

Insight in Offenders with Schizophrenia: Relationship to Psychopathology and Cognitive Function

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ABSTRACT

Objectives: To study the insight in offenders with schizophrenia and its relationship of psychopathology and cognitive function.

Methods: Seventy consecutive offenders with schizophrenia (aged 18-65) admitted to Hospital Bahagia Ulu Kinta within a six-month period were studied. Subjects' insight, psychopathology and cognitive function were assessed using the Insight and Treatment Attitude Questionnaire (ITAQ), Positive and Negative Syndrome Scale (PANSS), and Mini Mental State Examination (MMSE) respectively.

Results: High PANSS positive scores were significantly associated with unsoundness of mind ($p = 0.011$). Low ITAQ and MMSE scores were significantly associated with PANSS total, negative and general scores.

Conclusion: Positive symptoms were significantly associated with unsoundness of mind. Poor insight and cognitive function were significantly associated with negative symptoms as well as general and global psychopathology. This study however, failed to find significant insight-unsoundness of mind or insight-cognitive function relationships.

KEY WORDS

mentally ill offender, schizophrenia, cognitive, insight, psychopathology

INTRODUCTION

The lack of insight or awareness of illness in schizophrenia is one of the most frequently observed symptoms of schizophrenia¹⁾ and may negatively influence treatment compliance and treatment response²⁻⁴⁾. It was found that insight and treatment attitudes improved during short-term hospitalization and insight deficits was relatively stable over time in outpatient setting²⁻⁴⁾. A recent study⁵⁾ also found insight did not differ significantly between the psychosis risk syndrome, first-episode schizophrenia, and multipisode schizophrenia suggesting insight deficits behaves like a trait and is modulated by positive symptom severity.

Impairment of insight in schizophrenia has been frequently associated with the neurocognitive functioning especially of the frontal brain region⁶⁾. Metacognitive deficit was related to greater levels of negative symptoms, poorer insight, neurocognitive impairment (particularly impairments in verbal and visual memory) premorbid intelligence, and processing speed⁷⁾.

A study on stable schizophrenia showed that insight was partially influenced by positive and negative symptoms and by cognitive functions. Awareness of mental illness was related to positive and negative symptoms, executive functions, and verbal learning memory. Variability in awareness of the need for treatment was related to positive and negative symptoms. Awareness of the social consequences of disorder was related to positive symptoms and executive functions⁸⁾.

Positive symptoms particularly delusion, hostility and hallucinatory behavior were found to be significantly correlated with social behavior problem and burden on the caregivers⁹⁾. Buckley *et al*¹⁰⁾ found that violence among patients with schizophrenia most often occurs during periods of active psychosis. Patients with schizophrenia who commit violent acts have insight deficits, including lack of awareness of the legal implications of their behavior.

Insight influences the degree of supervision required, and the decision as to whether a patient can safely be discharged from inpatient settings. This study therefore, aimed to investigate insight among mental offenders and the relationship to psychopathology and cognitive function. Understanding the relationship would be important in order to improve their treatment and prevent recidivism.

METHODOLOGY

Subject

This was a cross sectional study conducted within a six-month period starting in December 2009 in Hospital Bahagia Ulu Kinta (HBUK). Built in 1911, with over 2,600 beds in 76 wards covering 544 acres of land in Ulu Kinta, it is the oldest and largest mental institution in Malaysia. Seventy consecutive mental offenders with schizophrenia (aged 18-65) admitted under section 342 Criminal Procedure Code (CPC) were recruited. Subjects were excluded if they had severe communication problems or mental retardation. The study was approved by the Research & Ethics Committee, Universiti Sains Malaysia and Ministry of Health Malaysia. Written informed consent was obtained from all patients after a full explanation of the procedures of the study.

Assessment

All mental offenders admitted to the forensic wards and fulfilled the criteria were assessed within the first week of admission. A single researcher (the second author) trained in psychiatric interview and rating scale interviewed all the subjects and administered the test individually.

