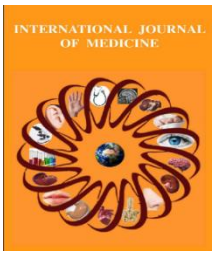
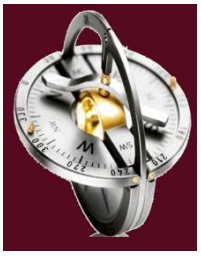


International Journal of Medicine
ISSN (P): 1468-3814; ISSN (e): 2667-7008

https://www.theinternationalmedicine.com

Volume: 7(6) 2025



Original Research

Assessment of Cognitive Impairment and Functional Disability Among Patients with Chronic Schizophrenia

Dr. Amit Meshram

Assistant Professor, Department of Psychiatry, Sri Shankaracharya Institute of Medical Sciences, Bhilai, Chattisgarh, India.

Received: 10 May 2025 / Accepted: 10 June 2025

Abstract

Background: Schizophrenia is a chronic psychiatric disorder associated with persistent cognitive deficits and impaired daily functioning. Cognitive dysfunction often remains clinically significant even when psychotic symptoms are controlled and contributes to poor occupational, social, and interpersonal outcomes. *Objectives:* To assess the severity of cognitive impairment and functional disability among patients with chronic schizophrenia and to examine the association between cognitive impairment and functional disability. *Methods:* This hospital-based cross-sectional observational study was conducted at Sri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India, from November 2023 to October 2024. A total of 100 patients with chronic schizophrenia were included. Demographic details, clinical profile, illness duration, treatment adherence, cognitive assessment scores, domain-wise cognitive impairment, functional disability levels, and disability domains were recorded. Descriptive statistics and correlation analysis were used for interpretation. *Results:* The mean age was 41.6 ± 10.8 years, and 62.0% were males. The mean duration of illness was 11.4 ± 6.2 years. Cognitive impairment was observed in 86.0% of patients, with moderate impairment being the most frequent category. Functional disability was common, with moderate disability in 44.0%, severe disability in 26.0%, and extreme disability in 8.0%. Delayed recall, attention, and executive function were the most affected cognitive domains, while occupational functioning and social participation were the most impaired functional areas. Cognitive score showed a significant negative correlation with functional disability score. *Conclusion:* Cognitive impairment and functional disability were highly prevalent among patients with chronic schizophrenia. Poorer cognitive performance was associated with greater disability, highlighting the importance of routine cognitive evaluation and functional rehabilitation in long-term schizophrenia care.

Keywords: *chronic schizophrenia; cognitive impairment; functional disability; neurocognition; occupational functioning; social functioning.*

Introduction

Schizophrenia is a heterogeneous and long-term psychiatric disorder characterized by disturbances in perception, thought, emotion, motivation, and behaviour. Although hallucinations, delusions, and disorganization are often the most visible clinical manifestations, the burden of schizophrenia extends beyond positive psychotic symptoms. Patients frequently experience persistent negative symptoms, impaired insight, reduced social participation, reduced occupational productivity, and recurrent need for family or institutional support [1]. These consequences become more pronounced in chronic schizophrenia, where the illness trajectory is shaped by repeated relapses, prolonged antipsychotic exposure, social disadvantage, stigma, and progressive functional restriction.

Cognitive impairment is now considered a central clinical dimension of schizophrenia rather than a secondary consequence of active psychosis. Deficits are commonly observed in attention, processing speed, working memory, verbal learning, executive function, problem-solving, and social cognition [2]. These deficits are detectable across different stages of illness and often remain stable or persistent over time. Earlier work by Green and colleagues established that neurocognitive deficits are strongly linked with functional consequences, including independent living, social problem-solving, and vocational outcome [3,4]. Bowie and Harvey further emphasized that cognitive deficits are not merely test abnormalities but clinically meaningful predictors of real-world outcome in schizophrenia [5].

Address for Correspondence Dr. Amit Meshram, Assistant Professor, Department of Psychiatry, Sri Shankaracharya Institute of Medical Sciences, Bhilai, Chattisgarh, India.

DOI: 10.61336/im/26-06-07

This is an Open Access article under the terms of the Creative Commons Attribution-Noncommercial 4.0 International License (https://creativecommons.org/licenses/by-nc/4.0/)

The assessment of cognition in schizophrenia has improved through structured batteries and consensus-based frameworks. The NIMH-MATRICS initiative identified key cognitive domains relevant to schizophrenia trials and clinical research [6]. The MATRICS Consensus Cognitive Battery and Brief Assessment of Cognition in Schizophrenia later provided standardized approaches to measuring cognitive performance [7-9]. However, in routine clinical settings, cognition is still less frequently evaluated than symptom severity, even though cognitive impairment influences treatment planning, psychosocial rehabilitation, employment readiness, and caregiver burden.

