Taylor & Francis
Taylor & Francis Group

Clinical and cognitive insight in patients with acute-phase psychosis: Association with treatment and neuropsychological functioning

Burç Çağri Poyraz, Mehmet Kemal Arikan, Cana Aksoy Poyraz, Şenol Turan, Ayşe Sakalli Kani, Eser Aydin & Ezgi İnce

Published online: 27 Apr 2016.

Submit your article to this journal ↗

Article views: 93

View related articles ↗

View Crossmark data ↗

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

Clinical and cognitive insight in patients with acute-phase psychosis: Association with treatment and neuropsychological functioning

Burç Çağri Poyraz[a], Mehmet Kemal Arikan[a], Cana Aksoy Poyraz[a], Şenol Turan[a], Ayşe Sakalli Kani[b], Eser Aydin[a] and Ezgi İnce[a]

[a]Department of Psychiatry, Cerrahpaşa Faculty of Medicine, University of Istanbul, Istanbul, Turkey; [b]Sivas Numune State Hospital, Sivas, Turkey

ABSTRACT

Background: The severity of psychopathology cannot fully explain deficits in the multi-dimensional construct of insight.
Aims: The aim of this study was to evaluate the correlates and associations of clinical and cognitive insight in patients in an acute phase of psychosis and to analyse the impact of acute treatment on these variables.
Methods: This study examined 47 inpatients who were recently hospitalized with acute exacerbation of schizophrenia. All subjects were assessed at both admission and discharge with the Positive and Negative Syndrome Scale (PANSS), Schedule for the Assessment of Insight-Expanded Version (SAI-E), Beck Cognitive Insight Scale (BCIS), and a neurocognition battery.
Results: Patients with schizophrenia gained clinical insight after treatment. Cognitive insight did not change significantly after treatment. Insight showed significant negative correlations with positive symptoms and general psychopathology, but not with negative symptoms. Clinical insight was not associated with neuropsychological functioning in this cohort.
Conclusion: Gaining clinical insight in the acute phase of illness was associated with the remission of positive symptoms, but not with neuropsychological functioning. Some significant correlations between clinical and cognitive insights were detected, which suggests that cognitive insight contributes to clinical insight but is not treatment-dependent. Long-term treatment may be required to understand the contribution of insight to the outcome of patients with schizophrenia.

Introduction

Insight has been described as a multi-dimensional construct that encompasses awareness of having a mental disorder, its symptoms, and need for treatment (1,2). Lack of understanding of mental illness, which is detected in the mental state examination of the majority of patients with psychosis, has traditionally been considered a hallmark of psychosis by clinicians. Between 50–80% of patients diagnosed with schizophrenia (including patients at different stages of disease and with different evolution times) have been shown to be partially or totally lacking insight into the presence of their mental disorder (3).

Many clinicians believe that poor insight is associated with a worse functional and symptomatic prognosis. Moreover, it has been shown that poor insight had a major negative impact on treatment satisfaction in psychosis (4). Lack of insight may disrupt the continuity of treatment because patients are not likely to comply with psychiatric treatment for an illness they do not believe exists. Indeed, the majority of studies provide evidence that insight contributes to adherence during the treatment phase (5–7). However, the association between insight and long-term treatment adherence remains unclear (8).

Over the past decade, there has been an increase in efforts to deepen our understanding of the consequences and correlates of poor insight in patients with psychosis. Studies investigating the relationship between insight and symptoms in schizophrenia have demonstrated that patients with more severe positive symptoms have more deficits in insight into the illness (9,10). Negative symptoms (10–13) and disorganization (12,14,15) have also been shown to be correlated with lack of insight into illness in several studies. However, the severity of psychopathology cannot fully explain deficits in the multi-dimensional construct of insight. A recent meta-analysis has demonstrated that the severity of psychopathology plays a limited role in deficits in insight (10). Given the relatively small effect sizes observed in this meta-analysis, the authors suggested a curvilinear relationship between insight and psychopathology mediated by other clinical factors such as cognitive status.

It has been proposed that poor insight in schizophrenia is associated with impaired neurocognition or impaired information processing capacity. The results of studies exploring the relationship between cognition and insight are inconsistent. Some studies have reported a significant association between impaired insight and executive functioning (16–18)

and memory (12,18,19). In contrast, other studies have failed to detect a relationship between insight and neurocognitive functioning (20–25). These inconsistent findings likely reflect the multi-dimensionality of insight in psychosis as well as variations in study design, such as differences in the reliability with which the measures were used, and the inclusion of patients across different stages of illness (26).

Several recent studies have expanded the concept of insight to include cognitive insight. Beck et al. (27) define the traditional concept of insight as 'clinical insight', and define 'cognitive insight' as a reflection of the tendency or capacity toward flexible thinking. The Beck Cognitive Insight Scale (BCIS) has trait-like properties (28), whereas clinical insight has both state- and trait-like properties (29). Previous research shows that cognitive insight consistently correlates with clinical insight (28), yet cognitive insight may be a better indicator of prognosis, and it has already been shown that cognitive insight was the best baseline predictor of overall psychopathology at the end of a 1-year follow-up in a sample of patients experiencing their first episode of psychosis (30), which implies a positive relationship between cognitive insight and psychopathology over time.

