the same day. The investigators performing testing were aware of the patients' diagnosis and overall clinical status.

Measures

Diagnosis was ascertained from clinical interview and confirmed with medical chart review and the Portuguese version of the MINI [34].

Symptom severity was evaluated with the PANSS [35]. Depression and insight were assessed with items of the general psychopathology sub-scale of the PANSS (G6 and G12, respectively).

Social functioning was evaluated with the Portuguese version of the Personal and Social Performance (PSP) scale [29]. The PSP is a brief instrument that assesses four domains of functioning. The ratings are based on the assessment of four objective indicators: (1) socially useful activities, including work and study; (2) personal and social relationships; (3) self-care; and (4) disturbing and aggressive behaviours. These are rated on a six-point severity scale (absent to very severe), according to specific operational definitions. The interviewer assigns a global score on a 100-point scale, based upon information from interview and other valid sources. Although there are no cut-off points, the total score is usually divided into three levels: 71–100, reflecting mild or no functioning difficulties; 31–70, reflecting varying degrees of difficulties; and 0–30, reflecting functioning so poor that the patient needs intensive support and supervision.

Subjective well-being and QoL was assessed by the Portuguese version of the WHO Quality of Life Measure–Abbreviated Version (WHOQOL–Bref–PT) [36]. The WHOQOL is a generic self-reporting QoL instrument designed to be applicable to people living under different circumstances, conditions and cultures [36, 37], providing unweighted measurement on four domains: physical, psychological, social relationship and environment.

Patients

Seventy-six individuals (56 men, 20 women) were recruited from two Portuguese psychiatric departments located in Lisbon (Lisbon Psychiatric Hospitalar Centre and Santa Maria's University Hospital) from September 2009 to April 2010. Inclusion criteria were as follows: a DSM-IV-TR diagnosis of schizophrenia [38], age between 18 and 65 years, and having been on a stable dose of antipsychotic for at least 2 weeks prior to interview. Eighteen patients were excluded due to history of neurological disorders or severe head trauma ($n = 2$), illiteracy ($n = 2$), current substance dependence ($n = 2$) or refusal to participate ($n = 12$).

Statistical analyses

Statistical analyses were conducted using version 17.0 of the SPSS statistical software package. Descriptive statistics were performed (mean, median, standard deviation and range), and normality distribution of continuous measures was checked with the Kolmogorov–Smirnov test. Correlations between sociodemographic, clinical variables, QoL and personal and social functioning scores were calculated with Pearson's correlation coefficient. Chi-square test was used to test associations between categorical measures. Partial correlations, controlling for symptom level (PANSS total score), were calculated to test the associations between social functioning domains and self-reported QoL scores.

Results

Demographic and clinical characteristics

Sociodemographic and clinical characteristics of the study sample are presented in Table 1. The majority of patients were single (78%), and unemployed/inactive (74%), and only 6 (7.9%) had never been hospitalised.

Personal and social functioning and quality of life

Patients' mean total score on the PSP was 55.5; this would correspond to a patient with '*difficulties interfering with*

Table 1 Sociodemographic and clinical characteristics of community schizophrenia patients ($N = 76$)

Variable	Mean	Median	SD	Range
Age (years)	39.8	39	9.7	22–64
Educational level (years)	8.8	9	3.83	4–20
Age of illness onset (years)	25.0	24	8.04	11–50
Illness duration (years)	15.0	13	9.8	1–39
Number of admissions	3.5	2	4.47	0–22
PANSS scores				
Positive	14.4	14	5.88	7–35
Negative	18.7	18	6.59	7–39
General	32.5	31	10.29	16–59
Total	65.7	63	19.71	30–117
G6 (depression)	2.0	2	1.08	1–5
G12 (insight)	3.0	3	1.44	1–7
PSP scale scores				
Total score	55.5	60	17.26	16–99
WHOQOL-Bref scores				
Physical domain	60.1	63	19.1	13–94
Psychological domain	63.0	63	17.36	19–100
Social domain	54.1	56	21.43	0–100
Environmental domain	57.8	56	17.54	13–100

