ORIGINAL RESEARCH PAPER

Psychiatry

COGNITIVE IMPAIRMENT IN PATIENTS WITH SCHIZOPHRENIA: A HOSPITAL BASED CROSS SECTIONAL STUDY

KEY WORDS: cognitive impairment, schizophrenia, quality of life

Umang Narayan Junior Resident Department Of Psychiatry, Career Institute Of Medical Sciences, Lucknow

Rishabh Chandra Senior Resident Department Of Psychiatry, Teerthanker Mahaveer University, Moradabad

Abbas Mehdi* Professor & Head, Department Of Psychiatry, Career Institute Of Medical Sciences, Lucknow *Corresponding Author

Aditi Jain Assistant Professor, Department Of Psychiatry, Career Institute Of Medical Sciences, Lucknow

ABSTRACT

Background: Schizophrenia is well known to cause impairment in multidimensional construct. Cognitive deficits in various domains have been consistently seen in patients of schizophrenia and is one of the core symptoms. Therefore, present study was designed to assess the impact of cognitive impairment on quality of life in patients with schizophrenia. **Methods:** A hospital based cross-sectional study on the assessment of cognitive impairment of schizophrenic patients. Total 60 patients were evaluated using Positive and Negative Syndrome Scale (PANSS), Addenbrooke's cognitive examination (ACE-III). **Results:** The mean age of study sample was 28.00±6.58 Years. The mean of total PANSS score of major cognitive impairment group was 84.25±23.43, the mean total ACE-III score of major cognitive impairment group was 54.25±4.90. There was a significant increase among all neurocognitive function score was observed. **Conclusion:** Present study findings depict that major cognitive impairment are seen in significant number of patients in schizophrenia. Though our study could not find any significant association between PANSS Score and neurocognitive functions. Hence, in schizophrenic patients priority interventions to improve QOL is utmost important.

INTRODUCTION

Schizophrenia is a complex chronic psychiatric disorder with a heterogeneous genetic and neurobiological background that influences early brain development. It is characterized by an array of symptoms, including delusions, hallucinations, disorganized speech or behaviour, and impaired cognitive ability.[1] In addition to above psychotic symptoms schizophrenia alter one's affect, behaviour and cognition as well.[2]

Cognitive deficits in various domains have been consistently replicated in schizophrenia patients. In schizophrenia patients, delusions and hallucinations could arise as a result of deficits in cognitive functions involving perceptual and attribution biases. Most studies that link cognitive deficits to functional outcome in schizophrenia support the notion that neurocognitive function predicts social and occupational function. Measures of immediate memory, delayed memory, and executive function have been found to predict functional outcome with small to medium effect size. Moreover, cognitive function has been found to be a better predictor of functional outcome than symptom levels.[3]

Persons suffering from schizophrenia show a substantial impairment in overall cognitive performance, which, on average, is around two standard deviations below that in healthy controls.[4] Moreover, this deficit contributes to poor clinical outcomes such as unemployment and an inability to live independently.[5] While cognitive function in schizophrenia is an area of increasing research interest[6], this has yet to translate into the development of novel treatments for cognitive problems.

In recent years, several different scales have been developed to measure subjective cognitive dysfunction in schizophrenia with sufficient reliability and validity and have been reported to have utility in investigating compromised cognitive constructs in Schizophrenia.[7] Self-perceived cognitive deficits have been reported to play a substantial role in vulnerability, symptom severity, treatment compliance, functional outcome, and status of remission in schizophrenia patients. In addition, the exploration of subjective cognitive symptoms may provide a foundation for helping patients to avoid maladaptive coping responses in favour of more appropriate coping strategies.[8]

At present, the clinical correlates of subjective cognitive dysfunction in schizophrenia have not been sufficiently investigated and warrant further exploration. In particular, the relationship between subjective cognitive deficits and internalized stigma that has been reported to significantly affect various functional outcomes including quality of life remains unexplored.[9,10] It has been considered that patients with schizophrenia internalize the stigma associated with illness and experience lowered self esteem, which results in substantially diminished quality of life.[11] Moreover, internalized stigma has been reported to play an important mediating or moderating role in the relationship between key clinical variables in schizophrenia.[12] Limited studies on cognitive functioning in Indian patients with schizophrenia prompted the focus on cognitive impairment in the current research.

