

THE RELATIONSHIP OF INSIGHT TO PSYCHOPATHOLOGY IN SCHIZOPHRENIA: A CROSS-SECTIONAL STUDY

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Insight plays an important role in the management of Schizophrenia. The study was undertaken to assess the cross-sectional relationship of clinical variables and psychopathology to insight, using the BPRS and the Insight Schedule. The study sample consisted of 59 ICD-10 Schizophrenics with a mean duration of illness of 41.88 months. Insight was found to have significant positive association with number of previous episodes of illness and treatment taken in the past. The correlation matrix of BPRS total score with Insight Schedule item scores revealed non significant negative correlations. On multiple regression analysis, psychopathology was found to explain significantly about a third of the variability in insight, thus demonstrating only partial dependence of insight on psychopathology. Construct analysis of the Insight Schedule was undertaken in parallel to the main study and revealed a component structure similar to that espoused by its author, ensuring comparability between the present and previous studies.

Key words: insight, psychopathology, schizophrenia

INTRODUCTION

Insight has been variously defined in psychiatry (Carpenter et al, 1973; Heinrichs et al, 1985; McEvoy et al, 1981). Freud (1933) supported the view that insight refers to a genuine awareness of unconscious conflicts or drives (cited in David, 1990a). Other concepts of insight were put forward by the phenomenological school (Jaspers, 1913) and the Gestalt psychologists (cited in Hare & Lamb, 1983). The Comprehensive Textbook of Psychiatry (Kaplan & Sadock, 1989) defines insight as the "degree of awareness and understanding the patient has that he or she is ill", but in their subsequent grading of insight, evidence of the psychoanalytic roots of the concept can be seen in words like 'denial' (grade 1) and 'emotional insight' (grade 6).

With growing research into the issue, consensus is emerging that insight is not a unidimensional concept (David, 1990b; Amador et al, 1993). Thus the older studies such as the International Pilot Study of Schizophrenia (IPSS: WHO, 1973), which had rated insight on the basis of a dichotomous concept may not be very valid today with respect to insight. The recent realization that the "component dimensions of insight are continuous...one can have partial insight" (Amador et al, 1993), is in keeping with the concept of six grades of insight (Kaplan & Sadock, 1989).

Till a few years ago, measurement of insight, in view of the above, was highly unsatisfactory. Though insight has, since a long time, been regarded

as an important part of the Mental State Examination (Kaplan & Sadock, 1989; Appleby & Forshaw, 1990), drawbacks in its assessment included lack of an operational definition and standardized measurement procedures (David et al, 1992). A common method of measurement was through the use of the PSE-9 (Wing et al, 1974) item 104, eg. the IPSS (WHO, 1973). However, there has been a recent spurt of structured insight measurement schedules, in keeping with the recent revival of interest in this issue (Amador et al, 1991). Three recently constructed insight rating instruments are the Insight and Treatment Attitudes Questionnaire (ITAQ: McEvoy et al, 1989a), the Insight Schedule (David, 1990a) and the Scale to Assess Unawareness of Mental Disorder (Amador et al, 1993).

Insight level can vary across the many manifestations of illness (Amador et al, 1993), i.e., there may be awareness of only one aspect of illness. Insight changes with the course of illness, but the direction of change is uncertain: some report an increase in the insight of schizophrenics with symptomatic improvement (Small et al, 1965 a & b) others have shown insight to decrease (Whitman & Duffey, 1961), while yet a third group reported lack of consistent direction of change in insight with improvement in psychopathology (McEvoy et al, 1989a). McEvoy et al (1989a) found significant moderate inverse correlation between ITAQ and BPRS and CGI scores only at day 14, and between only ITAQ and CGI scores at final assessment (in keeping with the changing nature of insight). In a companion study, the authors report an association between

insight scores and lower readmission rates (upto 3 1/2 years follow up). A significant trend for patients with more insight to be compliant with treatment thirty days after discharge was also reported (McEvoy et al, 1989b). A moderate inverse correlation between one year follow up ITAQ scores and BPRS total score and BPRS measure of psychoses was found in another prospective study of 25 schizophrenics (22 of which were assessed after the first year), only the latter of which was statistically significant (McEvoy et al, 1993).