PANSS Positive and Negative Syndrome Scale, *PSP* Personal and Social Performance, *SD* standard deviation and *WHOQOL-Bref* World Health Organization Quality of Life Measure—Abbreviated Version

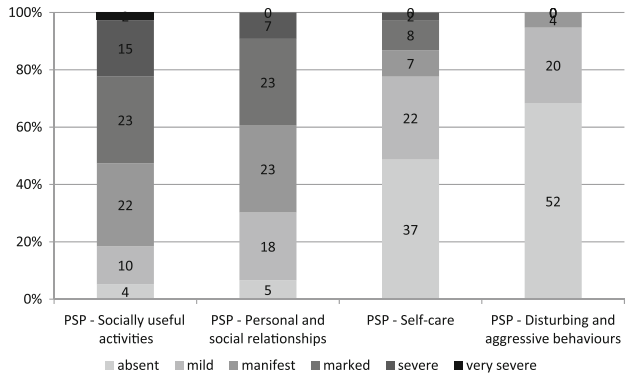

Fig. 1 Social functioning of schizophrenia community patients ($N = 76$) according to the Personal and Social Performance (PSP) scale domains

role; needs help to perform tasks' [29]. Regarding the PSP domains, overall patients presented more difficulties in *socially useful activities* and *personal and social relationships* than in *self-care* or *disturbing and aggressive behaviours* (Fig. 1). In fact, only 18.5% of patients had mild or no difficulties in *socially useful activities*, and only about one-third of the patients (30.3%) had mild or no difficulties in *personal and social relationships*. On the other hand, the majority of patients had mild or no problems in both *self-care* (77.6%) or *disturbing and aggressive behaviours* (94.7%).

Patients' scores on WHOQOL-Bref domains were relatively low (Table 1), especially in the social domain, revealing impaired self-reported QoL in this sample.

Relationships between sociodemographic and clinical variables, social functioning and quality of life

We found a significant association between gender and PSP *socially useful activities* ($\text{Chi}^2 = 10.605$, $P = 0.031$) and PSP *disturbing and aggressive behaviours* ($\text{Chi}^2 = 6.220$, $P = 0.045$), indicating that in this sample women had better functioning in these domains.

We found no significant association between age and PSP domains. However, negative associations were found between illness duration and PSP *socially useful activities* ($r = -0.281$, $P = 0.020$), PSP *personal and social relationships* ($r = -0.245$, $P = 0.044$), PSP *self-care* ($r = -0.248$, $P = 0.041$) and PSP *total score* ($r = -0.296$, $P = 0.014$), indicating that patients who have been ill for longer, have more difficulties in all areas of functioning.

Occupational status was strongly associated with scores in the domains of *socially useful activities* ($\text{Chi}^2 = 26.263$, $p < 0.001$), *personal and social relationships* ($\text{Chi}^2 = 15.582$, $P = 0.004$) and *self-care* ($\text{Chi}^2 = 12.290$, $P = 0.015$), indicating that unemployed/inactive patients have more difficulties in these functioning areas. Moreover, educational level was also significantly associated with PSP *personal and social relationships* ($r = 0.229$, $P = 0.048$) and PSP *total score* ($r = 0.237$, $P = 0.041$), although these were modest. No significant correlations were found between *PSP total score* and patients' age, age of illness onset and number of hospital admissions.

Interestingly, we found very strong associations between all PANSS sub-scales and all PSP domains, indicating that more symptomatic patients have more difficulties in all areas of functioning (Table 1). Depressive scores showed very strong negative correlations with all PSP domains, apart from *disturbing and aggressive behaviours* (Table 2). Insight was also very strongly correlated with all PSP domains, indicating that patients with less insight have lower social functioning (Table 2).

Concerning QoL, we found a negative association between age and the physical and environmental domains of the WHOQOL-Bref ($r = -0.416$, $p < 0.001$; and $r = -0.283$, $P = 0.013$, respectively), and an association between age of illness onset and WHOQOL's physical ($r = -0.274$, $P = 0.024$) and social domains ($r = -0.274$, $P = 0.024$). Unexpectedly, illness duration did not correlate significantly with any QoL domain. Educational level was found to correlate significantly with the physical ($r = 0.288$, $P = 0.012$) and environmental domains ($r = 0.297$, $P = 0.010$), indicating that more educated patients self-report better QoL on those domains.