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Table 1. Characteristics of subjects (n = 70)

	Frequency (%)
Gender	
Male	68(97.1)
Female	2(2.9)
Ethnic	
Malay	37 (52.9)
Chinese	21 (30.0)
Others	12 (17.1)
Marital status	
Married	6(8.6)
Divorced	13(18.6)
Single	51(72.9)
Employment status	
Fulltime	13(18.6)
Part time	24(34.3)
Unemployed	29(41.3)
Others	4(5.7)
Educational levels	
Nil	4(5.7)
Primary	15(21.4)
Secondary	49(70.0)
Tertiary	2(2.9)
Route of AP	
Oral	53(75.7)
Depot	17(24.3)
Type of AP	
Oral typical	17(24.3)
Oral atypical	36(51.4)
Combination	17(24.3)
History of previous offence	
Yes	19(27.1)
No	51(72.9)
Mental Soundness	
Sound mind	19(27.1)
Unsound mind	45(64.3)
	Mean (SD)
Age (y)	38.03 (10.01)
Age of first treatment (y)	27.59(7.84)
No hospitalization	4.07(6.24)
No of previous offence	0.47 (1.14)

Table 2. Association with Psychopathology, Cognitive Function and Insight

	PANSS Positive		PANSS Negative		MMSE		ITAQ	
	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p
Gender								
Male	18.31 (4.19)	0.791*	15.56 (5.67)	0.705*	24.07 (4.24)	0.503*	6.24 (3.24)	0.155*
Female	17.50 (6.36)		14.00 (8.49)		22.00 (7.07)		2.50 (0.71)	
Ethnic								
Malay	18.86 (4.20)	0.471†	15.24 (5.82)	0.452†	24.32 (4.24)	0.103†	6.68 (4.00)	0.348†
Chinese	17.52 (4.69)		16.71 (6.06)		22.52 (4.71)		5.81 (3.34)	
Others	17.83 (3.22)		14.25 (4.50)		25.67 (2.87)		5.00 (2.89)	
Marital status								
Married	20.00 (4.56)	0.505†	10.83 (3.13)	0.093†	27.17 (3.66)	0.169†	7.33 (4.80)	0.465†
Divorced	18.69 (3.57)		15.23 (6.87)		23.69 (4.35)		6.85 (4.58)	
Single	17.98 (4.32)		16.14 (5.40)		23.73 (4.25)		5.80 (3.26)	
Employment status								
Full time	18.38 (4.52)	0.495†	14.23 (4.83)	0.420†	25.08 (3.35)	0.130†	4.69 (2.93)	0.101†
Part time	18.79 (4.44)		14.58 (5.38)		24.38 (4.07)		7.50 (4.31)	
Unemployed	17.52 (3.99)		16.83 (5.93)		22.79 (4.69)		5.53 (3.11)	
Other	20.50 (3.11)		15.75 (8.26)		27.25 (3.10)		4.75 (3.50)	
Educational level								
Nil	20.50 (3.11)	0.245†	16.25 (3.30)	0.574†	20.50 (2.89)	0.016†	5.75 (2.63)	0.845†
Primary	19.80 (3.78)		15.93 (5.34)		21.93 (4.33)		5.47 (2.53)	
Secondary	17.65 (4.24)		15.55 (5.99)		24.76 (4.05)		6.39 (4.02)	
Tertiary	18.00 (7.07)		10.00 (2.83)		28.50 (2.12)		5.50 (4.95)	
Route of AP								
Oral	18.28 (4.23)	0.993*	15.17 (5.50)	0.374*	23.91 (4.29)	0.711*	5.79 (3.42)	0.176*
Depot	18.29 (4.22)		16.59 (6.27)		24.35 (4.36)		7.18 (4.23)	
Type of AP								
Typical	18.76 (5.07)	0.852†	16.06 (6.48)	0.500†	23.06 (4.70)	0.578†	6.29 (4.30)	0.318†
Atypical	18.06 (3.83)		14.75 (5.02)		24.31 (4.09)		5.56 (2.96)	
Combined	18.29 (4.22)		16.59 (6.27)		24.35 (4.36)		7.18 (4.23)	
History of offence								
Yes	19.11 (3.05)	0.322*	16.21 (4.70)	0.535*	22.95 (4.84)	0.205*	7.16 (3.40)	0.151*
No	17.98 (4.54)		15.25 (6.03)		24.41 (4.03)		5.75 (3.70)	
Mental Soundness								
Sound mind	16.60 (3.16)	0.011*	15.60 (5.47)	0.926*	23.84 (4.30)	0.802*	7.24 (3.55)	0.057*
Unsound mind	19.22 (4.44)		15.47 (5.86)		24.11 (4.31)		5.51 (3.60)	

