

## DISABILITY AND EXECUTIVE FUNCTIONS IN SCHIZOPHRENIA: A CROSSSECTIONAL STUDY. (RELATION BETWEEN DISABILITY AND POSITIVE, NEGATIVE SYMPTOMS)

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### Abstract

The aim of the study was to see if there is any association between disability, positive- negative symptoms in patients of schizophrenia.

Study had a crosssectional design with purposive sampling in 50 patients with schizophrenia. Subjects were assessed using sociodemographic and clinical data sheet, PANSS, IDEAS (disability) .

The result of the study revealed a significant association was seen between IDEAS and WCST variables in patients of schizophrenia. A significant association was also seen between PANSS (positive and negative score) with IDEAS and WCST variables (disability and executive functions being more strongly associated with negative symptoms). On correlation analysis of socio-demographic and clinical data with IDEAS and WCST variables, a significant correlation (positive) of age and duration of illness was seen with IDEAS.

Executive functions and negative symptoms are crucial for functional outcome and independent living and are important target for intervention in order to reduce disability and improve quality of life in patients suffering from Schizophrenia.

**Keywords:** Schizophrenia, Disability, Positive–negative symptoms, Executive functions.

### Introduction

Schizophrenia is a severe psychiatric disorder that involves cognition, emotion, perception and other aspects of behavior. Schizophrenia usually starts during younger age and is frequently associated with deterioration from previous level of functioning. In persons with psychotic disorders nearly 50% had only one psychotic episode while 15% had continuous unremitting illness. In developing countries , a complete remission rate was significant higher as compared with that of developed world (37% vs 15.5%)(1). In a multicenter study done in India, it was found that the patients with disability due to mental illness suffered more discrimination as compared with their counter parts with physical disability. There was very less awareness regarding existing law and social programs. Stigma was a major reason for under utilization of services (2). A proper tool for the measurement of disability will help to plan services, programs and welfare benefits for them (3). Non-adherence to psychotropic medications leads to several important clinical and economic problems including psychotic relapse, increased clinical and emergency department visits and rehospitalization (4). Nearly 60% of patients with Schizophrenia require

rehospitalization. There are many contributory factors behind rehospitalization phenomenon, but medication non adherence happens to be most prominent contributor among all contributors (5).

Schizophrenia and antipsychotics are subject to stigma. The use of antipsychotics is hampered by side-effects that make patients more reluctant to follow prescriptions , a reality that apparently has not improved substantially with the advent of atypical antipsychotics(6)(7).

Executive functions include the capacity to formulate goals, plan and organize goal directed behavior and effectively and monitor and self correct ones behavior as needed (8). Luria refers to loss of meaningful, directed behavior resulting from frontal lobe lesion, in the absence of marked disturbance in motor activity or sensitivity, gnosis or praxis as a result of rehabilitation (9). Disturbance in executive functions have been structurally related to the prefrontal lobes, neuropsychologically to defective performance in tests of problems solving abilities and functionally to disability in maintaining a complex behavior sequence without help (10)(11).

The execution functions include volition (i.e, formulation of a goal, motivation to achieve the goal, the planning,

purposive action and execution, which involves self monitoring and self correction as well as control of the spatiotemporal aspects of the response (12)(13). The concept of execution function must be broad enough to include anatomical structures that represent a diverse and diffuse portion of CNS(14).

#### RATIONALE FOR STUDY

Schizophrenia is a significantly disabling disease that affects all major areas of life. An extensive literature search showed that studies on disability in schizophrenia have been done in the past showing that schizophrenia is associated with significant disability. An extensive research showed that there are few studies done in past estimating any association between disability and executive functions in patients with schizophrenia. This study had estimated association between disability and executive functions in schizophrenia.

#### AIM AND OBJECTIVES

The study aimed to see if there is any association between disability, positive-negative symptoms and executive functions in patients of schizophrenia (in remission).

- 1) To assess disability in relation to positive and negative symptoms of schizophrenia.
- 2) To study if there is any relation between disability, positive-negative symptoms in schizophrenia.

**Study population:** Patients were taken for the study from the outpatient department of Institute of Mental Health & Hospital, Agra.

**Study Design:** The study was a cross-sectional, hospital based study in which subjects were included using the purposive sampling method.