Aims and Objectives

This study aimed to assess the cognitive impairment in patients with schizophrenia and its relationship with sociodemographic data and its significance.

Material and methods-

Study design-

Our study is a hospital-based cross-sectional, observational study. It was conducted on the in patients and out patients visiting the Department of Psychiatry, Career Institute of medical sciences and hospital, Ghaila, Lucknow, during the study period from June 2022 to May 2023. All the patients who fulfilled the inclusion and exclusion criteria were enrolled in the study after obtaining their written informed consent in Hindi/English.

Participants-

In this study, a cohort of 78 patients were evaluated in which 18 individuals excluded due to non- fulfilment of selection criteria. Diagnosed cases of schizophrenia were selected from the patients visiting the inpatient and outpatient by purposive sampling method. The minimum sample size derived from the formula was 57. however, to keep the sample

size to be simple enough for parametric evaluations, we kept the sample size at 60.

All subjects were evaluated by a structured diagnostic interview by the same psychiatrist. After applying semi-structured sociodemographic proforma PANSS and ACE-III were applied on the same day by a trained investigator.

Inclusion Criteria

- All patients aged between 18 to 60 years
- Males and females
- Patients satisfying the criteria of schizophrenia according to the international classification of Diseases-tenth edition (ICD-10;World Health Organisation 1993)
- Patients willing to give informed consent.

Exclusion Criteria

- Patients with a history of any organic illness and psychoactive substance abuse.
- Subjects who have received Electroconvulsive therapy in the past 6 months.
- Any co-morbid psychiatric illness.
- Any recent history of head injury.

Scales Used

- **Semi-structured proforma** for socio-demographic details of subjects including age, sex, marital status, occupation, education, etc.
- **Hindi - Addenbrooke's cognitive examination (ACE III):** The Addenbrooke's Cognitive Examination-III (ACE-III) is a brief cognitive test that assesses five cognitive domains: attention, memory, verbal fluency, language and visuospatial abilities. The total score is 100 with higher scores indicating better cognitive functioning.
- **Positive and Negative Syndrome Scale (PANSS):** There are seven items measuring positive symptoms, seven for negative symptoms and 16 items corresponding to general symptoms. The positive symptoms comprise of delusions, conceptual disorganization, hallucinations, hyperactivity, grandiosity, suspiciousness and hostility and together form a positive subscale. Likewise, in negative items also. The 16 general and respectively global items measure symptoms like anxiety, tension, mannerism, unusual thought contents or disorientation.

Statistical Analysis

Microsoft Excel was used in creating the database and producing graphs, while the data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 23 for Windows. Mean and standard deviation (±SD) were used to describe quantitative data meeting normal distribution. Non-normal distribution or continuous variables was compared using Pearson's Chi-square test and for means, the student "t" test was used. The level of significance was taken as $P < 0.05$.

RESULTS-

The present hospital-based cross-sectional, observational study was conducted in the Department of Psychiatry, Career institute of medical sciences and hospital, Ghaila, Lucknow, over 60 both sex adult (18-60 years) patients, during the study period from June 2022 to May 2023. Results are displayed in tables-

Table 1- Socio-demographic Details Of Participants

Parameters		No. of patients (n=60)	percentage
Age in years	<20	8	13.3%
	21-25	13	21.7%
	26-30	27	40.0%
	31-35	8	13.3%
	36-40	5	8.3%
	>40	2	3.3%
Mean Age in years		28.00±6.58 Years	
Gender	Male	37	61.7%
	Female	23	38.3%
Marital Status	Married	33	55.0%
	Unmarried	27	45.0%
Residence	Rural	20	33.3%
	Sub-urban	17	28.3%
	Urban	23	38.4%
Education	Illiterate	17	28.3%
	Primary	14	23.3%
	Middle	10	16.7%
	High school	9	15.0%
	Intermediate/ Diploma	6	10.0%
	Graduate	4	6.7%
Religion	Hindu	41	68.3%
	Muslim	13	21.7%
	Sikhism	4	6.7%
	Others	2	3.3%