On the other hand, some studies showed that cognitive insight rather than clinical insight could be associated with neurocognitive abilities; the results of these studies implicate a complementary relationship between clinical insight and cognitive insight. (31–33). Follow-up studies have identified a link between poorer cognitive insight and poorer verbal memory (32,34) and executive dysfunctions (33,35,36).

The current study set out to evaluate the correlates and associations of clinical and cognitive insight in patients in an acute phase of psychosis and to analyse the impact of acute treatment on these variables. We hypothesized that the lack of both clinical and cognitive insight would be related to the severity of psychosis and that insight would be improved once psychotic symptoms had abated. The longitudinal design of our study that involves assessment of psychopathology, neurocognition, and clinical and cognitive insight might help to elucidate the response of each domain to treatment and may contribute to understanding of the nature of acute psychotic episodes beyond other factors. Considering that low insight is associated with poor adherence in patients with schizophrenia (37), elucidating how both forms of insight are related to treatment response may help to investigate the potential targets for improvement of adherence.

Materials and methods

Participants

Forty-seven patients who had been diagnosed with schizophrenia by two senior psychiatrists according to the criteria of the International Statistical Classification of Diseases and Related Health Problems, tenth revision (ICD-10) (38) were recruited from inpatients admitted to the Department of Psychiatry, Cerrahpaşa Faculty of Medicine. Interviews were conducted over 16 months between February 2014 and June 2015. Participants were recruited among patients who were hospitalized during the acute phase of psychosis. The sample did not include first episode patients, it consisted of patients with chronic schizophrenia.

All patients were assessed within a week of the onset of treatment and again prior to discharge. Qualified psychiatrists administered each instrument.

Patients who could not be interviewed due to mutism, severe negativism, or psychomotor agitation as well as patients with mental retardation or with a known organic cause for psychosis were excluded. All patients were receiving oral antipsychotic medication at the time of assessment. The participants only received psychopharmacological treatment during hospital stay. Among patients who met study eligible criteria, the psychiatrist in charge of the ward informed those who were clinically capable of completing a 2-h study protocol of their eligibility for the study. Patients expressing a willingness to participate were introduced to the study coordinator, and gave consent if they agreed to participate. Patients meeting inclusion criteria and providing written informed consent were interviewed as soon as possible after the onset of treatment for psychosis. Ethical approval was obtained from the institutional ethics review board. Table 1 reports the clinical characteristics of the study sample.

Measures

A questionnaire was used to collect demographic and clinical data. Psychopathological assessment was performed using the Turkish version of the Positive and Negative Syndrome Scale for Schizophrenia (PANSS), which was validated by Kostakoğlu et al. (39).

Clinical insight was measured with the Schedule for the Assessment of Insight-Expanded Version (SAI-E) (40). This scale is an observer-rated, semi-structured interview that has been applied widely in both Western and non-Western countries (41) and measures three linked dimensions of insight: awareness of illness, need for treatment, and the relabeling of symptoms as abnormal. Each dimension comprises two or three questions, which are scored on a 3-point scale from 0 (no insight) to 2 (good insight), with a maximum total score of 28. High scores represent better insight. The qualified psychiatrists who administered each test were familiar with the clinical presentation of the patient.

We used the Beck Cognitive Insight Scale (BCIS) (25) to measure cognitive insight, a type of metacognitive measure (42). The BCIS is a 15-item self-report scale, with items rated from 'do not agree at all' to 'agree completely'. There are two sub-scales: 'self-reflectiveness', which assesses willingness to accept fallibility as well as ability to recognize dysfunctional reasoning style (e.g. 'my unusual experiences may be due to my being extremely upset or stressed') (nine items) and 'self-certainty', which assesses over-confidence (e.g. 'I can trust my judgement at all times') (six items). Higher self-reflectiveness represents a willingness to accept fallibility (good insight), and higher self-certainty reflects a greater certainty about one's being right (poor insight). Participants rated each item on a 4-point Likert scale. The authors derived a composite cognitive insight index score (composite index, CI) by subtracting the self-certainty (SC) score from the

Table 1. Clinical and neurocognitive characteristics as well as insights (clinical and cognitive) of patients at admission and discharge.

	Admission	Discharge	p	Statistics
PANSS ratings				
Total	95.4 ± 27.1	65.1 ± 17.5	<0.001	z = −5.4
Positive	24.6 ± 8.5	14.5 ± 5.3	<0.001	t = 8.5
Negative	24.2 ± 9.5	17.9 ± 7.8	<0.001	z = −4.9
Psychopathology	46.3 ± 14.1	32.6 ± 7.8	<0.001	z = −5.4
SAI-E				
Total score	8.0 ± 6.0	14.8 ± 5.7	<0.001	z = 5.6
Awareness of illness	3.6 ± 3.3	6.7 ± 3.2	<0.001	z = 4.8
Re-labelling symptoms as abnormal	2.8 ± 2.3	5.0 ± 3.0	<0.001	z = 4.2
Need for treatment	1.5 ± 1.3	3.0 ± 1.0	<0.001	z = 4.6
BCIS				
Composite Index	0.6 ± 5.3	0.9 ± 6.2	0.7	t = −0.3
Self-reflectiveness	10.8 ± 3.7	11.0 ± 4.2	0.8	z = 0.2
Self-certainty	10.2 ± 3.0	10.1 ± 3.9	0.9	t = 0.1
Cognitive battery				
Trails A error (number)	0.4 ± 1.3	0.2 ± 0.7	0.2	z = −1.2
Trails A time (second)	97.4 ± 69.1	78.4 ± 46.6	0.001	z = −3.3
Visual recall	8.2 ± 3.5	9.8 ± 3.4	0.001	z = −3.2
Digit span forward	5.2 ± 1.4	5.7 ± 1.2	0.001	z = 3.2
Digit span backward	3.5 ± 1.4	3.5 ± 1.4	0.8	z = 0.2

