Recovery from schizophrenia: Results from a 1-year follow-up observational study of patients in symptomatic remission

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ABSTRACT

Objectives: This report presents the results of an observational empirical clinical investigation about the prevalence and correlates of a proposed definition of recovery from schizophrenia in outpatients in Spain.

Methods: Of 1010 outpatients with schizophrenia (DSM-IV-TR), a subgroup of 452 patients in symptomatic remission (SR) was followed for 1 year. SR was defined according to Andreasen's severity criteria based on the Scales for the Assessment of Positive (SAPS) and Negative (SANS) Symptoms. A Global Assessment of Functioning scale score of >80 was considered to be indicative of adequate functioning (AF). Correlates of recovery were identified by logistic regression.

Results: At baseline, 103 (22.8%; $N = 452$) patients fulfilled the recovery definition (SR + AF). After 1 year, 338 patients (89.9%; $N = 376$) maintained SR. Among these, the proportion of patients in recovery increased to 27.1% (102 out of 376). Better premorbid adjustment (PA) and improved social cognition correlated with recovery at baseline. After 1 year, PA, duration of untreated psychosis (DUP), type of pharmacotherapy, attitudes toward medication, and variation of depressive symptoms and social cognition determined the likelihood of recovery.

Conclusions: The proportion of patients in recovery increased among those fulfilling SR criteria. After 1 year, in addition to known factors like shorter DUP and better PA, social cognitive abilities and depressive symptoms were found to correlate with recovery.

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1. Introduction

Recovery from schizophrenia has fuelled theoretical debate for decades. The feasibility of obtaining good symptomatic and functional outcomes has increased recently with the advent of evidence-based pharmacotherapy and featured psychosocial services (Lehman et al., 2004). At the same time, reports from recent follow-up studies have shown that a considerable proportion of patients with schizophrenia do not have a disorder that is chronic and continuous (Harrow et al., 2005). This is consistent with the current development of a conceptual framework supporting the existence of subjective and objective influences on the course of schizophrenia (Liberman and Kopelowicz, 2002). Additionally, the mental healthcare system's demand for recovery models is steadily increasing (Christie-Smith and Gartner, 2005).

However, the effort to improve schizophrenia treatment and rates of recovery faces important challenges. The construct of recovery itself is still lacking an adequate translation into a measurable concept appropriate for research, which would allow empirical investigations to study the validity of different

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definitional approaches (Bellack, 2006). Also, psychosocial interventions can be construed as resource intensive and not cost-effective, with a lack of strong evidence concerning their applicability and replicability in providing a range of effective outcomes (Essock et al., 2004). Consequently, there is an urgent requirement for empirical evidence supporting operational definitions of recovery to determine their validity and the extent to which recovery can be achieved (Bellack, 2006).

In an effort to advance the conceptualization of recovery, we propose an operational definition and provide the results of its application in a prospective 1-year follow-up observational study (Ciudad et al., 2009). Consistent with early developments in this area, we base this definition on the remission of symptoms and the achievement of a suitable level of psychosocial functioning (Liberman et al., 2002). Because functional improvement usually takes longer to achieve than symptomatic remission (SR), we pre-selected only those patients meeting the SR criteria at the time of study entry. Conscious that a mere assessment of functional outcomes would neglect important elements of recovery, such as the subjective appraisal of patients (Frese et al., 2009) and the interplay with the environment and opportunities for real-world performance (Bellack et al., 2007; Bowie et al., 2006), we opted for a holistic approach and defined adequate functioning as an overall good level of functioning as measured with the Global Assessment of Functioning (GAF) scale. This approach is consistent with the recently proposed notion of functional remission, based on the achievement of some level of success across combinations of functional domains (Harvey and Bellack, 2009). The investigational objectives addressed in this paper are: a) to determine the actual proportion of ambulatory patients routinely utilizing publicly available mental health care resources in Spain who meet a proposed operational definition of recovery and the stability of this outcome after 1 year, and b) to identify factors that are correlated with meeting such a definition.

2. Experimental/materials and methods

2.1. Design and patients

This study comprised a cross-sectional investigation followed by a prospective 1-year follow-up cohort evaluation of the subgroup of patients who were in SR. Details of both, the cross-sectional (San et al., 2007) and the prospective evaluation (Ciudad et al., 2009), have been published in detail elsewhere. Outpatients with schizophrenia according to the DSM-IV-TR criteria (American Psychiatric Association, 2000), who consulted their psychiatrists for a routine follow-up visit were included. Data were collected during routine visits after obtaining written consent from participants. The study fulfilled all the applicable regulatory requisites.