Moderate correlations emerged between WHOQOL-Bref domains and negative, general and total scores of the PANSS but not with positive symptoms (Table 3). Interestingly, depressive symptoms were only (modestly) correlated with the psychological and environmental domains of the WHOQOL-Bref (Table 3), and insight levels did not correlate with WHOQOL-Bref scores (Table 3).

Finally, partial correlations controlling for symptom level (i.e. PANSS total score) revealed no significant correlations between all PSP domains and *PSP total score* and all WHOQOL domains (data not shown), indicating that self-reported QoL in schizophrenia stabilised patients is not associated with personal and social functioning.

Discussion

The main purpose of this study was to investigate the relationship between social functioning and QoL in community patients with schizophrenia.

As hypothesised, we found that patients with more positive, negative and depressive symptoms have more difficulties in all areas of functioning. Interestingly, these associations were weaker for the *PSP disturbing and aggressive behaviours* domain; self-care and aggression

Table 2 Pearson's correlations between PANSS scores and PSP categories in community schizophrenia patients

	PSP				
	Socially useful activities	Personal and social relationships	Self-care	Disturbing and aggressive behaviours	Total score
PANSS positive	−0.482**	−0.572**	−0.564**	−0.401**	−0.561**
PANSS negative	−0.521**	−0.711**	−0.564**	−0.231**	−0.652**
PANSS general	−0.554**	−0.746**	−0.680**	−0.476**	−0.673**
PANSS total score	−0.602**	−0.790**	−0.695**	−0.452**	−0.728**
PANSS G6 depression	−0.318**	−0.339**	−0.282*	−0.146	−0.330**
PANSS G12 insight	−0.487**	−0.561**	−0.597**	−0.374**	−0.579**

PANSS Positive and Negative Syndrome Scale, *PSP* Personal and Social Performance

* Correlation is significant at the 0.05 level (two-tailed)

** Correlation is significant at the 0.01 level (two-tailed)

Table 3 Pearson's correlations between PANSS scores and WHOQOL-Bref dimensions in community schizophrenia patients

	WHOQOL			
	Physical	Psychological	Social	Environmental
PANSS positive	−0.217	−0.073	−0.023	−0.153
PANSS negative	−0.459**	−0.298**	−0.361**	−0.366**
PANSS general	−0.366**	−0.284*	−0.214	−0.289*
PANSS total score	−0.414**	−0.280*	−0.236*	−0.310**
PANSS G6 depression	−0.202	−0.321**	−0.190	−0.271*
PANSS G12 insight	−0.091	−0.000	−0.127	−0.211

PANSS Positive and Negative Syndrome Scale, *WHOQOL-Bref* World Health Organization Quality of Life Measure—Abbreviated Version

* Correlation is significant at the 0.05 level (two-tailed)

** Correlation is significant at the 0.01 level (two-tailed)

problems usually increase during acute phases (are more state-related), whereas difficulties in the other domains seem to be more enduring or trait related in the majority of schizophrenia patients. Although negative symptoms have been consistently reported to be the most strongly correlated to functioning [10, 13, 30, 39], in our sample both positive and negative symptoms showed significant associations with functioning, which concurs with previous findings [40, 41]. Bowie et al. [40] showed that together with neurocognitive functioning, negative and positive symptoms have a direct and indirect effect on interpersonal behaviour, community activities and working skills. Positive symptoms, such as hallucinations and suspiciousness have been shown to predict real-world residential outcome [42], revealing that they may be difficult to tolerate as part of day-to-day living, negatively interfering with the patients social functioning, even during the stable phase of the disorder.

Patients with worse insight also demonstrated worse social functioning in all domains. Yen et al. [43] found that insight had a mediating effect on the association between executive function and psychosocial adjustment in remitted schizophrenia patients. However, Startup et al. [44] found that changes in insight made no significant contributions to changes in functioning, which were independent of changes in symptoms. These discrepancies may be due to methodological differences.