self-reflectiveness (SR) score. The BCIS has been accurately translated into Turkish (43).

The following domains of cognitive function were assessed: working memory (Wechsler Adult Intelligence Scale-Revised (WAIS; Digit Span (44)), processing speed (Trail Making Test part A (The Trails A) (45)), and non-verbal memory (Wechsler Memory Scale-Revised visual reproduction test (44)).

Statistical analysis

Statistical analyses were conducted using IBM Statistical Package for the Social Sciences version 21 (SPSS, Chicago, IL). A descriptive analysis was performed using the percentage, mean, standard deviation (SD), and median. Normality of each measure was determined via the Kolmogorov-Smirnoff test. Non-parametric statistics were applied to variables in which normality assumptions were violated. Change in score between admission and discharge for each measure was evaluated by either paired two-sample *t*-test or Wilcoxon signed-rank test. Two-tailed Pearson's correlations or Spearman's rank correlations were conducted to examine the relationship between measures (symptoms, neuropsychological measures, and insight scores). Significance was set at $p < 0.05$. An additional analysis was performed with analysis of covariance (ANCOVA) to control for the possible effects of duration of illness and the change in PANSS positive symptoms.

Results

Description of the sample

A total of 47 inpatients were selected based on interviews with patients and informants as well as reviews of case records. The mean age of the participants was 36.3 years (SD = 10.5), with an average duration of illness of 12.1 years (SD = 10.1). The study group included 26 males (55.3%) and 21 females (44.7%). The mean number of years of education

was 9.8 (SD = 4.1). Approximately 20% were married and ∼15% were employed.

The mean age of onset was 24.23 (SD = 7.41) years. The mean duration of illness was 12.1 years (SD = 10.15). The median value for the number of previous hospitalization was 3 (range = 1–12).

The average total PANSS (46) score was 95.48 (SD = 27.12), which indicates that patients were markedly ill according to a published set of severity standards (47). Patients scored an average of 24.63 (SD = 8.58) on the positive sub-scale, 24.28 (SD = 9.53) on the negative sub-scale, and 46.33 (SD = 14.13) on the general psychopathology sub-scale.

All participants were treated with antipsychotic medication starting on the first day of admission. Seventeen patients (36.7%) were treated with clozapine. The mean length of hospital stay was 29 days (SD = 10.7).

Change in insight score, psychopathology, and cognitive function at discharge

We compared scores of scales administered at admission and discharge (Table 1). Clinical insight (SAI-E total score) significantly improved between admission and discharge (from 8.01 ± 6.01 to 14.89 ± 5.74, $p < 0.001$). All dimensions of clinical insight significantly improved between admission and discharge: awareness of illness (from 3.62 ± 3.36 to 6.74 ± 3.2; $p < 0.001$), re-labelling of symptoms as abnormal (from 2.88 ± 2.31 to 5.09 ± 3.06, $p < 0.001$), and need for treatment (from 1.51 ± 1.36 to 3.05 ± 1.03, $p < 0.001$).

BCIS-composite index, BCIS-SC, and BCIS-SR scores did not change significantly between admission and discharge.

Positive symptoms, negative symptoms, and general psychopathology on the PANSS all significantly decreased between admission and discharge ($p < 0.001$) (Table 1).

Patients performed significantly better at discharge compared with admission on processing speed (Trail Making Test part A, $p = 0.001$), forward digit span (WAIS-R Digit Span, $p = 0.001$), and visual recall (Wechsler Memory Scale-Revised, $p = 0.001$). Number of errors on the Trail Making Test part A

Table 2. Spearman's rho and Pearson correlation coefficients (*r*) between clinical insight and psychotic symptomatology and cognitive insight at admission and discharge.