A total of 1010 patients, a majority of whom were men (63.3%) with a mean age of 38.8 (standard deviation, SD = 10.8) years and a with a mean disease duration of 14.9 (9.8) years, were recruited in the cross-sectional investigation. Of these, 452 (44.8%) patients were in SR and were followed in the prospective evaluation. Seventy-six patients of the 452 patients in SR at baseline (20 patients were also in recovery) were lost during follow-up, their characteristics being similar to that of the 376 remaining patients.

2.2. Assessment and proposed definition of recovery

SR was defined according to the severity component of the consensus-based operational criteria by the Schizophrenia Working Group (Andreasen et al., 2005) using the Scale for the Assessment of Positive (SAPS) and Negative (SANS) Symptoms (Andreasen, 1982; Andreasen and Olsen, 1982). The GAF scale was used to perform an overall assessment of functioning. In the absence of explicit functional measures, a total GAF score of >80 points was considered sufficient for adequate functioning (AF) in order to ensure an optimal psychosocial functioning in as many dimensions as possible. This strategy is suitable for an environment, as in Spain, in which competitive employment is not incentivized and the vocational functioning does not reflect patients' actual capabilities (Ciudad et al., 2004; Torres and Olivares, 2005). In this study, recovery as an outcome was operationalized as the simultaneous occurrence of SR plus AF at a given time point. The Montgomery-Asberg Depression Rating Scale (MADRS) was used to evaluate depressive symptoms, considering a score of ≤9 as indicative of clinical remission of depression (Zimmerman et al., 2004). Quality of life was assessed with the Medical Outcomes Study 12-item Short Form health survey (SF-12) (Ware et al., 1996). The Strauss-Carpenter prognostic scale (SCOS) (Strauss and Carpenter, 1974) was also included. Further assessments were carried out with the Premorbid Adjustment Scale (PAS) (Cannon-Spoor et al., 1982), the 10-item Drug Attitude Inventory (DAI-10) (Hogan and Awad, 1992), and the scale of social cognition for psychosis by the *Grupo Español para la Optimización del Tratamiento de la Esquizofrenia* (GEOPTE) (Sanjuan et al., 2003). This scale is rated in parallel by patients and their usual caregivers and includes items that measure aspects of emotional processing and theory of mind and social perception, such as identification of emotions and the perception of intentions or social cue recognition.

2.3. Data analysis

Stratified descriptions of data were done at baseline for patients in SR + AF (recovery), SR or neither, and according to recovery status at endpoint. Between-group differences were analyzed using chi-square or analysis of variance, as appropriate. The changes from baseline of the MADRS global score and of the Mental and Physical Component Summary scores of the SF-12 (MCS-12 and PCS-12) were compared between the groups by means of analysis of covariance, with the baseline values as covariates.

Logistic regression analyses were used to explore the contributions of various factors to the occurrence of recovery and its stability after 1 year. Ordinal models with the following categories: 1) meeting the recovery definition; 2) showing only SR but not AF; or 3) neither of these, were adjusted to explore the correlates at baseline among all patients participating in the cross-sectional study, and after 1 year among patients who participated in the prospective evaluation. Patients' characteristics and the baseline scale scores were included as independent variables in both models (with the exception of SAPS and SANS scores because they are part of the remission definition) as well as patient changes from baseline in the latter model as well. Finally, the stability of recovery was analyzed by means of a separate binary model, which explored the likelihood of

moving out of recovery. The models were reduced by backward likelihood-rated stepwise selection.

3. Results

3.1. Patient characteristics, prevalence of recovery at baseline and status after 1 year

The disposition of patients at baseline and after 1 year is provided on Fig. 1. Of total the 1010 patients, 452 (44.8%) were in SR but only 106 (10.5%) had total GAF scores of >80 (AF). Both

components were met by 103 patients (10.2%). Hence, the prevalence of recovery among patients in SR was 22.8%.

Of the 1010 patients included in the cross-sectional investigation, only 153 (15.9%) attended regular psychotherapy sessions, and 282 (29.3%) participated in any rehabilitation therapy. See Tables 1 and 2 for details.