Also supporting our hypothesis, we found worse symptom level was associated with poorer subjective QoL, but these were not as strong as for social functioning. Positive symptoms have been reported not to predict subjective QoL [18, 19, 21, 45]. Consistent with these previous studies, we found that positive symptoms did not correlate significantly with any domain of subjective QoL. On the other hand, depressive mood has been proposed as the most important determinant of subjective QoL [5, 18–21]. This was not confirmed in our study, either because of the difficulty in distinguishing depressive from negative symptoms or because of not using a specific scale for the assessment of depressive symptoms in schizophrenia.

Although it has been argued that schizophrenia patients overvalue their QoL due to low insight levels [6], in our

sample, insight levels were not significantly associated with subjective QoL. Again, this supports that stable patients can accurately evaluate their QoL subjectively [7, 8].

Contrary to our expectation, we found no association between social functioning and subjective QoL, when controlling for symptomatic level. This had been previously reported [22, 46, 47], but a recent report using the WHOQOL found a significant association between social functioning and QoL [48]. Although the lack of association may be attenuated due to psychiatric symptoms, we controlled for this potential effect in our sample. As a limitation, we did not control for cognitive deficits, which may affect this association [22, 49]. However, in a previous study with an independent sample of schizophrenia patients in remission, neurocognitive performance was not associated with self-reported QoL [25].

Interestingly, we found an association between gender and social functioning, indicating that women may have better skills to achieve better social functioning. Male gender has been described as a predictor of poor outcome [23]. Men with schizophrenia have usually poorer premorbid adjustment, worse negative symptoms, more substance abuse, and may have differences in brain morphology and response to antipsychotic treatment, as compared to women [50], which may explain their worse outcome in a range of measures, namely social functioning. As expected, unemployed/inactive patients present more difficulties in social functioning; however, unexpectedly, educational level was only modestly associated with functioning and specifically in social relationships.

Our findings also suggest that positive symptom severity is associated with worse personal and social functioning but not with subjective QoL. Negative and general symptoms, namely depression, were associated with social functioning and less so with subjective QoL. Therefore, treating these symptom domains may further improve both social functioning and QoL. However, in our sample of stable community schizophrenia patients, personal and social functioning was not associated with subjective QoL. This demonstrates that although there is some overlap between QoL and functioning, often measured with the same instruments, these are relatively independent concepts. In that vein, treatments aimed to improve one of these domains may not implicitly improve the other. Therefore, scales to assess social functioning and QoL in clinical trials and daily practice must be appropriate and should measure several dimensions of social functioning and QoL, independently of symptoms [51]. Unfortunately, there has not been sufficient research to define these concepts, its boundaries, its major determinants or its important clinical correlates [52], and several important and basic issues still require clarification [53]. The scrutiny of a broad range of patient-centred outcomes (meaningful for patients), together with traditional outcomes (rating scales, relapse rates), will assist with the assessment of new treatment modalities and service planning [54].

Limitations

The size of our sample and the fact that it was from one geographical location may limit the generalisability of the results to more rural areas, especially concerning social functioning.

The use of single items on the PANSS scale to assess depressive symptoms (G6) and insight (G12) is insufficient, and the results would have been more robust if specific scales had been used [55].

Medication status and side effects (i.e. extrapyramidal symptoms, weight gain, sedation, sexual dysfunction), also known to negatively influence QoL [5, 15, 52, 56], were not taken into account in our study.

The WHO scale for measuring QoL (WHOQOL-Bref) has been used in schizophrenia research [8, 15, 25, 48, 57]. Although this scale may not be sensitive enough to specific problems experienced by schizophrenia patients [26], other scales also have limitations, e.g. the Quality of Life Scale includes deficit symptoms and does not address subjective well-being [17].

In fact, functioning and well-being outcomes for schizophrenia are diverse and are thought to involve environmental factors, as well as the person's appraisal, coping responses [58] and temperament and character [59]. Moreover, stigma associated with the disorder may also negatively influence both functioning and QoL in these patients [60, 61].