Table No. 2: Clinical Characteristics Of Studied Populations

Parameters		No. of patients (n=60)	percentage
Family type	Nuclear	27	45.0%
	Extended/Joint	33	55.0%
Family history of mental illness	Present	16	26.7%
	Not present	44	73.3%
Duration of illness (in years)	≤5	33	55.0%
	6-10	20	33.3%
	>10	7	11.7%

Table No. 3: Distribution Of Studied Patients Based On Ace Score Group

ACE Score Group		Frequency (n=60)	Average ACE III Score	Average PANSS score
Major	<61	24	54.25±4.90	84.25±23.43
Mild	61-71	30	66.93±2.46	88.87±23.17
Normal	>71	6	74.83±2.71	99.67±33.96
P Value			<0.001	0.379

DISCUSSION

In our study 75.0% patients belonged to 30 years or below, followed by 21.7% patients between 31-40 years age group and 3.3% patients above 40 years age group. Mean age of studied patients was 28.00±6.58 years. There was no significant association between age and the total ACE score. **Addington et al**[13] studied first-episode psychosis and observed no significant association between age at onset of illness and cognitive function. **Krishnadas R et al**[14] studied schizophrenia cases in remission (with mean duration of illness 11.3±5.8years) and depicted no relation between neuro-cognition and age. **Bhat PS et al**[15] study, reported that insignificant difference in cognitive function was also observed among different age groups.

Present study noted the 61.7% patients were male and 38.3% patients were female. The association of sex with the total ACE group was found statistically non significant among all groups ($p>0.05$). A similar study conducted by **Bhat PS et al**[15] also reported that no significant difference in the cognitive function was observed between males and females similar to the above-quoted study by Hoff. Another study conducted by **Srinivasan et al**[16] in Indian patients showed a difference in cognitive performance between the gender. This variance might be because of fact that it was conducted in patients having chronic schizophrenia, and used a variety of batteries for cognitive assessment.

Talreja BT et al[17] reported the patients of urban habitat displayed more cognitive dysfunction in schizophrenia. While

our study finding showed more cognitive impairment in schizophrenia patients in rural area. In our study 26.7% had family history of psychiatric illness. The association of family history of the mental illness with the total ACE group was found statistically significant **(p=0.002).**

Our study showed that the 55.0% patients had duration of illness of 5 years or less, followed by 33.3% patients with 6-10 years of illness, and 11.7% patients had duration of illness >10 years. The association between duration of illness with the total ACE III score group was found statistically insignificant (p>0.05). In a study **Talreja BT et al**[17] reported the patients having duration of illness >2years showed much more cognitive dysfunction in schizophrenia

In this study we found major neurocognitive impairment in 40% population with mean total ACE-III Score 54.25±4.90, and mild neurocognitive impairment in 50% studied patients with mean total ACE-III Score 66.93±2.46. There was a significant increase among all the Neuro-cognitive functions score **(p<0.001).** The mean total PANSS score in major neurocognitive group is 84.25±23.43 and in minor neurocognitive group is 88.87±23.17. There was an insignificant increase among all the Neuro-cognitive functions score (p>0.05).

Limitations

1. This is a cross-sectional study in which causal relationships between the variables cannot be determined.
2. The use of a single cognitive assessment tool (ACE-III) for evaluating cognitive function, while comprehensive, may not capture all aspects of cognitive impairment relevant to schizophrenia.
3. Lastly, the study's setting in a single tertiary care hospital in North India may not represent the diversity of schizophrenia patients in other geographic regions or healthcare settings, thus limiting the external validity of the findings.