*Independent t-test was applied, p value significant at < 0.05

†One way ANOVA test was applied, p value significant at < 0.05

Table 3. Correlation between Psychopathology, Cognitive Function and Insight

	MMSE		ITAQ	
	R	p	R	p
PANSS Positive	-0.16	0.193	-0.04	0.776
PANSS Negative	-0.59	0.001	-0.26	0.029
PANSS General	-0.50	0.001	-0.32	0.007
PANSS Total	-0.55	0.001	-0.29	0.015

The Insight and Treatment Attitude Questionnaire (ITAQ)^{2,4)} is a semi-structured interview that measures various aspects of insight such as acceptance of the presence of mental disorder (first five items) to the patient's attitudes to medication, hospitalization and follow-up evaluation (last six items). It consists of 11 questions, the response to which are scored 0 (no insight), 1 (partial insight) and 2 (good insight). The maximum possible score is 22. A principle component factor analysis revealed a single factor.

The Positive and Negative Syndrome Scale (PANSS) scale is a 30-item semi structured clinical interview developed to assess typological and dimensional assessment of schizophrenia. Each item is rated on a 7-point scale (1 = absent, 7 extreme) based upon information related to the past week. It has strong psychometric properties in terms of reliability, validity and sensitivity which have been shown in a number studies¹¹⁾.

The mini-mental state examination (MMSE) or Folstein test is a brief 30-point questionnaire test that is used to screen for cognitive impairment. The examination takes approximately seven minutes to complete (1). It tests a broad range of cognitive functions, including orientation, recall, attention, calculation, language manipulation and con-

structional apraxia. The validated Malay version¹²⁾ was used in this study.

Information about the socio-demographic and clinical characteristic of subjects was collected from the medical record. Subject's mental soundness at the time of offence was based on the final forensic report. It would be recorded as unsound mind if the forensic psychiatrist in-charge was in the opinion that the mental offender was insane at the time of the offence. The defense of insanity in Malaysia is contained in section 84 of Penal Code (Revised 1997) Act 574. Section 84 of Penal Code clearly described about the act of a person of unsound mind. In the section, it was stated that 'nothing is an offence which is done by a person who, at the time of doing it, by reason of unsoundness of mind, is incapable of knowing the nature of the act, or that what he is doing is

either wrong or contrary to the law'.

Statistics

All the analyses were done using PASW Statistics version 18 for Windows. Independent t test was used to compare mean between two groups. One way ANOVA test was used if there were more than two independent groups. Pearson correlation test was used to measure the relationship between two numerical variables.

RESULTS

Most of the offenders were involved in violent offence against person (48.6%) or property (31.4%). The remaining were drugs-related (15.7%) and possession of firearm (4.3%). Table 1 details the socio-demographic characteristics of the subjects. Malay constituted 52.9% of all subjects which was representative of Malaysian population at 50%¹³. Majority of the subjects were male (97.1%), single (72.9%), unemployed (41.3%), educated up to secondary level (70%), received oral atypical antipsychotic (51.4%), no previous history of offence (72.9%) and were found to have unsound mind at the time of offence (64.3%).