Sixty-seven patients in recovery at baseline who were not lost were also in recovery at 1 year, while 35 patients moved into, and 16 patients moved out of recovery during follow-up (Fig. 1). In consequence, 102 (27.1%) patients were in recovery after 1 year. With regard to symptoms, 37 patients lost SR, and the remission status was unknown in one further patient.
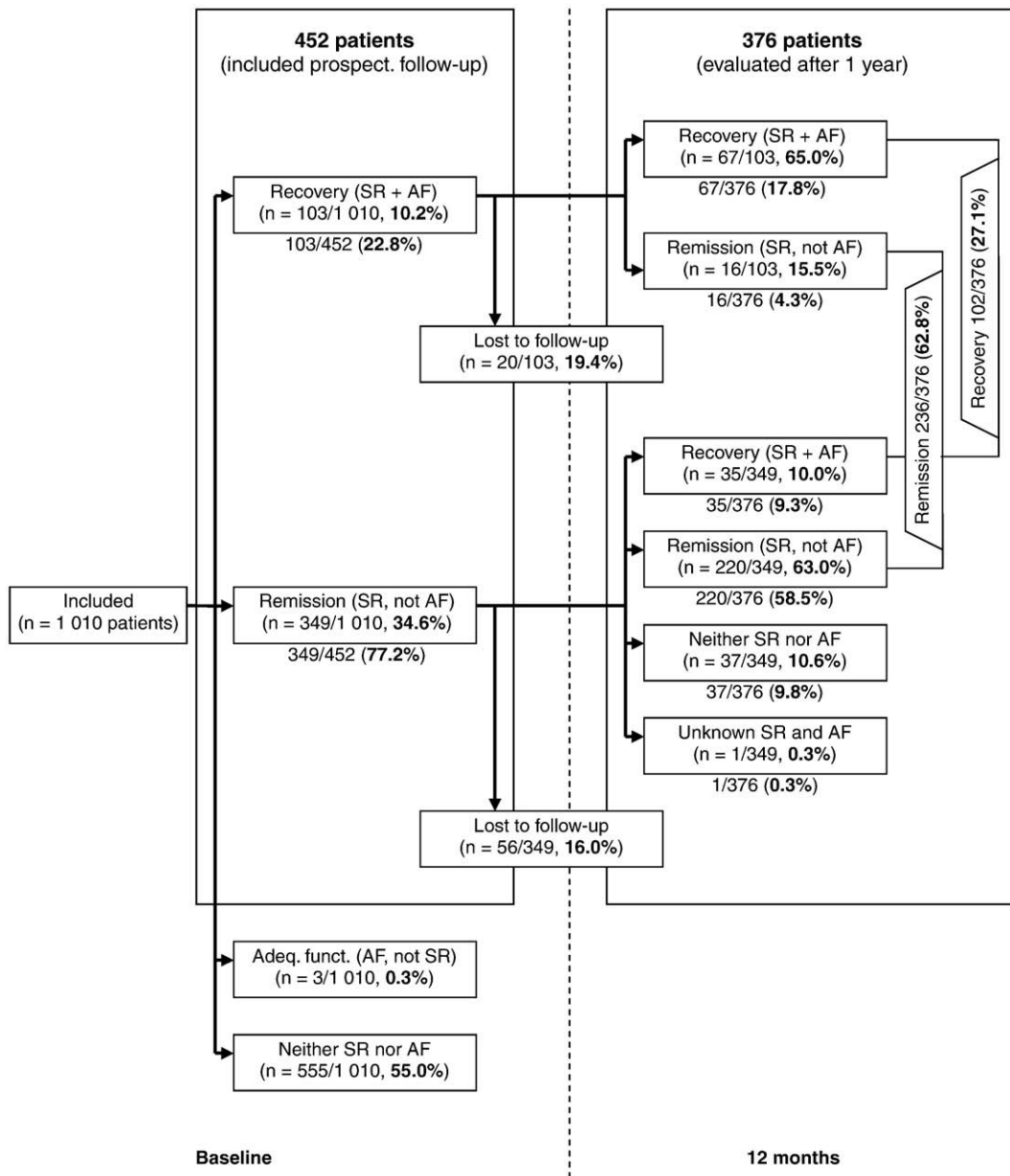

Fig. 1. Disposition of subjects. SR: symptomatic remission, AF: adequate functioning.

Table 1
Subjects' demographic and clinical baseline characteristics.

	Symptomatic remission AND adequate functioning	Symptomatic remission NOT adequate functioning	NEITHER symptomatic remission NOR adequate functioning	Total	
	$N = 103$[d]	$N = 349$[d]	$N = 555$[a,d]	$N = 1010$[a]	*p*-value
Age, years [mean (SD)]	36.7 (10.2)	37.9 (10.6)	39.8 (11.0)	38.8 (10.8)	0.005[b]
Age in the first episode, years [mean (SD)]	24.5 (5.9)	23.9 (6.5)	23.8 (6.5)	23.9 (6.5)	0.599[b]
Time since diagnosis, years [mean (SD)]	12.2 (9.0)	14.2 (9.7)	15.9 (10.0)	14.9 (9.8)	<0.001[b]
Duration of untreated psychosis: ≤3 months [*n* (%)]	50 (53.8)	125 (39.2)	132 (27.7)	309 (34.7)	<0.001[c]
Gender: proportion of males [*n* (%)]	63 (61.2)	228 (65.3)	376 (67.7)	670 (66.3)	0.391[c]
Marital status: single [*n* (%)]	63 (61.2)	252 (72.2)	439 (79.1)	757 (75.0)	NA
Patients with paid employment [*n* (%)]	35 (34.0)	64 (18.3)	60 (10.8)	159 (15.7)	<0.001[c]
Patients receiving social disability benefit [*n* (%)]	19 (18.4)	118 (33.8)	285 (51.4)	424 (42.0)	<0.001[c]
History of 1 to 4 prior psychotic episodes [*n* (%)]	63 (64.9)	200 (59.3)	258 (49.8)	522 (54.7)	<0.001[c]
Type of schizophrenia: paranoid [*n* (%)]	85 (85.0)	260 (76.2)	353 (65.4)	700 (71.1)	<0.001[c]
Current substance/alcohol abuse [*n* (%)]	20 (19.4)	119 (34.1)	206 (37.1)	345 (34.2)	0.002[c]