These concepts, although rather abstract, are general to all human beings and of utmost importance if we want to carry out a broad and comprehensive approach to assess and manage schizophrenia patients' QoL [46].

Finally, the clinician raters were not blind to diagnosis and clinical rating; moreover, the cross-sectional nature of the study does not enable inferences on causality.

The study was strengthened by the exclusion of patients with schizoaffective disorder and other psychotic disorders. The use of the PSP scale is innovative; while it is comprehensive, its brevity make it an appealing choice, both in the research setting and for mental health professionals in their busy clinical practice.

Conclusions

Our study highlighted that total symptom severity seems to have a greater influence on social functioning than on

subjective QoL. When controlling for symptom severity, personal and social functioning was not associated with subjective QoL. Overall, our findings are consistent with the literature, suggesting that QoL predictors (mainly negative and depressive symptoms) are different from predictors of everyday functioning and community integration.

Social functioning and QoL are currently considered unmet treatment needs in schizophrenia, and thus a target for future therapies. These, whether pharmacological or psychological, must be customised to the individual patient, and this argues for a detailed assessment of these domains. Although research (including our study) generally focuses on symptomatic and neurocognitive variables, a broader research approach, with increased attention to social and psychological factors may enable us to identify other treatment targets that may improve both social functioning and QoL of patients with schizophrenia.

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Conflict of interest Sofia Brissos is Medical Affairs Manager for Janssen-Cilag Portugal. Vicent Balanzá-Martínez has received research grants and has served as consultant, advisor or speaker during the last 3 years for the following companies: Almirall, AstraZeneca, Boehringer Ingelheim, Bristol-Myers-Squibb, Grunenthal, Janssen and Pfizer Inc. Vasco Videira Dias is consultant for Angelini Pharmaceutical, Portugal and has received honoraria from Astra-Zeneca. The remaining authors declare no potential conflicts of interest relative to the contents of this paper.