Table 2 details the relationship of subjects' characteristics with psychopathology, cognitive function and insight. High MMSE scores were significantly associated with tertiary education level. Offenders found to have unsound mind were significantly associated with high PANSS positive scores ($p = 0.011$). The mean ITAQ scores among were lower compared to those with sound mind at the time of offence. However, the association was found to be non-significant ($p = 0.057$).

Both ITAQ and MMSE scores were negatively associated with PANSS negative, general and total scores as summarized in table 3. However, the correlation between MMSE and ITAQ was not significant ($r = 0.23$, $p = 0.052$).

DISCUSSION

This study found significant association between unsound mind at the time of offence with PANSS positive symptoms but not with negative symptoms. Active psychosis in the first week of admission during which the assessment was made significantly associated with the final forensic report that the offender was of unsound mind at the time of offence. Those whose final reports were of unsound mind were also rated lower on ITAQ scores. Nevertheless, the difference was not statistically significant. This finding suggested that all offenders, regardless of whether they were of sound or unsound mind, had poor insight and treatment attitude. The role of active psychosis as measured by significantly higher positive symptoms was to further impair, at the time of the offense, the awareness of the offense with regard to the nature of act or what he was doing was either wrong or contrary to the law. This was consistent with a previous study⁵ that found positive symptoms had a modulating effect on insight in schizophrenia patients.

This study also found that poor insight in offenders with schizophrenia was associated with symptoms severity but not positive symptoms. This was generally consistent with previous studies that insight a small relationship exists between insight and level of symptomatology^{8,14}. Similarly, cognitive function was also significantly associated with negative symptoms, general and global psychopathology but not with positive symptoms. A previous study¹⁵, using the Brief Psychiatric Rating Scale (BPRS) and Calgary Depression Scale (CDS) to assess schizophrenia symptomatology, found significant relationships between verbal memory performance and patient's severity of the illness but not depressive symptoms. A subsequent study¹⁶, using PANSS to assess the psychopathology, found significant association between verbal working memory and negative symptoms but not positive symptoms.

The present study has a number of limitations. The ITAQ which had shown strong loading on a single factor that is highly correlated with the total insight score, appears to capture a global level of insight that is linked to compliance and need for involuntary treatment²⁻⁴. While this simplifies interpretation of results, it also suggests that the ITAQ taps a uni-dimensional aspect of a phenomenon that has many nuances. In addition, the ITAQ is relatively transparent to some patients who may report a more positive but misleading attitude to treatment. Another scale, the Scale to Assess Unawareness of Mental Disorder (SUMD)¹⁷ is more comprehensive. It taps several independent dimensions of insight, including awareness of specific symptoms, and both current and past

attributions about symptoms. As for the assessment of cognitive function, the MMSE covers a broad area of cognitive functions. Future studies should consider battery of more specific cognitive assessment. Rather than broad cognitive assessment such as MMSE, Auditory Verbal Learning Test¹⁸ for example can be used to specifically assess verbal memory performance which includes the assessment of immediate memory, delayed recall and recognition memory.

Another limitation is that the present study is cross sectional and, as such, cannot lead to conclusions about the direction of causality in the cognition-insight or psychopathology-insight relationships. Future studies should consider a more experimental approach in exploring the relationships that exist between psychopathology, cognitive function and insight in schizophrenia.

CONCLUSION

In conclusion, positive symptoms which characterized active psychosis were significantly associated with unsoundness of mind. Poor insight and cognitive function were significantly associated with negative symptoms in particular, in addition to general and global psychopathology. This study however, failed to find significant association between insight and cognitive function.