[a]Three patients were classified as having adequate psychosocial functioning but not symptomatic remission, but this information has not been summarized because it is not representative enough. However, the totals column contains also the information from these 3 patients.
[b]ANOVA.
[c]Chi-square.
[d]Some of the data from several patients was missing and the percentages were calculated over the total with data available in each case. For this reason, their values are greater than expected in some instances.

Hence, 338 patients remained in SR and the proportion of recovery among patients in SR was 30.2% (102 out of 338).

3.2. Recovery correlates at baseline

As shown on Table 1, patients fulfilling the definition of recovery were significantly younger, had a shorter time since diagnosis, more frequently had a duration of untreated psychosis of or below 3 months, were employed, had the paranoid type of schizophrenia, had up to 4 prior psychotic episodes, and were, less frequently, current substance/alcohol abusers or receiving social benefits for professional disability. Monotherapy with second-generation antipsychotics was more frequent among those patients in recovery (Table 2).

Table 2
Treatments for schizophrenia at baseline.

	Symptomatic remission AND adequate functioning	Symptomatic remission NOT adequate functioning	NEITHER symptomatic remission NOR adequate functioning	Total
	$N = 103$	$N = 349$	$N = 555$[a]	$N = 1010$[a]
Current antipsychotic pharmacotherapy [n (%)]				
Typical antipsychotics, monotherapy	8 (7.8)	31 (8.9)	50 (9.0)	89 (8.8)
Second generation antipsychotics, monotherapy	84 (81.6)	251 (71.9)	357 (64.3)	694 (68.7)
Typical antipsychotics, polytherapy	0 (0.0)	2 (0.6)	7 (1.3)	9 (0.9)
Second generation antipsychotics, polytherapy	8 (7.8)	31 (8.9)	75 (13.5)	115 (11.4)
Mixed polytherapy (typical + SGA))	1 (1.0)	28 (8.0)	46 (8.3)	75 (7.4)
Without pharmacotherapy	2 (1.9)	6 (1.7)	20 (3.6)	28 (2.8)
Psychotherapeutic activity [n (%)][b]				
Current	16 (16.0)	61 (18.3)	75 (14.3)	153 (15.9)
Past	21 (21.0)	68 (20.4)	100 (19.0)	189 (19.6)
Never	63 (63.0)	205 (61.4)	351 (66.7)	621 (64.5)
Rehabilitation [n (%)][b,c]				
Current	21 (21.2)	95 (28.4)	164 (31.2)	282 (29.3)
Past	18 (18.2)	56 (16.8)	128 (24.4)	202 (21.0)
Never	60 (60.6)	183 (54.8)	233 (44.4)	477 (49.6)

[a]Three patients were classified as having adequate psychosocial functioning but not symptomatic remission, but this information has not been summarized because it is not representative enough. However, the totals column contains also the information from these 3 patients.
[b]Relative frequencies have been calculated without accounting for missing data.
[c]The differences among the groups were statistically significant (chi-square $p = 0.003$).
SGA: Second-Generation Antipsychotics.

Psychotherapy was generally not readily available; 64.5% of patients had never participated in a psychotherapeutic activity. Symptomatic and functional levels did not predict differences in such participation. Only half of the patients (50.3%) were following rehabilitation programs or had followed them in the past, although these programs were participated more frequently by patients who did not attain SR at all.

The logistic regression (Fig. 2) revealed that a positive attitude toward pharmacotherapy, past participation in rehabilitation, better premorbid adjustment, social cognition, and fewer depressive symptoms were significantly correlated with recovery at baseline.

3.3. Predictors of recovery after 1 year

Patients who were in recovery after 1 year were older at first psychotic episode than those who did not (25.4 [SD = 7.0] years versus 23.8 [6.6] years, t-test p-value = 0.046). Other baseline characteristics between these two groups did not differ significantly. Yet, most baseline clinical scale scores did differ significantly (Table 3). Patients who were in recovery at endpoint had better SAPS and SANS global scores at baseline, a mean MADRS score of 9 or less, and a higher score on the MCS-12. Patients' recovery status at 1 year also differentiated between the score changes from baseline. Psychopathology, especially the negative symptoms improved considerably among patients in recovery at endpoint, while there was a negligible variation in

those patients who did not. The MADRS global score improved in both groups, though remained over 9 among patients not in recovery. The occupation item score of the SCOS improved among patients in recovery while it worsened among those patients not in recovery, and the past symptoms item score improved significantly more in the former group than in the latter.