References

1. Remington G, Foussias G, Agid O (2010) Progress in defining optimal treatment outcome in schizophrenia. CNS Drugs 24:9–20. doi:10.2165/11530250-000000000-00000
2. Juckel G, Morosini PL (2008) The new approach: psychosocial functioning as a necessary outcome criterion for therapeutic success in schizophrenia. Curr Opin Psychiatry 21:630–639
3. Figueira ML, Brissos S (2011) Measuring psychosocial outcomes in schizophrenia patients. Curr Opin Psychiatry 44:91–99
4. Group WHOQOL (1995) The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. Soc Sci Med 41:1403–1409
5. Harvey PD, Velligan DI, Bellack AS (2007) Performance-based measures of functional skills: usefulness in clinical treatment studies. Schizophr Bull 33:1138–1148
6. Yamauchi K, Aki H, Tomotake M, Iga J, Numata S, Motoki I, Izaki Y, Tayoshi S, Kinouchi S, Sumitani S, Tayoshi S, Takikawa Y, Kaneda Y, Taniguchi T, Ishimoto Y, Ueno S, Ohmori T (2008) Predictors of subjective and objective quality of life in outpatients with schizophrenia. Psychiatry Clin Neurosci 62:404–411
7. Voruganti L, Heslegrave R, Awad AG, Seeman MV (1998) Quality of life measurement in schizophrenia: reconciling the quest for subjectivity with the question of reliability. Psychol Med 28:165–172
8. Becchi A, Rucci P, Placentino A, Neri G, de Girolamo G (2004) Quality of life in patients with schizophrenia–comparison of self-report and proxy assessments. Soc Psychiatry Psychiatr Epidemiol 39:397–401
9. Burns T, Patrick D (2007) Social functioning as an outcome measure in schizophrenia studies. Acta Psychiatr Scand 16:403–418
10. Apiquian R, Elena Ulloa R, Herrera-Estrella M, Moreno-Gómez A, Erosa S, Contreras V, Nicolini H (2009) Validity of the Spanish version of the Personal and Social Performance scale in schizophrenia. Schizophr Res 112:181–186
11. Möller HJ, Jäger M, Riedel M, Obermeier M, Strauss A, Bottlender R (2010) The Munich 15-year follow-up study (MUFUSSAD) on first-hospitalized patients with schizophrenic or affective disorders: comparison of psychopathological and psychosocial course and outcome and prediction of chronicity. Eur Arch Psychiatry Clin Neurosci 260:367–384
12. Bowie CR, Reichenberg A, Patterson TL, Heaton RK, Harvey PD (2006) Determinants of real-world functional performance in schizophrenia subjects: correlations with cognition, functional capacity, and symptoms. Am J Psychiatry 163:418–425
13. Milev P, Ho BC, Arndt S, Andreasen NC (2005) Preditive values of neurocognition and negative symptoms on functional outcome in schizophrenia: a longitudinal first-episode study with 7-year follow-up. Am J Psychiatry 162:495–506
14. Velligan DI, Alphs L, Lancaster S, Morlock R, Mintz J (2009) Association between changes on the Negative Symptom Assessment scale (NSA-16) and measures of functional outcome in schizophrenia. Psychiatry Res 169:97–100
15. Hofer A, Kemmler G, Eder U, Edlinger M, Hummer M, Fleischhacker WW (2004) Quality of life in schizophrenia: the impact of psychopathology, attitude toward medication, and side effects. J Clin Psychiatry 65:932–939
16. Ruggeri M, Nosè M, Bonetto C, Cristofalo D, Lasalvia A, Salvi G, Stefani B, Malchiodi F, Tansella M (2005) Changes and predictors of change in objective and subjective quality of life: multiwave follow-up study in community psychiatric practice. Br J Psychiatry 187:121–130
17. Norman RM, Malla AK, McLean T, Voruganti LP, Cortese L, McIntosh E, Cheng S, Rickwood A (2000) The relationship of symptoms and level of functioning in schizophrenia to general wellbeing and the Quality of Life Scale. Acta Psychiatr Scand 102:303–309
18. Dickerson FB, Ringel NB, Parente F (1998) Subjective quality of life in out-patients with schizophrenia: clinical and utilization correlates. Acta Psychiatr Scand 98:124–127
19. Fitzgerald PB, Williams CL, Corteling N, Filia SL, Brewer K, Adams A, de Castella AR, Rolfe T, Davey P, Kulkarni J (2001) Subject and observer-rated quality of life in schizophrenia. Acta Psychiatr Scand 103:387–392
20. Reine G, Lançon C, Di Tucci S, Sapin C, Auquier P (2003) Depression and subjective quality of life in chronic phase schizophrenic patients. Acta Psychiatr Scand 108:297–303
21. Aki H, Tomotake M, Kaneda Y, Iga J, Kinouchi S, Shibuya-Tayoshi S, Tayoshi SY, Motoki I, Moriguchi K, Sumitani S, Yamauchi K, Taniguchi T, Ishimoto Y, Ueno S, Ohmori T (2008) Subjective and objective quality of life, levels of life skills, and their clinical determinants in outpatients with schizophrenia. Psychiatry Res 158:19–25

