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Relationship between Degree of Insight with Severity of Illness, Cognitive Dysfunction and Social Cognition: Building Block for Management in Schizophrenia

Shikha Goel

Abstract: ***Introduction: Lack of insight has been observed in patients with schizophrenia and it has been recognized as a potential barrier to treatment adherence and a risk factor for a range of poorer outcomes. The factors for poor insight might include deficits in neurocognition, social cognition, illness severity. Objectives: Study was conducted to examine the relationship between degree of insight with severity of illness, cognitive functions and social cognition in patients with Schizophrenia. Methods: A cross - sectional, single assessment design was used to study 60 participants with a diagnosis of Schizophrenia as per International Classification of Diseases (ICD) - 10. Study was conducted at tertiary care hospital of northern part of the India and participants were administered PANSS, ITAQ, WCST, BSS, SOCRATIS tools. Results: One - sixth of the patients had reported complete insight. Significant cognitive dysfunctions were present in the category of fluency, set shifting, abstraction, intelligence and social cognition. No significant association was seen between levels of insight with neurocognitive functions and social cognition. Conclusion: Insight in patients of schizophrenia is not associated with any of the neuro - cognitive functions and social cognition.***

Keywords: insight, severity of illness, cognition, management, schizophrenia

1. Introduction

Schizophrenia has been considered a unique disease since the term was coined by Eugen Bleuler in 1908, though its definitions and boundaries have changed over the period and its etiology and path - physiology remains elusive.[1] What differentiates schizophrenia from other psychiatric disorders is the absence of insight in most of the subjects.[2] Insight was initially defined as awareness of having a disorder and was conceptualized as single dimension i. e. only in a binary fashion means a patient either possessed insight or lacked it entirely.[3] Patients can be evaluated by the degree to which they demonstrate awareness to illness, its signs and symptoms, and the need for treatment etc.[4] The 'clinical insight' thus has become invaluable for the formulation and treatment of psychosis.[5] Beck described "cognitive insight" as patients current capacity to evaluate his or her anomalous experiences and atypical interpretations of events.[6] Therefore, investigating factors that are specifically related to poor insight is of crucial importance for understanding and development of treatment strategies in psychotic disorders.

Recently it has been proposed that poor insight in schizophrenia is a manifestation of underlying cognitive dysfunction. However, in last decade, there has been an increasing interest in studying cognitive dysfunctions, as they have been found to be predictive of both disease outcome and treatment response.[7 - 8] Cognitive deficits include difficulties with attention, language, several aspects of memory, executive functioning, cognitive flexibility, and interpretation of social cues.[9, 10, 11, 12]

The literature shows that unawareness of illness is associated with defects in cognitive functions such as attention, memory, language, executive functioning and social cognition.[13] A meta - analysis of these studies found a significant relationship and the predictive value of neurocognition was rather modest.[14] Furthermore, in schizophrenia, all neurocognitive domains (i. e. reasoning and problem solving verbal learning and memory) determine the reduced insight to a similar degree. Despite numerous studies on the relationship between insight and neurocognitive impairment, severity of psychopathology or functional recovery remains unclear.[2] Also, studies have not focused much on relationship between social cognition and insight in these patients.

Given the clinical implications of the level of insight in patients with schizophrenia, it is thus imperative to study the various factors influencing the level of insight in patients with schizophrenia.

2. Methods

2.1 Participants

The study was conducted at Department of Psychiatry in the tertiary care hospital of northern part of the India. Sixty (60) patients between March 2017 to June 2018 who had been diagnosed with chronic schizophrenia based on ICD - 10 diagnostic criteria were considered for the study. The inclusion criteria included primary diagnosis of schizophrenia as per ICD 10, between the ages 18 to 60 years with minimum primary education. The patients with co - morbid psychiatric disorder and substance dependence (except nicotine and caffeine), history of head injury, intellectual disability, patients who had undergone neuropsychological assessment in last three months or previously undergone structured cognitive retraining or / and social skill training, patients who received electro - convulsive treatment (ECT) in last three months and patients with movement disorder were excluded. Total 60 participants providing written informed consent were

recruited. Data on socio - demographic characteristics (e. g. age, gender, and years of education) and self - reported duration of illness were documented. Medical records were used to verify the socio - demographic, clinical details and course of treatment. All participants signed written informed consent and the study was approved by the Institutional Ethics Committee.