The logistic regression modeling of recovery correlates after 1 year showed (Fig. 3) that a shorter duration of untreated psychosis, positive attitude toward pharmacotherapy during follow-up, antipsychotic monotherapy, better premorbid adjustment, as well as improvements of depressive symptoms and of social cognition from baseline were all associated with a higher likelihood of being in recovery after 1 year.

3.4. Stability of recovery after 1 year

Reassessment after 1 year was completed for 83 out of 103 patients who were in recovery and for 293 patients who were not in recovery at baseline. Of the 83 patients, 67 (80.7%) maintained their recovery status after 1 year. On the other hand, 35 out of 292 patients (one was excluded because his/her status at endpoint was unknown) not in recovery at baseline moved into recovery after 1 year; hence, 257 out of 292 (88.0%) patients remained out of recovery after 1 year.
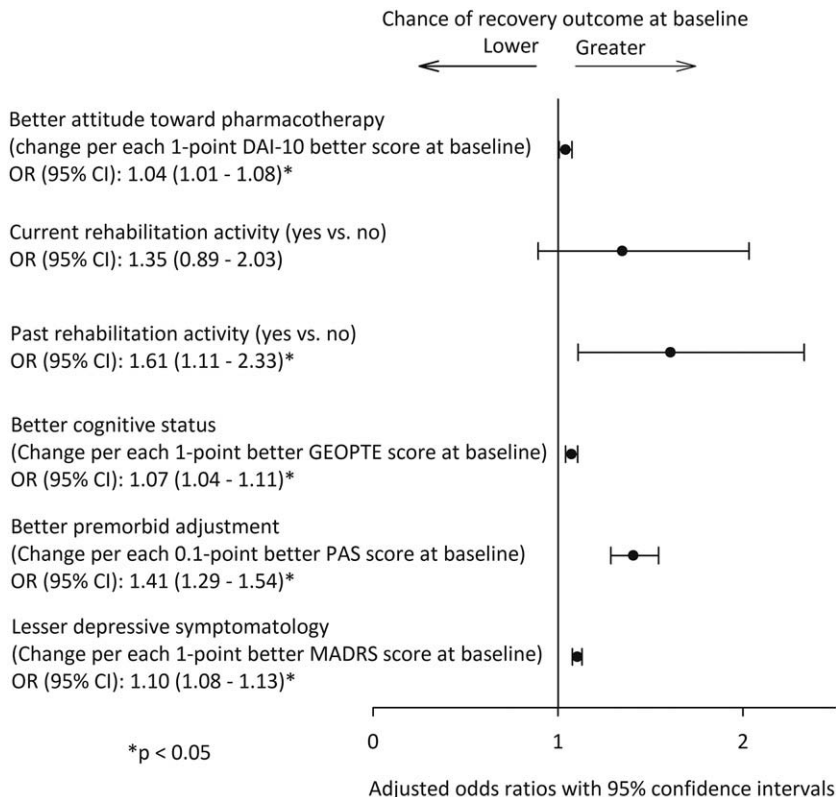

Fig. 2. Adjusted odds ratios and 95% confidence intervals (CI) of the likelihood of being in a better symptomatic and/or functional level (recovery: SR plus AF versus isolated SR versus neither of these) for the factors significantly correlated with the status at baseline. DAI-10: 10-item version of the Drug Attitude Inventory, PAS: Cannon-Spoor Premorbid Adjustment Scale, GEOPTE: *Grupo Español para la Optimización del Tratamiento de la Esquizofrenia*, MADRS: Montgomery-Asberg Depression Rating Scale.

Table 3
Baseline status and evolution of patients' clinical aspects by recovery status after 1 year.