	Admission SAI-E				Discharge SAI-E			
	Total score	Awareness of illness	Re-labelling symptoms as abnormal	Need for treatment	Total score	Awareness of illness	Re-labelling symptoms as abnormal	Need for treatment
PANSS								
Positive symptoms	−0.35*	−0.18*	−0.42*	−0.42**	−0.42**	−0.07	−0.43**	−0.21
Negative symptoms	−0.07	−0.1	−0.42 **	−0.05	−0.24	−0.23	−0.01	−0.15
General psychopathology	−0.06	−0.05	0.0	−0.17	−0.40**	−0.24	−0.32*	−0.37*
PANSS total score	−0.26	−0.19	−0.25	−0.33*	−0.42**	−0.25	−0.29	−0.34*
BCIS								
Composite Index	0.43**	0.46**	0.37*	0.36*	0.27	−0.02	0.32*	0.09
Self-Reflectiveness	0.36*	0.3	0.32*	0.39**	0.29	0.14	0.3	−0.22
Self-Certainty	−0.36*	−0.43**	−0.3	−0.28	−0.31*	−0.00	−0.18	−0.01
Cognitive battery								
Trails A error (number)	−0.2	−0.09	−0.29	0.04	0.03	0.13	0.07	−0.002
Trails A time (seconds)	−0.09	−0.21	−0.12	0.04	−0.11	−0.09	0.02	−0.18
Visual recall	−0.18	−0.18	−0.12	−0.15	0.28	0.02	0.13	0.12
Digit span forward	0.01	0.03	0.05	−0.1	0.13	0.18	0.07	−0.03
Digit span backward	0.02	0.03	0.06	0.01	0.08	0.01	0.02	0.01

PANSS: Positive and Negative Syndrome Scale; SAI-E: Schedule for the Assessment of Insight-Expanded Version (SAI-E); BCIS-CI: Beck Cognitive Insight Scale-Composite Index.
*$p \leq 0.05$, **$p \leq 0.01$.

and backward digit span on the WAIS-R Digit Span did not significantly change between admission and discharge.

Correlation analysis

Significant inter-correlations between admission and discharge are described below.

Insight, neuropsychology, and symptoms at admission

SAI-E total score did not correlate with neuropsychological variables. BCIS-SR was correlated with visual recall ($r = -0.351$) and BCIS-SC was correlated with the time to complete trails ($r = 0.31$). Cognitive insight was not correlated with symptoms at admission.

SAI-E total score was correlated moderately with positive symptoms at admission ($r = -0.352$). Need for treatment sub-scale was significantly correlated with positive symptoms ($r = -0.426$), but not with negative symptoms. Re-labelling of symptoms as abnormal was correlated with positive symptoms ($r = -0.423$). SAI-E total score was correlated with BCIS scores (SC: $r = -0.365$, SR: $r = -0.36$, and CI: $r = 0.434$). Some significant correlations were obtained between SAI-E sub-scales and BCIS and its' sub-scales (Table 2).

The following neuropsychological variables were correlated with negative symptoms at baseline: Trails A ($r = 0.562$), visual memory ($r = -0.487$), Digit Span Forward ($r = -0.333$), and Digit Span Backward ($r = -0.392$). Visual memory was also correlated with general psychopathology ($r = -0.345$).

Insight and discharge status

SAI-E total score at discharge was not correlated with neuro-cognitive functioning or negative symptoms, but was correlated with positive symptoms ($r = -0.417$), general psychopathology ($r = -0.406$), and PANSS total score ($r = -0.422$). The index SAI-E score for re-labelling symptoms as abnormal was correlated with positive symptoms ($r = -0.432$) and general psychopathology ($r = -0.322$), but not with negative symptoms. Need for treatment was correlated with general psychopathology ($r = -0.379$) (Table 2). The change in SAI-E total score was correlated with the change in positive symptoms ($r = 0.313$). The change in SAI-E total score was also inversely correlated with the duration of illness ($p = 0.005$, $r = -0.41$).

BCIS-SR was correlated with general psychopathology at discharge ($r = -0.434$). BCIS total score and BCIS sub-scales were not correlated with neuropsychological variables at discharge.

SAI-E total score was only correlated with BCIS-SC at discharge (Table 2). At discharge, visual memory was correlated with negative symptoms ($r = -0.33$).

A further analysis of repeated measure of ANOVA using the change in SAI-E total score as the dependent variable and duration of illness and change in PANSS positive symptoms as covariates was performed. The change in PANSS positive symptoms has affected the change in SAI-E total score between pre- and post-treatment assessments ($p = 0.002$, df $= 1$, $F = 11.55$); but the change in clinical insight total scores was not associated with the duration of illness ($p = 0.056$, df $= 1$, $F = 3.88$).

Discussion

The current study aimed to evaluate the correlates and associations of clinical and cognitive insight in patients in an acute phase of psychosis and to analyse the impact of acute treatment on changes in clinical and cognitive insight. We found that deficits in clinical insight were associated with more severe psychopathology, particularly on the positive symptom sub-scale of the PANSS. Decrease in positive symptoms was related to a gain in clinical insight at the end of the acute treatment phase. Cognitive insight remained stable after acute treatment of psychosis and was not correlated

with symptomatology. No significant correlation was found between clinical insight and neuropsychological test performances. Finally, the results of the analysis of covariance suggest that the change in positive symptoms has been related to the improvement in clinical insight total scores, but not the duration of illness.

Insight and clinical symptoms

Our results showed that positive symptoms and general psychopathology were correlated with re-labelling of symptoms as abnormal and need for treatment, but not with awareness of mental illness. We also found that change in SAI-E total score was modestly correlated with change in positive symptoms ($r = 0.313$). No association was found between clinical insight and negative symptoms.