A consistent negative correlation between BPRS scores and the scores of David's Insight Schedule were found to be statistically significant only after week two in a mixed sample of eight schizophrenics and fourteen affective disorder patients (Kulhara et al, 1992a). Another study of ninety one mixed psychotic patients diagnosed by the PSE/CATEGO system (David et al, 1992), showed no significant difference in insight between the 52 S+ (definitely schizophrenic) and the other 39 patients. On the other hand, Kulhara et al (1992b) reported significantly better insight in the affective disorder patients at initial assessment as well as significantly better improvement across time than in the schizophrenic group.

The present study was therefore undertaken to assess the cross-sectional relationship of clinical variables and psychopathology to insight in a homogeneous diagnostic groups of ICD-10 schizophrenics and to ascertain the amount of the variability in insight that can be satisfactorily explained by psychopathology alone. A parallel aim was to undertake a construct analysis of the Hindi adaptation of David's Insight Schedule, which was the insight assessment instrument used in the study.

MATERIALS AND METHODS

Subjects for this study were selected from consecutive admission on specified beds to the adult psychiatry unit, King George's Medical College (KGMC), Lucknow, fulfilling the following selection criteria: an ICD-10 diagnosis of Schizophrenia (WHO, 1992), age of the patient between 17 to 65 years, and consent for the study from the patients and their relatives.

Those with a comorbid neurological or psychiatric disorder were excluded from the study. The study had an open cross-sectional design. Tools of assessment included:

1. Brief Psychiatric Rating Scale (BPRS: Overall & Gorham, 1962)

A modified 18 item version of the original 16 item scale has been in use since the late sixties, and was used in the study. It is rated on a seven point scale (Bech et al, 1986). The scoring also yields 5 factor scores, anxiety-depression, thought disturbance, anergia, hostile-suspiciousness and activation (cited in Hafkenscheid, 1991) while 10 items can be combined to yield a schizophrenia subscale. The total scores are added to yield three syndrome levels: no syndrome (0-14), minor syndrome (15-29), and major syndrome (more than 29) (Bech et al, 1993). It has been shown to have excellent reliability, validity, and sensitivity to change (Hedlund & Vieweg, 1980).

2. Insight Schedule (IS: David, 1990a)

This is a short scale comprising of 3 subscales and one supplementary question. It is based on the concept that insight is based on three different but overlapping constructs - ability to relabel unusual mental events as pathological (scored 0-4), recognition by the patient of the presence of mental illness (scored 0-6), and treatment compliance, both expressed and observed (score 0-4). A supplementary question assesses hypothetical contradiction (scored 0-4). A supplementary question assesses hypothetical contradiction (scored 0-4) (Brett-Jones et al, 1987), thus bringing the maximum possible score to 18 (range 0-18). Psychometric properties of this scale have since been reported (David et al, 1992).

In a preliminary study in India, the scale was used without the supplementary question, and was shown to be satisfactory (Kulhara et al, 1992a). This was one major reason for selecting this instrument for use in this study, over the other recent insight rating scale. The scale has been subsequently expanded to include items on awareness of change (David & Kemp, 1994; personal communication) but since the psychometric properties of this version have not yet been reported, this version was not taken up for use in the study. The authors adapted the entire scale into Hindi prior to use in the study. The construct analysis of this Hindi version was undertaken simultaneously with the main study.

The procedure, briefly, was as follows. Prior education regarding the illness was provided to all patients from a standardized information sheet constructed in simple Hindi. It was further ensured that all patients were admitted under one consultant (AKA) and were rated by a single author (VMA) to

minimize variability in the assessment procedure. Each patient was first seen together with the attendant and the nature of the study was explained to them, to allay the anxiety of the patients. Patients were then told, "I am going to ask you a few questions that will assess your symptoms and motivation for treatment". Sociodemographic data was noted in a semi-structured proforma and patient were then rated on the BPRS and the Insight Schedule consecutively.

