

Comparative Analysis of Schizophrenia and Frontal Lobe Impairment on the Positive and Negative Syndrome Scale: A Pilot Study

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Abstract: Background: The late 20th century witnessed a resurgence of interest in schizophrenia, driven in part by the recognition of functional deficits contributing to disability and indirect costs of the illness. Despite its significance, frontal lobe evaluation is often overlooked in routine neurologic examinations due to the detailed attention and rigorous testing required. Frontal lobe dysfunction, or frontal systems impairment, can lead to specific clinical syndromes, emphasizing its importance in understanding schizophrenia. **Objective:** This study aimed to compare the manifestations of schizophrenia and frontal lobe impairment as assessed by the Positive and Negative Syndrome Scale (PANSS). **Method:** Thirty male schizophrenic patients aged 18 to 35 years were selected from Gajra Raja Medical College, Gwalior, using purposive sampling, and diagnosed according to the Diagnostic Criteria for Research (DCR), ICD-10. Thirty normal controls were similarly selected from various localities in Gwalior. The PANSS was utilized for assessment. **Findings:** The study found no significant differences between schizophrenic and frontal lobe impaired groups on the Negative Syndrome Scale. However, scores on the general psychopathology scale were significantly lower in the Schizophrenic Group compared to the Frontal Lobe Impaired Group.

Keywords: Schizophrenia, frontal lobe impairment, cognitive syndrome

INTRODUCTION

At the very end of 20th century there was a resurgence of interest in schizophrenia. This interest was partially spurred by the realization that functional deficits in schizophrenia are responsible for large amount of the disability and indirect costs of the illness and deficits are largely responsible for these functional

insufficiencies. Three-fourth of all schizophrenias begins with a pre psychotic prodromal phase, which lasts several times longer than the psychotic pre phase. The frontal lobe is the largest lobe in the brain, yet it is often not specifically evaluated in routine neurologic examinations. This may in part be due to the diligence and rigorous testing strategies required probing frontal lobe functions. As successful completion of any cognitive task considered a frontal lobe function requires multiple brain regions both within and outside the frontal lobe, some authors prefer the term frontal systems impairment. In any case, dysfunctions of the frontal lobe can give rise to specific clinical syndromes.

Positive and Negative Symptoms

Schizophrenia is a chronic and severe mental illness characterized by multiple symptom dimensions. One of these classes of symptoms, “negative symptoms”, has received more attention over the last few years. Negative symptoms, including blunted affect, withdrawal or apathy, are particularly important for recovery and are associated with negative functional outcomes, such as inability to get employment and conduct normal daily living activities. While positive symptoms are usually treated by antipsychotic drugs, negative symptoms are usually persistent, which indicates the need for better treatment. Some work has suggested that negative symptoms are inversely correlated with functional outcomes. Rosenberg (2016) published journal *Neuron* highlights groundbreaking studies of patients with brain damage. It reveals how distinct areas of the frontal lobes are critical for a person's ability to learn, multitask, control their emotions, socialize, and make real-life decisions.

The findings have helped professionals rehabilitate patients experiencing damage to this region of the brain. Cognition indicates to the process whereby individuals acquire knowledge of the highest level of various mental processes as perception, abstract thinking, memory, problem solving and related to executive functions such as planning, choosing strategies, set shifting. Perception is a central step in the processing of sensory information perceived through sensory systems and later transformed into higher order codes for use by the various higher order cognitive subsystems. Executive functioning has encompassed several meanings. It is a integrate information perceived in the external world and transform perception into higher order symbols, compare incoming information with what knowledge stored in memory and combine those incoming perceptions with information about the person's internal physiological state and biological drives.

The evidence has long been clear that schizophrenia is a disorder of the brain with genetic and Neurodevelopment components, yet the precise nature of the brain pathology and genetic vulnerability remain unknown. In addition, there is remarkable heterogeneity among schizophrenia presentation, everyday functioning, treatment response, and course of illness. Indeed, in coining the modern term for this disorder, Eugen Bleuler spoke not of "Schizophrenia" such heterogeneity has led some to suggest that the term schizophrenia has itself outlived its usefulness (Howard, 1996). A more common approach has been to divide schizophrenia into subtypes. Attempts to devise a meaningful subtype's scheme are as old as the concept of schizophrenia itself. Kraepelin initially divided the disorder the disorder into hebephrenic, catatonic, and paranoid forms, and later, impart inspired by E. Bleular, he proposed an even more complex sub typing scheme. E. Bleuler (1911) proposed four major grouping based on symptoms (hebephrenia, catatonia, paranoid, and schizophrenia simplex) but also suggested the possibility of groupings based on periodicity etiology, severity of symptoms and perhaps most important age at onset.

PURPOSE OF THE STUDY

To compare the performance of schizophrenia and frontal lobe impairment on positive and negative syndrome scale.

Method

Sample:

Based on purposive sampling method a group of thirty male schizophrenic patients between the age ranges of 18 to 35 years were taken from Gajra Raja Medical Collage Gwalior. The diagnosis done according to the DCR, ICD – 10. Similarly, thirty normal controls were selected from different localities of Gwalior.

Inclusion Criteria for Schizophrenics group:

- Patient diagnosed as Schizophrenia according to DCR, ICD – 10.
- Male/Female Patient.
- Right -Handed.
- Patient in the age range 18 to 35 years (early onset).
- Educated at least up to primary level.
- Patient cooperative for testing.