Studies exploring the relationships between insight and positive symptoms have yielded inconsistent findings. Some studies found non-significant relationships between insight and acute psychopathology (48). Others found that the severity of some positive symptoms, such as delusions and thought disorder, was correlated with lack of insight (49). Deficits in awareness of having a mental disorder and of its social consequences have been associated with positive symptom severity (50). Zhou et al. (25) found that deficits in insight were associated with positive and disorganized/concrete and excited symptoms, but not with the severity of negative symptoms in a sample of patients with chronic schizophrenia. Another recent study, which explored the relationship between insight and the severity of psychotic symptomatology, also found that insight was not correlated with the severity of negative psychotic symptoms in a sample of patients in an acute phase of psychosis (51). In contrast, other studies have reported a relationship between impaired insight and the severity of negative psychotic symptoms (12,52). A recent meta-analysis reported a small negative relationship between insight and symptoms (10). However, some consistency was observed in the magnitude of the relationship between positive symptoms and dimensions of insight. Moreover, a negative relationship between insight and positive symptoms was stronger during acute psychotic episodes compared to periods of remission. The relatively consistent finding that insight is more closely linked to severity of positive symptoms may be associated with the fact that delusions represent a higher degree of unawareness of illness. Patients with strong delusions adhere to them for a considerable amount of time and strongly defend them, even in the face of evidence that disproves them. Thus, with remission of the psychotic episode and decreases in the intensity of delusions, patients may develop more accurate interpretations of their reality, which may in turn increase their ability to re-label symptoms as abnormal and to recognize the need for treatment.

Significant correlations were also observed between SAI-E total score, re-labelling of symptoms as abnormal, need for treatment, and general psychopathology at discharge. This finding suggests that the severity of residual disorganization/ general psychopathology was associated with impairments in

insight among patients who were not in remission at discharge. The length of hospital stay was ~1 month in this cohort, which may not have been sufficient for antipsychotic treatment to have complete effects.

We found a significant negative correlation between the duration of illness and the change in SAI-E total scores between admission and discharge ($p = 0.005$, $r = -0.41$), which suggests that longer duration of illness was associated with lower chance to gain clinical insight after acute treatment. Yet, a further analysis of repeated measures of ANOVA for the clinical insight scores with the change in positive symptoms and duration of illness entered as covariates revealed that the change of positive symptoms was the only variable related with the improvement in clinical insight.

Insight and neurocognitive function

We found no significant correlation between clinical insight and neuropsychological test performance during inpatient hospitalization for an acute psychotic episode. These findings are consistent with previous studies that failed to detect significant associations between neurocognitive dysfunction and lack of insight (22–24). The findings from these studies and our cohort support the view that neurocognitive impairment does not have a significant impact on awareness of mental illness. Both a systematic review (53) and meta-analysis (54) have suggested an association between poor clinical insight (as measured by SAI-E) and neuropsychological deficits, especially in domains of executive function. However, it has been emphasized that such an association is not always evident (40), and most of the variance in insight cannot be explained by cognitive function. A comprehensive meta-analysis examining relationships between clinical insight and neurocognition in psychotic disorders indicated a small but significant effect of neurocognition on clinical insight (55).

There is some evidence that the phase of illness may influence the relationship between insight and cognition. A previous study reported that poor insight was only modestly associated with neurocognitive impairment during inpatient hospitalization; the authors suggested that the relationship between impaired insight and neurocognitive dysfunction may be masked during an acute psychotic episode (40). Based on these findings, it is possible that we did not find a relationship between impaired insight and neurocognitive dysfunction because the assessments were conducted during the acute psychotic episode. In addition, only a limited number of tests were used.

Cognitive insight and its correlates

We found no significant improvement in cognitive insight after treatment. Contrary to our findings, Bora et al. (56) reported some improvement in self-certainty after recovery of acute psychosis. Other studies have shown that both self-certainty and self-reflectiveness do not change substantially during the course of the illness (57,58). These inconsistent findings suggest that longer follow-up may be needed to observe changes in rigid thinking styles. In addition, BCIS may

be a more useful screening instrument in patients who are undergoing cognitive behavioural therapy, as following the change in BCIS over time may reveal the impact of this change on improvements in symptoms. Moreover, a previous study reported that poor cognitive insight was correlated with specific positive symptoms, namely delusions, and improvement in cognitive insight was correlated with improvement in delusional beliefs (59). These findings suggest that change in cognitive insight over time might be worthy of further examination.

We found no correlation between cognitive insight and symptoms at admission. Some previous studies have found that BCIS is associated with positive symptoms (56,60). However, a number of studies have failed to find a relationship between cognitive insight and PANSS positive symptoms (30,61–63), which is consistent with our study. We found that BCIS-SR was correlated with general psychopathology ($r = -0.43$) at discharge, which suggests that associations between cognitive insight and psychopathology may emerge only once psychotic symptoms abate. O'Connor et al. (30) found that cognitive insight was the best baseline predictor of overall psychopathology at the end of a 1-year follow-up in a sample of patients experiencing their first episode of psychosis. This finding implies a positive relationship between cognitive insight and psychopathology over time. Thus, cognitive insight may be a determinant of later recovery from psychosis.