**Sample size:** 50 patients with diagnosis of schizophrenia, as per criteria laid by ICD-10 DCR.

#### Inclusion-Criteria:

- (1) Diagnosis of schizophrenia according to ICD-10 (DCR) currently in remission.
- (2) Patient's age between 18-50 years.
- (3) Minimum education up to 8<sup>th</sup> standard.
- (4) Minimum duration of illness is 2 years on regular medication of minimum three months duration.
- (5) Care-giver should have been in contact with the patient for at least past two weeks time period.

#### Exclusion Criteria:

- (1) Patients with chronic medical illness.

(2) Patients with co morbid psychiatric illness or mental-retardation.

(3) Patients with co-morbid substance abuse or substance dependence(except nicotine)

(4) Subject not willing to give informed written consent.

#### Study Tools

(1) Semi structured proforma for socio-demographic variables.

(2) Positive and Negative syndrome Scale (PANSS).

(3) IDEAS(Indian Disability Evaluation and Assessment Scale)(IPS-2002)

#### Study Procedure

Informed written consent was taken from the patients. Detailed physical examination was done to rule out any medical or neurology abnormality. Patients were rated on PANSS and only those who attained positive score for individual items of maximum score 3(mild) were taken for study. Patients were rated on IDEAS (Indian disability Evaluation and assessment scale) and were rated as having mild, moderate or severe disability.

#### Statistical method:

Descriptive statistics were used to define sample characteristics.

Pearson's correlation test was used to explore the association between IDEAS (disability) and PANSS (Positive score and negative score). Non parametric spearman's correlation test was applied to find any significant correlation between socio-demographic and clinical variables and IDEAS.

**Table 1:** Sociodemographic profile of sample population of patients with Schizophrenia

Variables	N	
Age (in Years)	18-30	28
	31-50	22
Gender	Male	27
	female	23
Marital Status	Married	26
	Unmarried	21
	others	03
religion	Hindu	45
	Muslim	03
	others	02
Education (in years)	Secondary(8 <sup>th</sup> )	11
	High school(10 <sup>th</sup> )	15
	Intermediate(12 <sup>th</sup> )	08
	Graduate and above	16
occupation	Unemployed	32
	Unskilled	10
	Skilled	07
	professional	01
Socioeconomic status	Lower	24
	Middle	17
	upper	09

**Table 2:** Descriptive statistics of IDEAS in 50 patients with Schizophrenia

	N	Minimum	Maximum	Mean	Standard deviation
IDEAS (Total Score)	50	03	15	8.16	+_3.24

We applied IDEAS on 50 patients of schizophrenia to measure disability with minimum score of 03 and maximum score of 15. Mean IDEAS score in our study was found to be 8.16 with standard deviation of +\_3.24.

**Table 3:** Descriptive statistics of IDEAS (levels of disability) in 50 patients with Schizophrenia.

	Frequency	Percent
Mild	18	36
Moderate	29	58
Severe	03	06
total	50	100

On categorizing disability into mild, moderate and severe- 36 % ( 18patients) were found to have mild disability, while 58%(29 patients)were found to have moderate disability and 06%(03 patients )were found to have severe disability on IDEAS.

**Table 4:** Descriptive statistics of PANSS in 50 patients with Schizophrenia-

	N	Minimum	Maximum	mean	Standard deviation
PANSS(Positive score)	50	7	20	11.68	+_2.97
PANSS(Negative Score)	50	7	24	11.40	+_3.84
PANSS(General Score)	50	19	46	26.68	+_5.29

We applied PANSS on 50 patients of schizophrenia and found PANSS (POSITIVE SCORE) minimum score of 7 and maximum score of 20 with mean of 11.68 and standard deviation of +\_2.97. On applying PANSS (negative score ), minimum score of 07 and maximum score of 24 was observed with mean of 11.40 and standard deviation of +\_3.84.