Statistical analysis was done according to the principles outlined by Glantz and Slinker (1990) and Altman (1992). The analyses were carried out using the EPI-INFO and MINITAB statistical software packages. Tests were considered significant at $p < 0.05$. Two-tailed p values were used throughout. Fisher's Exact Test was used for frequency data and Student's t test for continuous data. Adjustments were made in the alpha error value for the correlation metrics using the Bonferroni correction (Grove & Andreasen, 1982). Backwards multiple regression was used in the study, with a backwards F-to-remove of $p > 0.05$. Since it was decided to enter only $n/10$ variables into the regression model, only those BPRS items found significant on linear regression at $p < 0.03$ were entered into the multiple regression equation.

RESULTS

A total of 82 patients clinically diagnosed as schizophrenia were screened for inclusion in the study. Nine patients did not meet the ICD-10 F20 criteria for Schizophrenia and were excluded, as were those with a neurological (1) or psychiatric (8) comorbidity. Five patients could not be immediately assessed as they were uncooperative, and either absconded or were discharged against medical advice before reevaluation. A total of 23 patients were thus excluded, and the final analysis was carried out on 59 subjects.

The mean age of this study sample was 35.44 years ($SD=10.45$; range 18-55 years), 64.41% of the sample being male. Mean duration of illness was 41.88 months and there were 33 (55.93%) first episode patients. There were 31 paranoid schizophrenics (52.54%), 4 hebephrenic schizophrenics (6.78%), 4 catatonic schizophrenics (6.78%) and 20 undifferentiated schizophrenics (33.9%). The mean BPRS score was 31.22 ($SD=6.99$) and the mean Insight Schedule score was 4.91 ($SD=3.98$), the latter being less than 33% of the maximum possible score. Patients were receiving a

mean of 659.60 mg chlorpromazine or equivalents ($SD=495$) and 4.44 mg trihexyphenidyl ($SD=3.30$). Thirteen patients were receiving benzodiazepines (22.03%), 5 were on depot neuroleptic (8.47%) and 3 had received ECT (5.08%) a minimum of 1 week prior to assessment.

Table 1
Association of clinical variables with Insight

1. Duration of illness (1 year vs. others)	Fisher's Exact 2-tailed $p=0.2863$
2. Episode (1st. vs. others)	Fisher's Exact 2-tailed $p=0.0328^*$
3. Subtype (F 20.2 vs. Others)	Fisher's Exact 2-tailed $p=1.0000$
4. Current treatment	
-Chlorpromazine/equivalent (mg.)	Two-sample $t=1.10$, $df=57$ $p=0.33$
-Trihexyphenidyl (mg.)	Two-sample $t=0.04$, $df=57$ $p=0.97$
-Benzodiazepines (received vs. not received)	Fisher's Exact 2-tailed $p=1.0000$
-ECT (received vs. not received)	Fisher's Exact 2-tailed $p=1.0000$
-Depot injectables (received vs. not received)	Fisher's Exact 2-tailed $p=1.0000$
5. Past treatment (received vs. not received)	Fisher's Exact 2-tailed $p=0.0449^*$
6. BPRS syndrome (Major vs. others)	Fisher's Exact 2-tailed $p=0.5983$

* significant at $p < 0.05$

Since no cut-off score has been provided by its author for rating patients as having high and low scores on the Insight Schedule, the rather arbitrary procedure followed by McEvoy et al (1989b) with the ITAQ was followed. The sample was divided into these with high and low scores on the Insight Schedule, using 66% of the maximum score or above as the cut-off point. Clinical variables were compared between the two groups (Table 1). Patients who scored 66% of the maximum score of higher on the Insight Schedule had significantly more number of past episodes ($p < 0.05$) and were significantly more likely to have had received treatment in the past ($p < 0.05$). On the other hand, no significant inter-group differences were found on possible confounding variables: age, sex, education and family type.