We observed modest correlations between BCIS-SR and visual recall ($r = -0.35$) and between BCIS-SC and processing speed ($r = 0.31$) at admission. Neither the BCIS total score nor BCIS sub-scales were correlated with neuropsychological variables at discharge. This result is likely because patients performed significantly better in neurocognitive tests at discharge. Cooke et al. (35) also reported that greater self-certainty (i.e. poor cognitive insight) was modestly associated with executive dysfunction in a sample of outpatients with schizophrenia. Cognitive insight has also been shown to be associated with various neuropsychological functions (64,65). Moreover, previous studies have shown that BCIS but not the clinical insight is associated with neurocognitive functioning (31). In a comprehensive meta-analysis, Nair et al. (55) found that self-certainty was negatively associated with a number of neurocognitive domains, but found no associations between self-reflectiveness and neurocognition. These results suggest that self-certainty and self-reflectiveness are independent dimensions associated with different neuropsychological pathways. Findings from neuroimaging studies support this view that self-certainty and self-reflectiveness have different correlates. In one study, a smaller overall hippocampal volume was correlated with higher self-certainty, and reduced left-hemisphere hippocampal volume was correlated with a lower composite index score (32), but no correlation was observed between self-reflectiveness and total hippocampal volume.

We found some significant correlations between clinical and cognitive insight, which is consistent with other studies (35,60). Significant correlations between clinical and cognitive insight at admission were not present at discharge, a result likely due to improvements in clinical insight, but not cognitive insight. It has been proposed that clinical and cognitive insights are complementary rather than overlapping constructs. In the current study, clinical insight was associated with an acute response to treatment. However, longer follow-up studies are needed to understand the contribution of cognitive insight as an indicator of prognosis.

Limitations and strengths

This study examined a relatively small sample of inpatients. The limited number of tests included in the cognitive battery and the absence of IQ scores are additional weaknesses of the study. The correlational approach used to assess the relationship between clinical and cognitive insight, psychosis symptoms, and neurocognitive functioning precludes the determination of causal relationships among these variables.

This study has several strengths. The longitudinal design of the study allowed us to track changes in the relationship between insight and symptoms over time. All patients were in the acute phase of psychosis, which produced a relatively homogeneous sample. In addition, only patients with a diagnosis of schizophrenia uncomplicated by co-morbidity with substance abuse were included in the study. We used a broad range of tests to examine different correlates of insight.

Conclusion

The results of our study support the view that lack of insight in schizophrenia during inpatient hospitalization is significantly associated with positive symptomatology, but not with neuropsychological functioning or severity of negative psychotic symptoms. We found modest correlations between cognitive insight and neurocognition at admission. Acute treatment in inpatients with psychotic exacerbation was associated with improvement in clinical but not cognitive insight. Acute treatment in chronic patients with schizophrenia should target prompt reduction of positive symptoms in order to maintain a better clinical insight, regardless of the duration of illness. Clinical and cognitive insights have overlapping aspects, but only change in clinical insight was associated with reduction in symptomatology after treatment. Longer follow-up studies are needed to understand the contribution of cognitive insight as an indicator of prognosis.

Disclosure statement

References

1. David AS. Insight and psychosis. Br J Psychiatry 1990;156:798–808.
2. Amador XF, Strauss DH, Yale SA, Gorman JM. Awareness of illness in schizophrenia. Schizophr Bull 1991;17:113–32.

3. Amador XF, Gorman JM. Psychopathologic domains and insight in schizophrenia. Psychiatr. Clin North Am 1998;21:27–42.

4. Bø B, Ottesen ØH, Gjestad R, Jørgensen HA, Kroken RA, Løberg EM, et al. Patient satisfaction after acute admission for psychosis. Nord J Psychiatry 2016. [Epub ahead of print]. DOI:10.3109/08039488.2015.1112831.

5. Kozuki Y, Froelicher ES. Lack of awareness and nonadherence in schizophrenia. West J Nurs Res 2003;25:57–74.

6. Mutsata SH, Joyce EM, Hutton SB, et al. Clinical correlates of early medication adherence: West London first episode schizophrenia study. Acta Psychiatr Scand 2003;108:439–46.

7. Cuffel BJ, Alford J, Fischer EP, Owen RR. Awareness of illness in schizophrenia and outpatient treatment adherence. J Nerv Ment Dis 1996;184:653–9.

8. Lincoln TM, Lullmann E, Rief W. Correlates and long-term consequences of poor insight in patients with schizophrenia. A systematic review. Schizophr Bull 2007;33:1324–42.

9. Amador XF, Strauss DH, Yale SA, Flaum MM, Endicott J, Gorman JM. Assessment of insight in psychosis. Am J Psychiatry 1993;150:873–9.

10. Mintz RA, Dobson SK, Rommey MD. Insight in schizophrenia: A metaanalysis. Schizophr Res 2003;61:75–88.

11. Carroll A, Fattah S, Clyde Z, Coffey I, Owens DG, Johnstone EC. Correlates of insight and insight change in schizophrenia. Schizophr Res 1999;35:247–53.

12. Smith TE, Hull JW, Israel LM, Willson DF. Insight, symptoms, and neurocognition in schizophrenia and schizoaffective disorder. Schizophr Bull 2000;26:193–200.

13. Mingrone C, Rocca P, Castagna F, Montemagni C, Sigaudo M, Scalese M, et al. Insight in stable schizophrenia: Relations with psychopathology and cognition. Compr Psychiatry 2013;54:484–92.