22. Narvaez JM, Twamley EW, McKibbin CL, Heaton RK, Patterson TL (2008) Subjective and objective quality of life in schizophrenia. Schizophr Res 98:201–208
23. Priebe S, Katsakou C, Yeeles K, Amos T, Morriss R, Wang D, Wykes T (2010) Predictors of clinical and social outcomes following involuntary hospital admission: a prospective observational study. Eur Arch Psychiatry Clin Neurosci [Epub ahead of print]
24. Awad AG (1992) Quality of life of schizophrenic patients on medications and implications for new drug trials. Hosp Community Psychiatry 43:262–265
25. Brissos S, Dias VV, Carita AI, Martinez-Arán A (2008) Quality of life in bipolar type I disorder and schizophrenia in remission: clinical and neurocognitive correlates. Psychiatry Res 160:55–62
26. Savilla K, Kettler L, Galletly C (2008) Relationships between cognitive deficits, symptoms and quality of life in schizophrenia. Aust N Z J Psychiatry 42:496–504
27. Melle I, Røssberg JI, Joa I, Friis S, Haahr U, Johannessen JO, Larsen TK, Opjordsmoen S, Rund BR, Simonsen E, Vaglum P, McGlashan T (2010) The development of subjective quality of life over the first 2 years in first-episode psychosis. J Nerv Ment Dis 198:864–869
28. Endicott J, Spitzer RL, Fleiss JL, Cohen J (1976) The global assessment scale. A procedure for measuring overall severity of psychiatric disturbance. Arch Gen Psychiatry 33:766–771
29. Morosini PL, Magliano L, Brambilla L, Ugolini S, Pioli R (2000) Development, reliability and acceptability of a new version of the DSM-IV Social and Occupational Functioning Assessment Scale (SOFAS) to assess routine social functioning. Acta Psychiatr Scand 101:323–329
30. Juckel G, Schaub D, Fuchs N, Naumann U, Uhl I, Witthaus H, Hargarter L, Bierhoff HW, Brüne M (2008) Validation of the Personal and Social Performance (PSP) Scale in a German sample of acutely ill patients with schizophrenia. Schizophr Res 104:287–293
31. Tianmei S, Liang S, Yun'ai S, Chenghua T, Jun Y, Jia C, Xueni L, Qi L, Yantao M, Weihua Z, Hongyan Z (2011) The Chinese version of the Personal and Social Performance Scale (PSP): validity and reliability. Psychiatry Res 185:275–279
32. Brissos S, Palhavã F. Marques JG, Carmo AL, Carvalho M, Dias C, Franco JD, Mendes R, Zuzarte P, Carita AI, Molodynski A, Figueira ML. The Portuguese version of the Personal and Social Performance Scale (PSP): reliability, validity, and relationship with cognitive measures in hospitalized and community schizophrenia patients. Submitted to publication in Soc Psychiatry Psychiatr Epidemiol
33. Schaub D, Brüne M, Jaspen E, Pajonk FG, Bierhoff HW, Juckel G (2011) The illness and everyday living: close interplay of psychopathological syndromes and psychosocial functioning in chronic schizophrenia. Eur Arch Psychiatry Clin Neurosci 261:85–93
34. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC (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 59:22–33. (Portuguese version: Guterres T, Levi P, Amorim P, Lisbon, PORTUGAL)
35. Kay SR, Fiszbein A, Opler LA (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 13:261–276
36. Vaz Serra A, Canavarro MC, Simões MR, Pereira M, Gameiro S, Quartilho MJ, Rijo D, Carona C, Paredes T (2006) Estudos Psicométricos do Instrumento de Avaliação da Qualidade de Vida da Organização Mundial de Saúde (WHOQOL-Bref) para Português de Portugal. Psiquiatria Clínica 27:41–49
37. Group WHOQOL (1998) Development of the World Health Organization WHOQOL–BREF quality of life assessment. Psychol Med 28:551–558
38. Association AmericanPsychiatric (2000) Diagnostic and statistic manual of mental disorders text revision, 4th edn. American Psychiatric Association, Washington, DC
39. Marshall M, Lewis S, Lockwood A, Drake R, Jones P, Croudace T (2005) Association between duration of untreated psychosis and outcome in cohorts of first-episode patients: a systematic review. Arch Gen Psychiatry 62:975–983
40. Bowie CR, Leung WW, Reichenberg A, McClure MM, Patterson TL, Heaton RK, Harvey PD (2008) Predicting schizophrenia patients' real-world behaviour with specific neuropsychological and functional capacity measures. Biol Psychiatry 63:505–511
41. Lipkovich IA, Deberdt W, Csernansky JG, Sabbe B, Keefe RS, Kollack-Walker S (2009) Relationships among neurocognition, symptoms and functioning in patients with schizophrenia: a path-analytic approach for associations at baseline and following 24 weeks of antipsychotic drug therapy. BMC Psychiatry 14:44
42. Leifker FR, Bowie CR, Harvey PD (2009) Determinants of everyday outcomes in schizophrenia: the influences of cognitive impairment, functional capacity, and symptoms. Schizophr Res 115:82–87
43. Yen CF, Cheng CP, Huang CF, Ko CH, Yen JY, Chang YP, Chen CS (2009) Relationship between psychosocial adjustment and executive function in patients with bipolar disorder and schizophrenia in remission: the mediating and moderating effects of insight. Bipolar Disord 11:190–197
44. Startup M, Jackson MC, Startup S (2010) Insight, social functioning and readmission to hospital in patients with schizophrenia-spectrum disorders: prospective associations. Psychiatry Res 178:17–22
45. Sim K, Mahendran R, Siris SG, Heckers S, Chong SA (2004) Subjective quality of life in first episode schizophrenia spectrum disorders with comorbid depression. Psychiatry Res 129:141–147
46. Bengtsson-Tops A, Hansson L (1999) Subjective quality of life in schizophrenic patients living in the community. Relationship to clinical and social characteristics. Eur Psychiatry 14:256–263
47. Parker G, O'Donnell M, Hadzi-Pavlovic D, Proberts M (2002) Assessing outcome in community mental health patients: a comparative analysis of measures. Int J Soc Psychiatry 48:11–19
48. Chino B, Nemoto T, Fujii C, Mizuno M (2009) Subjective assessments of the quality of life, well-being and self-efficacy in patients with schizophrenia. Psychiatry Clin Neurosci 63:521–528
49. Heslegrave RJ, Awad AG, Voruganti LN (1997) The influence of neurocognitive deficits and symptoms on quality of life in schizophrenia. J Psychiatry Neurosci 22:235–243
50. Abel KM, Drake R, Goldstein JM (2010) Sex differences in schizophrenia. Int Rev Psychiatry 22:417–428
51. Kwon JS, Choi JS (2009) Social functioning and quality of life as measures of effectiveness in the treatment of schizophrenia. World Psychiatry 8:35–36
52. Awad AG, Voruganti LN, Heslegrave RJ (1997) A conceptual model of quality of life in schizophrenia: description and preliminary clinical validation. Qual Life Res 6:21–26
53. Awad AG (1997) Quality of life rediscovered: implications for clinical outcome and health economics in schizophrenia. J Psychiatry Neurosci 22:229–230
54. Kulkarni J, de Castella AR, Filia KM, Filia SL, Marston N, Montgomery W, Christova L, Fitzgerald PB (2007) Australian Schizophrenia Care and Assessment Programme: real-world schizophrenia: outcomes. Aust N Z J Psychiatry 41:969–979
55. Reine G, Bernard D, Lancon C (1998) Depression scales in schizophrenia: a critical review. Encephale 24:530–540
56. Adrianzén C, Arango-Dávila C, Araujo DM, Ruíz I, Walton RJ, Dossenbach M, Karagianis J (2010) Relative association of