Table 2
Correlation matrix of the items of the Insight Schedule and BPRS total scores (n=59)

	BTOT	I1	I2	I3	I4
I1	-0.404				
I2	-0.174	0.584*			
I3	-0.162	0.342	0.454*		
I4	-0.160	0.421*	0.644*	0.554*	
ITOT	-0.284	0.756*	0.886*	0.701*	0.807*

The alpha-overall for the matrix is significant at $p < 0.05$, hence the critical p -value of Pearson's r (Bonferroni correction) is 0.0033.

* Significant at $p < 0.0033$

Table 3
Regression of BPRS item scores on Insight Schedule total scores

Predictor	Coef	Stdev	t-ratio	p	VIF
Constant	9.277	1.235	7.51	0.000	
B5	1.3959	0.5735	2.43	0.018	1.1
B14	-0.7819	0.2550	-3.07	0.003	1.1
B15	-0.5714	0.2655	-2.15	0.036	1.0

$s = 3.322$ $R\text{-sq} = 33.9\%$ $R\text{-sq}(\text{adj}) = 30.3\%$

Analysis of Variance:

Source	DF	SS	MS	F	p
Regression	3	311.75	103.92	3.42	0.000*
Error	55	606.83	11.03		
Total	58	918.58			

* Significant at $p < 0.001$

The correlation matrix between the various items and the total (ITOT) of the Insight Schedule and the total BPRS (BTOT) scores is reproduced in Table 2. There were low negative correlations between BTOT and all items of the Insight Schedule, which were not statistically significant at the adjusted alpha error value.

The standardized scores of 6 BPRS items were entered into the multiple regression equation, the outcome variable being Insight Schedule Total score (ITOT). The predictor variables were Guilt Feeling (B5; $p = 0.004$), Hostility (B10; $p = 0.005$), Uncooperativeness (B14; $p = 0.000$), Unusual Thought Content (B15; $p = 0.024$), Disorientation (B18; $p = 0.024$) and Total BPRS Score (BTOT; $p = 0.029$). Interaction between items was not studied. Back-

wards regression yielded the final three-variable model (Table 3). The model was able to explain significantly 30.3% of the variance in insight ($p < 0.001$). The Variance Inflation Factors (VIF: Table 3) of all the variables indicated no serious multicollinearity, and normal plot of the residuals (not shown) revealed no significant departures from normality. The three BPRS items in the final model were Guilt feeling, Uncooperativeness, and Unusual thought content.

Table 4
Principal components analysis of the Insight Schedule

VARIABLE	PC1	PC2	PC3	PC4	PC5
I1	0.396	0.660	0.472	0.338	0.264
I2	0.464	0.208	-0.383	-0.687	0.350
I3	0.385	-0.659	0.588	-0.156	0.219
I4	0.442	-0.291	-0.533	0.621	0.223
ITOT	0.533	0.046	0.001	-0.056	-0.843

Eigen value	3.5072	0.7094	0.4777	0.3050	0.0007
proportion(%)	70.1	14.2	9.6	6.1	0.0
Cumulative proportion(%)	70.1	84.3	93.9	100.00	100.00

The construct analysis of the Hindi Insight Schedule was simultaneously undertaken. All inter-correlations between items and the total score of the Insight Schedule were significant at the adjusted alpha level (Table 2) except the correlation between Insight Schedule items 1 (Compliance) and 3 (Relabelling of Psychosis). The principal components analysis of the Insight Schedule (Table 4) yielded a single component accounting for 70.1% of the variance. The rest of the components, in descending order, accounted for 14.2%, 9.6% and 0% of the variance respectively. The highest item loading on the first principal component was for the total score (0.533) and the lowest for relabelling of psychosis (0.385). This indicates that the IS total score can function well as a single composite measure of insight.