14. Dickerson FB, Boronow JJ, Ringel N, Parente F. Lack of insight among outpatients with schizophrenia. Psychiatr Serv 1997;48:195–9.

15. Baier M, DeShay E, Owens K, Robinson M, Lasar K, Peterson K, et al. The relationship between insight and clinical factors for persons with schizophrenia. Arch Psychiatr Nurs 2000;14:259–65.

16. Drake RJ, Lewis SW. Insight and neurocognition in schizophrenia. Schizophr Res 2003;62:165–73.

17. Simon AE, Berger GE, Giacomini V, Ferrero F, Mohr S. Insight, symptoms and executive functions in schizophrenia. Cogn Neuropsychiatry 2006;11:437–51.

18. Rossell SL, Coakes J, Shapleske J, Woodruff PW, David AS. Insight: Its relationship with cognitive function, brain volume and symptoms in schizophrenia. Psychol Med 2003;33:111–19.

19. Keshavan MS, Rabinowitz J, DeSmedt G, Harvey PD, Schooler N. Correlates of insight in first episode psychosis. Schizophr Res 2004;70:187–94.

20. David A, van Os J, Jones P, Harvey I, Foerster A, Fahy T. Insight and psychotic illness. Cross-sectional and longitudinal associations. Br J Psychiatry 1995;167:621–8.

21. Cuesta MJ, Peralta V, Caro F, de Leon J. Is poor insight in psychotic disorders associated with poor performance on the Wisconsin card sorting test. Am J Psychiatry 1995;152:1380–2.

22. Collins AA, Remington GJ, Coulter K, Birkett K. Insight, neurocognitive function and symptom clusters in chronic schizophrenia. Schizophr Res 1997;27:37–44.

23. Freudenreich O, Deckersbach T, Goff DC. Insight into current symptoms of schizophrenia. association with frontal cortical function and affect. Acta Psychiatr Scand 2004;110:14–20.

24. Goodman C, Knoll G, Isakov V, Silver H. Insight into illness in schizophrenia. Compr Psychiatry 2005;46:284–90.

25. Zhou Y, Rosenheck R, Mohamed S, Zhang J, Chang Q, Ou Y, et al. Insight in inpatients with schizophrenia: Relationship to symptoms and neuropsychological functioning. Schizophr Res 2015;161:376–81.

26. Shad MU, Tamminga CA, Cullum M, Haas GL, Keshavan MS. Insight and frontal cortical function in schizophrenia: A review. Schizophr Res 2006;86:54–70.

27. Beck A, Baruch E, Balter JM, Steer RA, Warman DM. A new instrument for measuring insight: The Beck cognitive insight scale. Schizophr Res 2004;68:319–29.

28. Riggs SE, Grant PM, Perivoliotis D, Beck AT. Assessment of cognitive insight: A qualitative review. Schizophr Bull 2012;38:338–50.

29. Wiffen BDR, Rabinowitz J, Lex A, David AS. Correlates, change and 'state or trait' properties of insight in schizophrenia. Schizophr Res 2010;122:94–103.

30. O'Connor JA, Wiffen B, Diforti M, Ferraro L, Joseph C, Kolliakou A, et al. Neuropsychological, clinical and cognitive insight predictors of outcome in a first episode psychosis study. Schizophr Res 2013;149:70–760.

31. Lepage M, Buchy L, Bodnar M, Bertrand M-C, Joober R, Malla A. Cognitive insight and verbal memory in first episode psychosis. Eur Psychiatry 2008;23:368–74.

32. Buchy L, Czechowska Y, Chochol C, Malla A, Joober R, Pruessner J, et al. Toward a model of cognitive insight in first-episode psychosis: Verbal memory and hippocampal structure. Schizophr Bull 2010;36:1040–9.

33. Lysaker PH, Warman DM, Dimaggio G, et al. Metacognition in schizophrenia: Associations with multiple assessments of executive function. J Nerv Ment Dis 2008;196:384–9.

34. Engh JA, Sundet K, Simonsen C, Vaskinn A, Lagerberg TV, Opjordsmoen S, et al. Verbal learning contributes to cognitive insight in schizo- phrenia independently of affective and psychotic symptoms. Prog Neuro-Psychopharmacol Biol Psychiatry 2011;35:1059–63.

35. Cooke MA, Peters ER, Fannon D, Aasen I, Kuipers E, Kumari V. Cognitive insight in psychosis: The relationship between self-certainty and self-reflection dimensions and neuropsychological measures. Psychiatry Res 2010;178:284–9.

36. Kao YC, Liu YP, Lien YJ, Lin SJ, Lu CW, Wang TS, et al. The influence of sex on cognitive insight and neurocognitive functioning in schizophrenia. Prog Neuropsychopharmacol Biol Psychiatry 2013;44:193–200.

37. Misdrahi D, Petit M, Blanc O, Bayle F, Llorca PM. The influence of therapeutic alliance and insight on medication adherence in schizophrenia. Nord J Psychiatry 2012;66:49–54.

38. World Health Organization. The ICD-10 classificaiton of mental and behavioral disorders:clinical descriptions and diagnostic guidelines. Geneva: World Health Organization, 1992.