treatment-emergent adverse events with quality of life of patients with schizophrenia: post hoc analysis from a 3-year observational study. Hum Psychopharmacol 25:439–447
57. Wegener S, Redoblado-Hodge MA, Lucas S, Fitzgerald D, Harris A, Brennan J (2005) Relative contributions of psychiatric symptoms and neuropsychological functioning to quality of life in first-episode psychosis. Aust N Z J Psychiatry 39:487–492
58. Yanos PT, Moos RH (2007) Determinants of functioning and well-being among individuals with schizophrenia: an integrated model. Clin Psychol Rev 27:58–77
59. Eklund M, Hansson L, Bengtsson-Tops A (2004) The influence of temperament and character on functioning and aspects of psychological health among people with schizophrenia. Eur Psychiatry 19:34–41
60. Sibitz I, Amering M, Unger A, Seyringer ME, Bachmann A, Schrank B, Benesch T, Schulze B, Woppmann A (2011) The impact of the social network, stigma and empowerment on the quality of life in patients with schizophrenia. Eur Psychiatry 26:28–33
61. Staring AB, Van der Gaag M, Van den Berge M, Duivenvoorden HJ, Mulder CL (2009) Stigma moderates the associations of insight with depressed mood, low self-esteem, and low quality of life in patients with schizophrenia spectrum disorders. Schizophr Res 115:363–369