DISCUSSION

The present study was undertaken to assess the cross sectional relationship of psychopathology to insight in schizophrenia (ICD-10). A single diagnostic group was taken up for study since previous work indicates that insight in schizophrenia (rated on the Insight Schedule) differs significantly from that in other diagnostic groups (Kulhara et al, 1992b). A

recent study published after the completion of the present one used the ITAQ and reported similar findings (Michalakeas et al, 1994). There was no association between insight and demographic variables, as also observed in previous studies (Kulhara et al, 1992a; David et al, 1992). Unlike these previous studies, two clinical variables, number of previous episodes and treatment taken in the past, were significantly positively associated with insight scores. It has been suggested (Amador et al, 1993) that insight may depend upon the information provided during past episodes. This study did not assess if there had been any formal attempts to educate these patients about their illness in the past. However, treatment (with or without hospitalization) undeniably includes some exposure to information about the illness, which may result in the significantly improved insight in the subsequent episodes.

It was imperative to undertake a construct analysis of the Insight Schedule because a Hindi adaptation of David's original scale was used in the study. Significant positive correlations were observed between all the items and total score except Compliance (item 1) and Relabelling of psychosis (item 3). A similar analysis of this instrument has been undertaken in only one previous study (Kulhara et al, 1992a), apart from the data published by the author of the original scale (David et al, 1992). Our findings were closer to those of the later study. The principal components analysis in the present study yielded a single factor solution, again similar to the data reported by David et al (1992), but the item loading on this factor was different in the present study. A component analysis of this scale was not reported by Kulhara et al (1992 a& b). Taken together, these findings indicate the robustness of the Insight schedule as an assessment instrument across different populations and ensure comparability between the present and previous studies.

The BPRS total score had low, inverse (non-significant) correlations with Insight Schedule items and total score, as in most studies (initial scores in the studies of McEvoy et al, 1989; McEvoy et al, 1993; Kulhara et al, 1992a and most recently, Michalakeas et al, 1994).

In insight completely independent of psychopathology in schizophrenia? Multiple regression analysis suggests that less than a third of the variability in insight can be significantly explained by psychopathology alone. This was the single most important finding of this study and no comparable

work could be found. Interestingly, the regression equation indicates that an increase in guilt feeling leads to better insight. One explanation for this observation may be that both increase in insight and increase in guilt feeling, are concomitant of improvement in psychopathology.

It is difficult to say at present what variables may explain the other 70% of the variability in insight. Since the aim of the study was to assess only the contribution of psychopathology to insight, only BPRS item scores were entered into the regression model. However, other factors that could further explain some of the variability in insight include formal patient education about their illness (Amador et al, 1993), the patients' IQ (David et al, 1992), the attitude of the family towards mental illness, and general awareness of mental illness in the community, but to date these have probably not been assessed for their contribution to insight.

Two drawbacks of this study require some elaboration. Firstly, the single point assessment procedure ignored the dynamic aspects of both psychopathology and insight, but the cross-sectional relationship was readily apparent, which was the aim of the study. Secondly, the stringent level for selection of variables to enter into the regression model ($p < 0.03$), necessitated by the limitations of the sample size, lead to slight increase in the type II error rate. However this did not decrease the amount of variance explained by the final model; in fact, the full six variable model could explain only 27.5% of the variance ($p = 0.001$).

Since poor insight plays an important role in the management of schizophrenia, it is particularly important to study the factors that contribute to insight. The present study found that while more number of previous episodes and treatment taken in the past significantly increased insight in the subsequent episodes, psychopathology alone accounted for less than a third of the variability in insight. A study of other variables proposed may go a long way in unraveling this complex clinical phenomenon.

ACKNOWLEDGMENTS

The authors gratefully acknowledge all the help and guidance extended by Dr. Anthony S. David, Senior Lecturer in Neuropsychiatry, Institute of Psychiatry, London, in the administration of his Insight Schedule. We also thank Dr. C. Andrade, Associate Professor in Psychopharmacology, NIMHANS, Bangalore, for his invaluable help with the references.

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