Aspect	Patients attaining recovery after 1 year $N = 102$[a]		Patients not attaining recovery after 1 year $N = 273$[a]		
	Baseline status[b]	Change to 1 year[c]	Baseline status[b]	Change to 1 year[c]	p-value[d]
Psychopathology					
SAPS global score[e]	1.2 (1.6)	− 1.0 (0.1)	2.3 (2.0)	− 0.3 (0.1)	<0.001
SANS global score[e]	3.0 (2.8)	− 2.3 (0.3)	5.3 (2.6)	0.0 (0.2)	<0.001
Depressive symptoms					
MADRS global score[e]	7.0 (5.4)	− 4.4 (0.5)	11.8 (6.8)	− 0.8 (0.3)	<0.001
Global function					
SCOS total score[e]	13.3 (2.5)	1.0 (0.2)	10.9 (2.9)	0.1 (0.1)	<0.001
SCOS non-hospitalisation item score	3.9 (0.3)	0.0 (0.0)	3.9 (0.4)	0.0 (0.0)	0.537
SCOS social contacts item score[e]	3.2 (1.2)	0.3 (0.1)	2.6 (1.4)	0.1 (0.1)	0.280
SCOS occupation item score[e]	3.0 (1.6)	0.4 (0.1)	1.9 (1.7)	− 0.2 (0.1)	<0.001
SCOS absence past symptomatic item score[e]	3.2 (0.7)	0.5 (0.1)	2.6 (0.8)	0.1 (0.0)	<0.001
Quality of life					
PCS-12 score	51.1 (7.8)	1.1 (0.8)	49.9 (8.5)	0.2 (0.5)	0.320
MCS-12 score[e]	47.0 (9.7)	7.5 (0.9)	41.2 (11.6)	1.9 (0.5)	<0.001

[a]Statistics have been calculated for 375 patients, because the status could not be determined in one case.
[b]Values are expressed as means (standard deviation).
[c]Values are expressed as least square means (standard error of the mean).
[d]Corresponds to the between-group comparison of the changes from baseline (ANCOVA).
[e]Between-group (recovery/not recovery) significant differences at baseline.
SAPS: Scale for the Assessment of Positive Symptoms, SANS: Scale for the Assessment of Negative Symptoms, MADRS: Montgomery-Asberg Depression Rating Scale, SCOS: Strauss-Carpenter Outcomes Scale, PCS-12: Physical Component summary Score of the SF-12 outcomes survey, MCS-12: Mental Component summary Score of the SF-12 outcomes survey.

The likelihood of moving out of recovery during follow-up was modeled with binary logistic regression among those 83 patients (Fig. 4). Interestingly, among the pool of factors analyzed, only the deterioration of depressive symptoms was associated with a greater chance of moving out of recovery.

4. Discussion

4.1. Key findings

Comments regarding these results can be structured along two lines. First, the prevalence of recovery as an outcome with the current standards of care is modest (10.2%), but it could be considerably augmented if SR is achieved and maintained in more patients. We have shown that under maintained SR the recovery outcome is relatively stable within the term of 1 year, with a raw good positive predictive value of 80.7% for the endpoint status. These results underscore the mutual interaction between the recovery process and the recovery outcome as a source of confidence for both patients and clinicians (Liberman and Kopelowicz, 2005).

Also of note is that using the proposed definition of appropriate functioning based on an overall measurement of psychosocial functioning yielded baseline comparable recovery rates, 10.2%, than other study that used a categorical, criterion-based definition, 13.7% (Robinson et al., 2004). Such approximations based on continua, like ours, might therefore be valid to evaluate functional outcomes in an environment where one component of categorical definitions of AF is practically excluded, as it occurred with the attainment of competitive job because of massive disability endorsements. This situation depicts the influence of the community context and opportunity on recovery (Bellack et al., 2007); and, speculatively, suggests that the use of overall measurements of psychosocial functioning may be an alternative to other proxy measures of everyday functioning, like so-called functional capacity. Our recovery rate at baseline differed notably from the 24% reported recently in the German sample of the Schizophrenia Outpatient Health Outcomes (SOHO) study (Lambert et al., 2008), whereas it was comparable after 1 year (27.1%). Remarkably, the definition of recovery used to analyze the data of the SOHO was founded on sustained SR, supporting, together with our data, the importance of maintaining SR (van Os et al., 2006).