CONCLUSIONS

In summary, this study provides a comprehensive analysis of cognitive impairment in schizophrenia, revealing its significant prevalence and impact across varied demographic and clinical parameters. Cognitive deficits, spanning multiple domains, were prevalent irrespective of age and illness duration, although family psychiatric history showed notable associations. These findings underscore the need for tailored interventions aimed at mitigating cognitive decline and enhancing functional outcomes in schizophrenia patients. Further longitudinal research is warranted to elucidate the trajectory of cognitive impairment and optimize therapeutic strategies for improved patient care and management.

REFERENCES

1. Patel KR, Cherian J, Gohil K, Atkinson D. Schizophrenia: overview and treatment options. PT. 2014;39(9):638-645.
2. Javitt DC. Balancing therapeutic safety and efficacy to improve clinical and economic outcomes in schizophrenia: a clinical overview. Am J Manag Care. 2014;20(8 Suppl):S160-5.
3. Talreja BT, Shah S, Kataria L. Cognitive function in schizophrenia and its association with socio-demographics factors. Ind Psychiatry J 2013;22:47-53
4. Keefe RSE, Fox KH, Harvey PD, Cucchiaro J, Siu C, Loebel A. Characteristics of the MATRICS Consensus Cognitive Battery in a 29-site antipsychotic schizophrenia clinical trial. Schizophr Res. 2011;125:161–8.
5. Green MF. What are the functional consequences of neurocognitive deficits in schizophrenia? Am J Psychiatry. 1996;153:321–30.
6. Sabe M, Pillinger T, Kaiser S, Chen C, Taipale H, Tanskanen A, et al. Half a century of research on antipsychotics and schizophrenia: a scientometric study of hotspots, nodes, bursts, and trends. Neurosci Biobehav Rev. 2022;136:104608.
7. Homayoun S, Nadeau-Marcotte F, Luck D, Stip E. Subjective and objective cognitive dysfunction in schizophrenia – is there a link? Front Psychol. 2011;2:148.
8. Shin Y, Joo Y, Kim J. Self-perceived cognitive deficits and their relationship with internalized stigma and quality of life in patients with schizophrenia. Neuropsychiatric Disease and Treatment. 2016;12:1411–1417
9. Park SG, Bennett ME, Couture SM, Blanchard JJ. Internalized stigma in schizophrenia: relations with dysfunctional attitudes, symptoms, and quality of life. Psychiatry Res. 2013;205(1–2):43–47
10. Tang IC, Wu HC. Quality of life and self-stigma in individuals with schizophrenia. Psychiatr Q. 2012;83(4):497–507
11. Sibitz I, Amering M, Unger A. The impact of the social network, stigma and empowerment on the quality of life in patients with schizophrenia. Eur Psychiatry. 2011;26(1):28–33
12. Chan KK, Mak WW. The mediating role of self-stigma and unmet needs on the recovery of people with schizophrenia living in the community. Qual Life Res. 2014;23(9):2559–2568.
13. Addington J, Saeedi H, Addington D. The course of cognitive functioning in first episode psychosis: Changes over time and impact on outcome. Schizophr Res. 2005;78:35–43.
14. Krishnadas R, Moore BP, Nayak A PR. Relationship of cognitive function in patients with schizophrenia in remission to disability: A cross-sectional study in an Indian sample. Ann Gen Psychiatry. 2007;6:6–19
15. Bhat PS, Raj J, Chatterjee K, Srivastava K. Cognitive dysfunction in first-episode schizophrenia and its correlation with negative symptoms and insight. Ind Psychiatry J. 2021;30(2):310–315.
16. Srinivasan L, Thara R, Tirupati SN. Cognitive dysfunction and associated factors in patients with chronic schizophrenia. Indian J Psychiatry. 2005;47:139–43.
17. Talreja BT, Shah S, Kataria L. Cognitive function in schizophrenia and its association with socio-demographics factors. Ind Psychiatry J 2013;22:47-53