REFERENCE

- 1) Carpenter WT Jr, Bartko JJ, Carpenter CL, Strauss JS. Another view of schizophrenia subtypes. A report from the international pilot study of schizophrenia. *Arch Gen Psychiatry* 1976; 33(4): 508-16.
- 2) McEvoy JP, Applebaum PS, Apperson LJ, Geller JL, Freter S. Why must some schizophrenic patients be involuntarily committed? The role of insight. *Compr Psychiatry* 1989; 30(1): 13-7.
- 3) McEvoy JP, Apperson LJ, Appelbaum PS, Ortelp P, Breckosky J, Hammill K, Geller JL, Roth L. Insight in schizophrenia: Its relationship to acute psychopathology. *J Nerv Ment Dis* 1989; 177(1): 43-7.
- 4) McEvoy JP, Freter S, Everett G, Geller JL, Appelbaum P, Apperson LJ, Roth L. Insight and the clinical outcome of schizophrenic patients. *J Nerv Ment Dis* 1989; 177(1): 48-51.
- 5) Comparelli A, Savoia V, De Carolis A, Di Pietro S, Kotzalidis GD, Corigliano V, Falcone I, Tatarelli R, Ferracuti S, Girardi P. Relationships between psychopathological variables and insight in psychosis risk syndrome and first-episode schizophrenia. *J Nerv Ment Dis* 2013; 201(3).
- 6) Monteiro LC, Silva VA, Louzã MR. Insight, cognitive dysfunction and symptomatology in schizophrenia. *Eur Arch Psychiatry Clin Neurosci* 2008; 258(7): 402-5.
- 7) Nicolò G, Dimaggio G, Popolo R, Carcione A, Procacci M, Hamm J, Buck KD, Pompili E, Buccione I, Lagrotteria B, Lysaker PH. Associations of metacognition with symptoms, insight, and neurocognition in clinically stable outpatients with schizophrenia. *J Nerv Ment Dis* 2012; 200(7): 644-7.
- 8) Mingrone C, Rocca P, Castagna F, Montemagni C, Sigaud M, Scalese M, Rocca G, Bogetto F. Insight in stable schizophrenia: Relations with psychopathology and cognition. *Compr Psychiatry* 2013.
- 9) Othman Z, Salleh MR. Burden of care in schizophrenia: Implication of psychopathology of the illness. *Malaysian Journal of Psychiatry* 2005; 13(2): 34-40.
- 10) Buckley PF, Hrouda DR, Friedman L, Noffsinger SG, Resnick PJ, Camlin-Shingler K. Insight and its relationship to violent behavior in patients with schizophrenia. *Am J Psychiatry* 2004; 161(9): 1712-4.
- 11) Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 1987; 13(2): 261-76.
- 12) Zarina ZA, Zahiruddin O, Che Wan AH. Validation of Malay Mini Mental State Examination. *Malaysian Journal of Psychiatry* 2007; 16(1): 16-9.
- 13) http://www.statistics.gov.my/portal/download_Population/files/census2010/Taburan_Penduduk_dan_Ciri-ciri_Asas_Demografi.pdf
- 14) Mintz AR, Dobson KS, Romney DM. Insight in schizophrenia: a meta-analysis. *Schizophr Res* 2003; 61(1): 75-88.
- 15) Othman Z, Jamaluddin R, Alwi MNM, Ismail HC. Demographic and clinical factors associated with verbal memory performance in patients with schizophrenia in Hospital Universiti Sains Malaysia (HUSM), Malaysia. *ASEAN Journal of Psychiatry* 2011; 12(2): 148-156.
- 16) Hazura H, Wan Norhaida WA, Ruzita J, Zahiruddin O. Verbal working memory in schizophrenia: Relationship to cigarette smoking and psychopathology 2012; 21(1): 44-53.
- 17) Amador XF, Strauss DH, Yale SA, Flaum MM, Endicott J, Gorman JM. Assessment of insight in psychosis. *Am J Psychiatry* 1993; 150(6): 873-9.
- 18) Jamaluddin R, Othman Z, Musa KI, Alwi MNM. Validation of the Malay Version of Auditory Verbal Learning Test (MVAULT) among schizophrenia patients in Hospital Universiti Sains Malaysia (HUSM), Malaysia. 2009; 10(1): 54-74.