The second line of comment relates to the validity of the recovery definition that we have proposed. In response to the call for empirical research to validate operational definitions of recovery (Bellack, 2006; Liberman et al., 2002), we provide data on construct and content validity. First, we can support the association of factors that had been proposed previously; such as shorter duration of untreated psychosis (Haas et al., 1998), better premorbid adjustment (Bailer et al., 1996; Harrow et al., 2005; Hofer et al., 2006; McGurk and Meltzer, 2000; Rund, 1990), and positive attitude/compliance with antipsychotic pharmacotherapy (Awad and Hogan, 1994; Awad et al., 1995; Brekke et al., 1993; Harrow et al., 2005). But, additionally, we have observed that better social cognition and milder depressive symptoms were associated with an increased chance of recovery. Furthermore, worsening of depressive symptoms was associated with a greater chance of moving out of recovery, and the presence of significant depressive symptoms at baseline differed between patients who were and were not in recovery after 1 year.
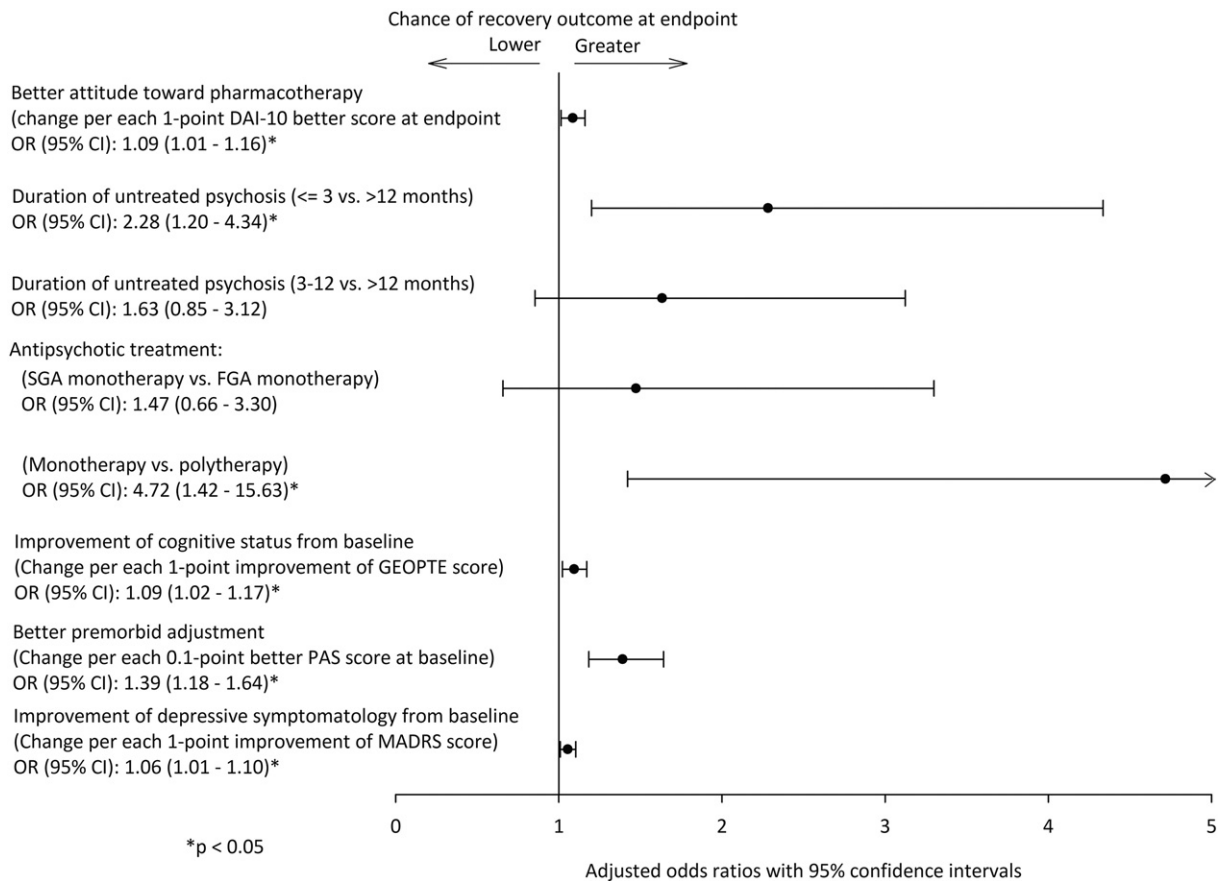
Chance of recovery outcome at endpoint

Fig. 3. Adjusted odds ratios and 95% CI of the likelihood of attaining a better symptomatic and/or functional level (recovery: SR plus AF versus isolated SR versus neither of these) for the factors significantly predicting the status after 1 year. FGA: First-Generation Antipsychotics, SGA: Second-Generation Antipsychotics, DAI-10: 10-item version of the Drug Attitude Inventory, PAS: Cannon-Spoor Premorbid Adjustment Scale, GEOPTE: *Grupo Español para la Optimización del Tratamiento de la Esquizofrenia*, MADRS: Montgomery-Asberg Depression Rating Scale.

4.2. Depressive symptoms

The relationship between depressive symptoms and functioning in schizophrenia is a contentious issue. We have seen that in the presence of SR there is a considerable association between depressive symptoms and good functional outcomes, in line with prior studies that have found a stronger correlation between affective than psychotic symptoms with functioning (Fleischhacker et al., 2005; Gaite et al., 2002). Depressive symptoms have also been recognized to contribute significantly to medication non-adherence in patients recovering from a first episode (Perkins et al., 2008), and may partially explain the functional outcomes in patients with an episodic illness who can show periods of