2.2 Assessments

Symptoms were assessed using the positive and Negative syndrome scale (PANSS) with higher scores indicating more severe symptoms.1[5] Insight was assessed using the well validated, structured interview performa through Insight Treatment Attitude Questionnaire (ITAQ).1[6] The Insight and Treatment Attitudes Questionnaire (ITAQ) is an 11 - item clinician - rated scale (scored 0, 1, 2) based on a two - dimensional definition of insight. Neurocognitive dysfunctions were evaluated by using Bhatia battery of intelligence (kohs block test, passalong test) to measure the intelligence. Color trail 1 and 2 was done for attention, perceptual tracking and simple sequencing along with mental flexibility where as Digit symbol substitution test (DSST) was done to determine the visuomotor coordination, motor persistence, sustained attention and response speed. Phonemic fluency and memory was assessed by control oral word association test (COWA) and digit span test (DST) respectively. Animal name test and Wisconsin card sorting test (WCST) were used to assess fluency and mental flexibility of the patients respectively. Social cognition was evaluated in Indian setting patients by SOCRATIS (Social Cognition Rating tool in Indian Setting) tool.[17]

2.3 Statistical analysis

Descriptive and inferential statistical methods were used to analyze the data obtained with the help of Statistical Package for Social Sciences (SPSS) version 16. Mean and standard deviation were calculated for continuous variables and percentages were computed for discontinuous variables. Pearson's correlation was used to study the relationship between Psychopathology, Neurocognition, Social Cognition and level of insight assessed by ITAQ.

3. Results

Table 1: Insight analysis

Questions		Score - 0	Score - 1	Score - 2''
		N=60		
1	Have you at any time had mental ("nerve", "worry") problems that were different from most other people?	3 (5%)	20 (33.3%)	37 (61.6%)
2	Have you at any time needed treatment (hospitalization or outpatient care) for mental ("nerve", "worry") problems ?	3 (5%)	24 (40%)	33 (55%)
3	Do you now have mental ("nerve", "worry") problems?	5 (8%)	30 (50%)	25 (41.6%)
4	Do you now need treatment (hospitalization or outpatient care) for mental ("nerve", "worry") problems?	7 (11%)	32 (53%)	21 (35%)
5	Is it possible that in the future you may have mental ("nerve", "worry") problems?	6 (10%)	33 (55%)	21 (35%)
6	Will you in the future need continued treatment (outpatient care or possibly hospitalization) for mental ("nerve", "worry") problems?	6 (10%)	39 (65%)	15 (25%)
7	Have you at any time needed to take medications for mental ("nerve", "worry") problems?	4 (6.6%)	40 (66%)	16 (26.6%)
8	Do you now need to take medications for mental ("nerve", "worry") problems ?	7 (11.6%)	35 (58%)	18 (30%)
9	Will you in the future need to take medications for mental ("nerve", "worry") problems	6 (10%)	38 (63%)	16 (26.6%)
10	Will you take the medications?	5 (8.3%)	35 (58%)	20 (33.3%)
11	Do the medications do you any good?	5 (8.3%)	35 (58%)	20 (33.3%)

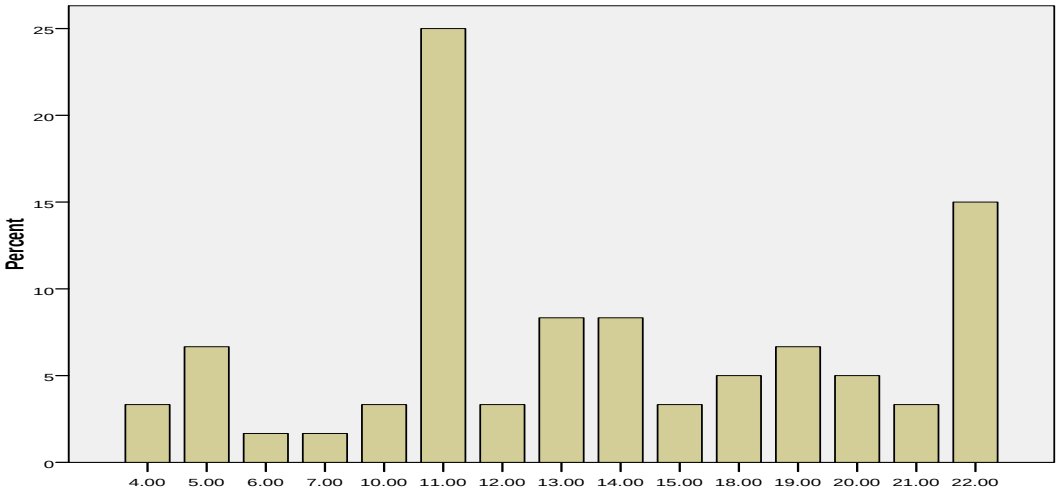

Figure 1: Distribution of scores on ITAQ and percentage of participants.