**Table 5:** Pearson's correlation between IDEAS and PANSS in 50 patients with Schizophrenia

	N	IDEAS	
		Correlation value	P value
PANSS(Positive score )	50	0.409	0.003**
PANSS(Negative score )	50	0.645	0.000**
PANSS(General score )	50	0.582	0.000**

\*\* Correlation is significant at the 0.01 level

On correlation of PANSS with IDEAS, we found a significant positive correlation between PANSS (positive symptoms)

and disability (IDEAS ) in patients of schizophrenia . In our study, we found P value of 0.003. PANSS (negative symptoms) of schizophrenia have significant positive correlation with disability in patients of schizophrenia

**Table 6:** Spearman's correlation between socio-demographic variables and disability (IDEAS ) in 50 patients with Schizophrenia

	Age (in years )		Education	
	Correlation value	P value	Correlation value	P value
IDEAS (Total score)	0.458	0.001**	-0.097	0.503

\*\*correlation is significant at the 0.01 level.

We applied spearman's correlation test between socio demographic variables (shown in table above) and IDEAS in 50 patients of schizophrenia and found a significant positive correlation between age and disability (IDEAS)

**Table 7:** Spearman's correlation between clinical variables and IDEAS in 50 patients with Schizophrenia

	Age of onset		Duration of illness		CPZ Equivalent	
	Correlation value	P value	Correlation value	P value	Correlation value	P value
IDEAS (Total score)	0.225	0.116	0.322	0.022*	0.245	0.087

\*correlation is significant at 0.05 level.

We applied spearman's correlation between socio demographic and clinical variables (shown in table above) and IDEAS in 50 patients with schizophrenia and found a significant positive correlation between duration of illness and disability(IDEAS).

## Discussion

The study was undertaken to investigate association of disability, positive-negative symptoms and executive functions in Schizophrenia. 28 patients were in 18-30 years age group while 22 patients were in 31-50 years age group. Out of 50 patients, 27 patients were male and 23 patients were female. Out of 50 patients, 32 were unemployed and 18 were employed. The higher rate of unemployment may be due to nature of disorder itself, social isolation, psychopathology, poor drug compliance and social discrimination. Schizophrenia and antipsychotics are subject to stigma.

The use of antipsychotics is hampered by side-effects that make patient more reluctant to follow prescription, a reality apparently has not improved substantially with the advent of atypical antipsychotics .Mean age of onset of sample population was 23.36 years with standard deviation of +\_ 6.93 . Mean duration of illness in sample population was 7.62 years with standard deviation of +\_ 6.04. Mean total IDEAS Score in sample population was 8.16 with standard deviation of +\_3.24 (Table 3) .Schizophrenia causes considerable disability in person's

functioning . According to International classification Impairment, disability and Handicap (ICIDH, 1980) disability is interference with the activities of whole person in relation to the immediate environment (15).

We found significant high correlation between PANSS negative score with IDEAS total score .PANSS general score was also having strong correlation with IDEAS total score (Table 7).In a study done by villalt et al (2006) ,negative symptoms in 113 patients of schizophrenia were major source of disability. All disability areas except occupational functioning were partially explained by negative dimension (16). Alptekin et al (2005) identified the clinical correlates and prediction of disability during a 1 year follow up period in 382 patients with schizophrenia. This study found that disability in schizophrenia is a clinical phenomenon closely linked to negative symptoms and poor outcomes(17).

Our results resembled with the results of previous studies. Negative symptoms or deficit syndrome patients have particular improvement in reasoning and problem solving (21)(22)(23).

The above results suggest severity of psychopathology is associated with poor executive functioning.

The results indicate that educational level has association with concept formation, cognitive flexibility and learning capacity.

Srinivasan et al (2005) reported a relationship between age, duration in formal education and neurocognitive functions in a sample of indian population (27).

Among the socio-demographic and clinical variables, age and duration of illness were positively correlated with disability (Table 7). The findings indicate that increasing age and DOI has negative impact on functioning capacity of a person with schizophrenia. These finding match with previous studies (27)(28).

### CONCLUSION AND FUTURE DIRECTIONS

Schizophrenia is a severe psychotic disorder characterized by chronic and relapsing course with generally incomplete remissions, functional decline frequent psychiatric comorbidities and increased mortality. Executive functioning has been found to be crucial for occupational outcomes and independent living. Results of the present study revealed significant relationship of disability with executive functions and symptoms. Disability is associated more with negative symptoms.

The implications of these findings are that cognitive and negative symptoms are important target for intervention in patients with schizophrenia, if greater clinical and functional success is to be achieved and cost of service use is to be reduced. The psychological management can play significant role in achieving management goals.

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