39. Kostakoğlu AE, Batur S, Tiryaki A, Göğüş A. The validity and reliability of the Turkish version of the positive and negative syndrome scale (PANSS) for schizophrenia. Türk Psikoloji Dergisi 1999;14:23–32.

40. Kemp R, David AS. Psychological predictors of insight and compliance in psychotic patients. Br J Psychiatry 1996;169:444–50.

41. Aga VM, Agarwal AK, Gupta SC. The relationship of insight to psychopathology in schizophrenia: A cross sectional study. Indian J Psychiatry 1995;37:129–35.

42. David A, Bedford N, Wiffen B, Gilleen J. Failures of metacognition and lack of insight in neuropsychiatric disorders. Philos Trans R Soc Lond B Biol Sci 2012;367:1379–90.

43. Aslan S, Türkçapar H, Güney E, Eren N, Akkoca Y, Uğurlu M, et al. The validity and reliability of the Turkish version of the Beck cognitive insight scale for patients with schizophrenia. Klinik Psikiyatri 2005;8:186–96.

44. Wechsler D. Wechsler Memory Scale-Revised Manual, San Antonio, TX: Psychological Corporation; 1987.

45. Reitan RM. Validity of trail making test as an indication of organic brain disease. Percept Mot Skills 1958;8:271–6.

46. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 1987;13:261–75.

47. Leucht S, Kane JM, Kissling W, Hamann J, Etschel E, Engel RR. What does the PANSS mean? Schizophr Res 2005;79:231–8.

48. McEvoy JP, Apperson LJ, Appelbaum PS, Ortlip P, Brecosky J, Hammill K, et al. Insight in schizophrenia. Its relationship to acute psychopathology. J Nerv Ment Dis 1989;177:43–7.

49. Amador XF, Andreasen NC, Flaum MM, Strauss DH, Yale SA, Clark S, et al. Awareness of illness in schizophrenia and schizoaffective and mood disorders. Arch Gen Psychiatry 1994;51:826–36.

50. Sevy S, Nathanson K, Visweswaraiah H, Amador X. The relationship between insight and symptoms in schizophrenia. Compr Psychiatry 2004;45:16–9.

51. Nieto L, Cobo J, Pous E, Blas-Navarro J, García-Parés G, Palao S, et al. Insight, symptomatic dimensions, and cognition in patients with acute-phase psychosis. Compr Psychiatry 2012;53:502–8.

52. Buchy L, Torres JI, Liddle FP, Woodward ST. Symptomatic determinants of insight in schizophrenia spectrum disorders. Compr Psychiatry 2009;50:578–83.

53. Morgan K, David A. Neuropsychological studies of insight in patients with psychotic disorders. In: Amador X, David A, editors. Insight and Psychosis 2nd edition, London: Oxford University Press; 2004.

54. Aleman A, Agrawal N, Morgan KD, David AS. Insight in psychosis and neuropsychological function: Meta-analysis. Br J Psychiatry 2006;189:204–12.

55. Nair A, Palmer EC, Aleman A, David AS. Relationship between cognition, clinical and cognitive insight in psychotic disorders: A review and meta-analysis. Schizophr Res 2014;152:191–200.

56. Bora E, Erkan A, Kayahan B, Veznedaroglu B. Cognitive insight and acute psychosis in schizophrenia. Psychiatry Clin Neurosci 2007;61:634–9.

57. Garety PA, Bebbington PE, Fowler DG, Freeman D, Kuipers E. Implications for neurobiological research of cognitive models of psychosis: A theoretical paper. Psychol Med 2007;37:1377–91.

58. Warman DM, Martin JM. Cognitive insight and delusion proneness: An investigation using the Beck cognitive insight scale. Schizophr Res 2006;84:297–304.

59. Engh JA, Friis S, Birkenaes AB, Jónsdóttir H, Klungsøyr O, Ringen PA, et al. Delusions are associated with poor cognitive insight in schizophrenia. Schizophr Bull 2010;36:830–5.

60. Pedrelli P, McQuaid JR, Granholm E, Patterson TL, McClure F, Beck AT, et al. Measuring cognitive insight in middle-aged and older patients with psychotic disorders. Schizophr Res 2004;71:297–305.

61. Favrod J, Zimmermann G, Raffard S, Pomini V, Khazaal Y. The Beck cognitive insight scale in outpatients with psychotic disorders: further evidence from a French-speaking sample. Can J Psychiatry 2008;53:783–7.

62. Tranulis C, Lepage M, Malla A. Insight in first episode psychosis: Who is measuring what? Early Interv Psychiatry 2008;2:34–41.

63. Uchida T, Matsumoto K, Kikuchi A, Miyakoshi T, Ito F, Ueno T, et al. Psychometric properties of the Japanese version of the Beck cognitive insight scale: Relation of cognitive insight to clinical insight. Psychiatry Clin Neurosci 2009;63:291–7.

64. Gilleen J, Greenwood K, David AS. Domains of awareness in schizophrenia. Schizophr Bull 2011;37:61–72.

65. Orfei MD, Caltagirone C, Cacciari C, Assogna F, Spalletta G. The neuropsychological correlates of cognitive insight in healthy participants. Appl Cogn Psychol 2011;25:927–32.