Insight Scores

Table 2: PANSS, Insight Treatment Attitude Questionnaire Scores (ITAQ) Score

Variable	Description	n=60 f (%)
Total duration of illness	Mean ± SD	102.1±92.1
PANSS (P)	Mean ± SD	8.3 ± 7.2
PANSS (N)	Mean ± SD	7.7 ± 6.4
PANSS (G)	Mean ± SD	15.2 ± 11.6
ITAQ	Mean ± SD	14.1 ± 5.4
S (FOT)	Mean ± SD	0.8 ± 0.2
S (SOT)	Mean ± SD	0.6 ± 0.3
S (EB)	Mean ± SD	5.8 ± 4.1
S (PB)	Mean ± SD	0.7 ± 0.2
S (SPI)	Mean ± SD	0.9 ± 0.1

Table 3: Relationship between severity of illness and degree of insight

	ITAQ {p - value Sig. (2 - tailed)}	TDI (months) {p - value Sig. (2 - tailed)}	PANSS (P) {p - value Sig. (2 - tailed)}	PANSS (N) {p - value Sig. (2 - tailed)}	PANSS (G) {p - value Sig. (2 - tailed)}
ITAQ	-	0.050 {.0704}	- 0.230 {.077}	- 0.351** {.006}	- 0.194 {.138}
TDI (months)		-	- 0.040 {.761}	- 0.013 {.921}	- 0.086 {.513}
PANSS (P)			-	0.561** {.000}	0.706** {.000}
PANSS (N)				-	0.734** {.000}
PANSS (G)				.	-
**. Correlation is significant at the 0.01 level (2 - tailed).					

Table 4: Pearson's correlation between insight, cognitive functions and social cognition

Color Trail 1	Color Trail 2		DST	DSST	COWA	Animal Name Test TNW	BSS	WCST_ NCC	WCST_ FMS	WCST_ P	WCST_ PE	WCST_ NPE	Similarities & Differences
.005	.060		.036	.045	- .016	.010	.238	.103	.069	- .117	- .072	- .080	- .057
.264*	.252		- .144	.254	.035	- .038	- .257*	- .176	.144	- .002	- .040	- .036	- .157
- .398**	.426**		- .216	.321*	- .172	- .217	- .379**	- .325*	.151	.121	.139	.125	- .113
PANNS G	.386**	.441**	- .144	.369**	- .084	- .144	- .342**	- .277*	.321*	.057	.009	.004	- .006
S (FOT)	.027	.042	.159	.179	- .108	.027	.375**	.242	.007	- .245	- .208	- .091	.174
S (SOT)	.002	- .029	.117	- .015	.007	.158	.385**	.140	- .002	- .051	- .017	- .095	.130
S (EB)	- .136	- .035	- .009	- .131	.156	.157	.120	.084	- .029	- .133	- .095	.062	- .236
S (PB)	.171	.166	- .087	.128	- .074	- .147	- .090	- .037	.344*	- .102	- .123	.121	- .179
S (SPI)	.096	- .016	.134	- .087	.119	- .122	- .064	- .102	- .270*	.080	.102	.149	- .183

4. Discussion

The present study was conducted with the aim to find out the relationship between degree of insight with severity of illness, cognitive dysfunction and social cognition among patients with schizophrenia.

The results (figure - 1) showed that only one sixth of the patients had complete insight while others had partial insight or poor insight that supports the results of previous study.1[5] It was observed that majority of the patients feels as *why treatment is continuing as all problems which had been present are now completely gone.* Only few patients on medications acknowledge the presence of delusional beliefs, hallucinatory experiences or disorganised thoughts as serious problems which required substantial intervention.

It was analyzed (table - 1) that patients were unable to understand the possibility of relapse or need for maintenance of treatment therefore will participate in their treatment if told to do so by his caregiver or physician. Along with this some patients strongly feels to continue medicines with the belief as medications would helpful anxieties, improving sleep or diminishing irritability but do not agrees for long term compliance. In our present study also majority of the patients lack complete insight.