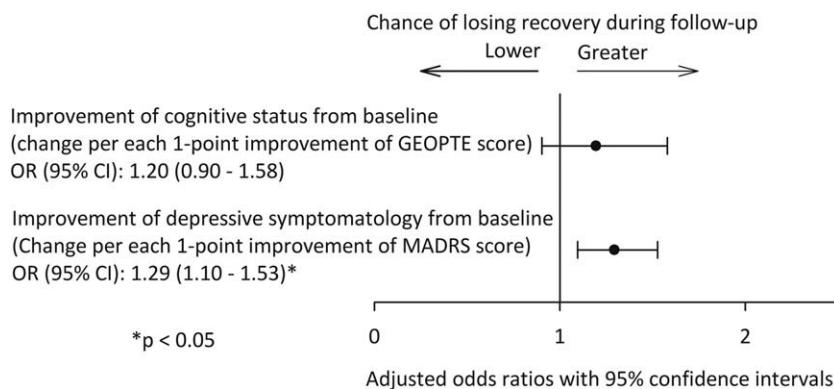Chance of losing recovery during follow-up

Fig. 4. Adjusted odds ratios and 95% CI of the likelihood of losing the recovery status for the factors significantly predicting the status after 1 year. GEOPTE: *Grupo Español para la Optimización del Tratamiento de la Esquizofrenia*, MADRS: Montgomery-Asberg Depression Rating Scale.

recovery (Harrow et al., 2005). Yet, the association seems to be more nuanced. Endorsement of defeatist beliefs regarding cognitive abilities, but not depressive symptoms, has been associated with reduced engagement in constructive activity and subsequently with poor functional outcomes (Grant and Beck, 2008); increased insight could determine poorer social functioning for it may elicit internalization of stigma and augmented depressive symptoms in a process related to demoralization (Lysaker et al., 2007). The latent motif in these somewhat contradictory findings may be the differing styles a person may follow as he/she recovers from schizophrenia (McGlashan and Carpenter, 1981). In this vein, consumers demanding and obtaining recovery-oriented services, independence and empowerment may be faced with a nuanced reality that challenges their impaired capabilities, and that would lead to hopelessness if this process is not preceded or accompanied by gains in personal agency. Hence, the individualization and evaluation of personal trails might aid to optimize the management of comorbid depression during the recovery process.

4.3. Social cognition

The other novel factor related to recovery in this research was social cognition. There is an increasing recognition of the importance of social cognitive deficits as determinants of functional outcome in schizophrenia (Couture et al., 2006). Although the study design was not optimal for establishment of causal or directional relationships between cognitive status and functioning, the results should encourage further evaluation of these relationships and the development of measures for these and other areas of cognitive research (Green et al., 2005). It is also of interest that self ratings of patients, but not those of their informants, became significantly associated with recovery. This interesting link between an objective, functional measure of recovery (GAF score), and the subjective interpretation of behavioral and interpersonal aspects of recovery (patient-rated GEOPTE scale) stresses the complementary relationship of these two conceptions, which may correspond to scientific and consumer models of recovery (Bellack, 2006). Our measure of social cognition may reflect the availability of social skills required to manifest appropriate behaviors in interpersonal situations to achieve desired goals, which in turn prompt active involvement in treatment, the pursuit of a healthy lifestyle and development of social relationships (Noordsy et al., 2002). The lack of these abilities may partially explain why remission in schizophrenia cannot be linked directly to improvements in functioning, and their salient importance may orient further research to operationalize and measure consumer definitions of recovery.

4.4. Limitations

Patients not in SR at baseline were not followed, precluding the evaluation of the predictive validity of remission for recovery. Second, because the GAF relies on symptom load to account for functioning, the strong correspondence found between SR and recovery must be considered with caution. Third, a time criteria was not required for remission and recovery definitions. The original proposal by the Schizophrenia Working Group requires a minimum period of 6 months under minimal symptom severity (Andreasen et al., 2005), and operational definitions of recovery should also contain a time component (Liberman and Kopelowicz, 2005). Disregarding the time components may have led to overestimation of the prevalence and stability of remission and recovery. Fourth, our 1-year follow-up observational study is certainly a short term effort to evaluate the stability of recovery, especially when compared with prior studies of long-term outcomes of schizophrenia (Harrow et al., 2005), yet these studies were more focused on clinical practice than on conceptual development of recovery constructs and used varying diagnostic criteria since they covered long time periods. Fifth, the net increase of the prevalence of recovery among patients in SR must be interpreted with caution, because this result could change depending on the evolution of the 76 patients lost during follow-up. Patients who choose not to attend mental health services were neglected by this study.

4.5. Conclusion

Although the prevalence of recovery among outpatients evaluated is low, the data suggest a relevant association of comorbid affective symptoms and social cognitive abilities with the functional outcome of schizophrenia in patients in SR. From the published dataset results (Ciudad et al., 2009; San et al., 2007), we can conclude that SR is a realistic and reachable goal and is the basis for further improvements in functioning. We can also conclude that social cognition can explain a relevant portion of variability observed in psychosocial functioning and that the recovery process is heterogeneous and non-linear (not all patients evolve through the same steps toward recovery). In addition to ensuring remission, recovery may advance with the amelioration of depression and development and evaluation of measures of social cognition.

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