Exclusion Criteria for Schizophrenics group:

- History of any other Psychiatric disorder or personality disorder.
- Poor eye sight or hearing impairment.
- Patients who are not able to cooperate.

Tools for the Assessments:

- Socio – demographic and clinical data sheet
- Handedness preference schedule (Mandal et al 1992)
- Positive and Negative Syndrome Scale (Stanley Kay, Lewis Oplerand Abraham Fiszbein In 1987).

Socio – Demographic and clinical data sheet:- Socio Demographic and clinical data sheet: A semi – structured Performa used for recording details about the patients such as age, education, marital status, occupation, age of onset of illness etc.

Handedness preference schedule:- To determine the handedness of the subject Hindi version of handedness preference schedule was used. It has items mainly based as culturally acquainted hand activities. The schedule consist of fifteen items and subjects are asked to indicate their hand preference for an activity on five point rating scale (1-never, 2- rarely, 3 – occasionally, 4 – frequently and 5 – always).

Positive and Negative Syndrome Scale:-The Positive and Negative Syndrome Scale (PANSS) is a medical scale used for measuring symptom severity of patients with schizophrenia. It was published in 1987 by Stanley Kay, Lewis Opler, and Abraham Fiszbein. It is widely used in the study

of antipsychotic therapy. The name refers to the two types of symptoms in schizophrenia, as defined by the American Psychiatric Association: positive symptoms, which refer to an excess or distortion of normal functions (e.g., hallucinations and delusions), and negative symptoms, which represent a diminution or loss of normal functions. The PANSS is a relatively brief interview, requiring 45 to 50 minutes to

administer. The interviewer must be trained to a standardized level of reliability. To assess a patient using PANSS, an approximately 45-minute clinical interview is conducted. The patient is rated from 1 to 7 on 30 different symptoms based on the interview as well as reports of family members or primary care hospital workers.

TABLE: 1. - Socio – Demographic Profile of (30) Early onset Schizophrenia (30) and (30) Frontal lobe impaired Group (FLIG)

Variable	Early Onset Schizophrenia mean	Frontal lobe impaired Group±	χ^2 / F	df	Level of significance	
Age	27.66±3.06	29.43±3.17	34.20	-	NS	
Marital Status	Unmarried	8(27)	10(33)	6.65*	2	0.05
	Married	22(73)	20(67)			
Education	Up to Matric	25(75)	26(86)	46.58***	4	0.001
	Above Matric	5(25)	4(14)			
Occupation	Unemployed	01(3)	10(34)	12.00*	4	0.01
	Semi-skilled	15(50)	15(50)			
	Skilled	14(47)	05(16)			
Domicile	Rural	11(37)	09(30)	33.51***	6	0.001
	Urban	19(63)	21(70)			

*P < 0.05, ** P < 0.01, *** P < 0.001

It is clear from Table 1 which gives descriptive information about the socio-demographic characteristics of entire sample, which was divided into two groups – schizophrenia and Frontal lobe impaired Group. The mean age of early onset, and frontal lobe impaired Group were 27.66±3.06 and 29.43±3.17 respectively. It is clear from the table that there is no significant difference among two groups, regarding their age. Though, there is marked mean difference between the age of schizophrenic and frontal lobe impaired Group. Frontal lobe impaired Group was older than that of early onset of schizophrenics. Marital status of the subjects has been taken into account. It has been observed that 27% early onset of schizophrenics were unmarried 73% of the patients were married. Respectively 33% of the frontal lobe impaired Group were unmarried and 67% of these patients were married. When education of the subjects have been taken into consideration. It has been observed that in early onset schizophrenic 75%

of patients were educated up to higher secondary level 25 per cent patients were educated up to higher secondary level In the group of frontal lobe impaired 86% of the patients were educated up to higher secondary level rest 14% educated up to above than higher secondary level.

When occupation of the subjects have been taken into account, it has been observed that higher representation in employed groups and schizophrenic patient both (Early onset). Lower representation from frontal lobe impaired probable patients reason may be their enduring illness, frequent hospitalizations, which might have affected their stability in working area. While domicile of the patients have been taken into consideration it has been observed that 63% of the patients were urban group for early onset schizophrenic group rest 37% rural background. In the group of frontal lobe impairment 70% of the patients were belonging to urban area and 30% of patient was from rural area.

Table-2. Comparison of schizophrenic and frontal lobe impaired of Patients Negative Syndrome Scale (PANSS) (N=30+30=60)

	Schizophrenic Group	Frontal lobe impaired Group	t	df	P
PANSS-Positive	84.77±2.10	22.13±1.22	2.96	14	.070
PANSS-	23.54±2.42	23.93±3.81	0.65	14	.062

Negative					
PANSS-General Psychopathology	102.07±2.64	29.16±2.17	3.16	14	.001**

**p<.01

CONCLUSIONS

The present results indicate that there is no significant compression found on schizophrenic and frontal lobe impaired Group on Negative Syndrome Scale. However, Schizophrenic Group scores were significantly lower than the Frontal lobe impaired Group on general psychopathology.

Limitation: Small sample group has been used. A longitudinal study should have given more depth understanding. It can be replicated with a larger population.

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