Impaired insight into illness is a prevalent feature of schizophrenia, which negatively influences treatment adherence and clinical outcomes. Study results (Table - 2) indicated mild (not much significant) improvement in the awareness of illness with increase in the total duration of the illness. Previous literatures also finds the overall, improvement of insight into illness with age, at least during midlife, in conjunction with the attenuation of positive symptoms that may be related, in part, to dopaminergic system "burnout" (ageing insight). Previous study supports the currents findings of our study.[16]

Further to understand the relationship between severity of illness and insight table - 3 was analyzed. Results have concluded the significant mild to moderate negative relationship of PANSS (N) with insight while there was very week and positive relationship of PANSS (P) with insight which is not significant. Previous literature supports the results of researcher study in view point that negative symptoms have been found to be associated with insight even though. Reason of strong association has been related

to "hypofrontality" theory of schizophrenia, thus depicting poor insight as a negative symptom dimension. Conceptually, greater severity of negative symptoms found it difficult in distinguishing own subjectivity in view to the surrounding reality and to recognize a disorder as belonging to his/her own person. Thus it supports the findings of current study that with gradual decrease of the negative symptoms or severity of illness, person awareness towards his/her illness increases. In addition, patients with marked negative symptoms such as apathy and social withdrawal have significant difficulty in maintaining therapeutic relationship and compliance to the prescribed treatment plan. This relationship might explain persistent abnormalities in insight even after symptomatic improvement in symptoms since "improvement" is mostly referred to regarding the positive dimension.[17]

Insight was not associated with any of the cognitive functions in this study. On the contrary, previous studies reported significant association between neurocognitive dysfunction and insight.[18 - 22]. The lack of association between insight and cognitive dysfunction in our study could be due to methodological differences in our study. In previous studies overall insight has been assessed but in this study researcher has evaluated insight with ITAQ scale. ITAQ scale comprises of 11 questionnaire having treatment based insight analyses. Based on awareness to treatment the degree of insight has been assessed and its further relationship with severity of illness along with other cognitive domains. Previous literature has not assessed the insight and its relationship with this methodology which is unique in this research. Some studies have found that when individuals with poor insight were subjected to executive function tasks such as the Wisconsin Card Sorting Test, the patients exhibited increased preservative responses and/or poor concept formation.[23 – 25]

Our study found that individual components of insight were related to poor scores on executive function and fluency tests indicating significant association between unawareness of symptoms and misattribution of negative symptoms which are inconsistent with the result findings previous study.[26 - 27] However, several studies have failed to demonstrate relationship between poor insight and neuropsychological deficits.[28 - 33]

Present study showed that positive symptoms of schizophrenia were significantly correlated with attention but not with performance intelligence and negative symptoms were correlated with working memory, information processing speed whereas attention and performance intelligence was not associated with the negative symptoms. Relationship between these variables suggests that better attention is associated with more positive symptoms and attention is poorer with more negative symptoms. Also, increase in positive symptoms is associated with decline in performance intelligence and increase in negative symptoms is associated with increase in performance intelligence.

Findings of current study depicted in table - 4 found that on attribution, external bias was not significantly correlated with the cognitive functions whereas personalizing bias was positively and significantly correlated with the set shifting ability. Social cognition, or the processes which allow people to grasp the meanings of social interactions and mental experiences of others[34], including theory of mind, affect recognition and attribution style[35 - 36] proposed to contribute to poor clinical insight when they block the opportunity to use the perspectives of others to understand past and present evidence of mental illness in social cognition deficits[36.] Another study reported that poor lifetime insight in psychosis was related to poorer social cognition.[37]

In conclusion, the results of the current study indicate that chronic course of illness significantly affects IQ of the patient during its long course of illness and this can be the reason that contributes the patent's unawareness of signs and symptoms which leads to poor insight. Further, due to affect on cognitive and social functions, the treatment should aim to reduce the severity of illness, minimise side effects and improve cognitive and social functions by combining psychological and psychosocial management along with medication. With better understanding in severity of illness and cognitive deficits while increasing in duration of illness, patients can be more involve with their caregivers and physician while increasing rapport. It can be a major building block in improving treatment efficacy among patients and psycho educating the caregivers who can further reduce psychological burden among persons suffering with the severe mental illness. With better understanding a new pathway with this building block towards care can be made while increasing long term follow up with such patients.

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