Functional disability is another major outcome of chronic schizophrenia. Disability includes limitations in self-care, interpersonal relationships, social participation, communication, understanding, work, and community life. Evidence shows that everyday functional disability is influenced by cognition, functional capacity, clinical symptoms, illness duration, health status, and environmental supports [10-12]. In the Indian clinical context, disability assessment has added relevance because family supervision, informal caregiving, stigma, treatment discontinuity, and occupational disruption strongly affect long-term recovery. Tools based on global functioning and disability concepts help clinicians understand the patient's actual ability to perform daily roles, not just symptom control [13,14].

The present study was conducted to assess cognitive impairment and functional disability among patients with chronic schizophrenia attending Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India. The primary objective was to determine the severity pattern of cognitive impairment and functional disability in this population. The secondary objectives were to describe domain-wise cognitive and functional impairment and to examine the association between cognitive impairment, illness-related variables, and functional disability.

METHODOLOGY

Study design and setting: This hospital-based cross-sectional observational study was conducted at Sri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India. The study was carried out over a 12-month period from November 2023 to October 2024. The institute provides psychiatry outpatient, inpatient, emergency, and referral services to patients from Bhilai and surrounding regions of Chhattisgarh. The study design was selected to assess the existing burden of cognitive impairment and functional disability among patients with chronic schizophrenia at a single point of clinical evaluation.

Study population: The study population consisted of adult patients diagnosed with chronic schizophrenia who attended the psychiatry services during the study period. A total of 100 eligible patients were included using a consecutive sampling method. Patients were evaluated when they were clinically stable enough to participate in interview-based assessment. Information was obtained from patients and, when required, from caregivers who had regular contact with the patient.

Eligibility criteria: Patients aged 18 years and above with a clinical diagnosis of chronic schizophrenia and available illness history were included. Patients with acute delirium, intellectual disability, major neurological disorder, head injury with residual cognitive deficit, substance intoxication at the time of assessment, severe medical illness interfering with interview, or inability to provide reliable information were excluded. Patients who declined consent were not enrolled.

Data collection procedure: A structured case-record form was used to collect socio-demographic and clinical variables, including age, sex, marital status, employment status, duration of illness, psychiatric hospitalization history, and treatment adherence. Cognitive assessment covered attention, executive function, working memory, delayed recall, language, and orientation. Functional disability assessment covered self-care, occupational functioning, social participation, and interpersonal relationships. Scores were grouped into prespecified severity categories of no significant impairment, mild, moderate, and severe cognitive impairment, and mild, moderate, severe, and extreme functional disability.

Outcome measures: The main outcomes were severity of cognitive impairment, severity of functional disability, domain-wise impairment pattern, and correlation of clinical variables with functional disability score. Cognitive assessment score was treated as a continuous variable for correlation analysis, while cognitive impairment category was used for severity-wise comparison with functional disability. Functional disability score was used as the principal disability outcome.

Bias control: Selection bias was reduced by enrolling consecutive eligible patients during the defined study period. Information bias was minimized by using a structured proforma and caregiver corroboration wherever required. Patients were assessed during clinical stability to reduce the effect of acute psychotic agitation on cognitive and functional responses. Duplicate entries and incomplete records were excluded before final analysis.

Statistical analysis: Data were entered into a spreadsheet and analysed using descriptive and inferential statistics. Continuous variables were expressed as mean and standard deviation. Categorical variables were summarized as frequency and percentage. Correlation coefficients were calculated to evaluate the association between functional disability score and cognitive assessment score, duration of illness, age, number of hospitalizations, and treatment adherence. A p-value below 0.05 was considered statistically significant.

Ethical considerations: The study protocol was reviewed and approved by the Institutional Ethics Committee of Sri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India. Written informed consent was obtained from all participants before enrolment. Patient confidentiality was maintained throughout the study, and data were used only for research analysis.

Results

A total of 100 patients with chronic schizophrenia were included in the study. The mean age of the study population was 41.6 ± 10.8 years, and most patients were in the 31-50 years age group. Males constituted 62.0% of the sample. The mean duration of illness was 11.4 ± 6.2 years, with more than half of the patients having illness duration above 10 years. Unemployment was common, and 68.0% of patients reported regular treatment adherence. The baseline demographic and clinical characteristics are shown in Table 1.

Table 1. Demographic and clinical characteristics of the study population

Variable	Frequency / Mean	Percentage
Total patients	100	100.0
Mean age, years	41.6 ± 10.8	-
18-30 years	18	18.0
31-40 years	32	32.0
41-50 years	29	29.0
>50 years	21	21.0
Male	62	62.0
Female	38	38.0
Mean duration of illness, years	11.4 ± 6.2	-
Duration <=5 years	18	18.0
Duration 6-10 years	28	28.0
Duration >10 years	54	54.0
Unemployed	64	64.0
Married	46	46.0
Regular treatment adherence	68	68.0
History of psychiatric hospitalization	42	42.0

Cognitive impairment was observed in 86.0% of patients. The mean cognitive assessment score was 20.8 ± 4.6. Moderate cognitive impairment was the most frequent category, followed by mild impairment. Severe cognitive impairment was noted in 14.0% of patients. Functional disability was also frequent, with moderate disability being the most common level. Severe or extreme disability was observed in 34.0% of patients. The distribution of cognitive impairment and functional disability is presented in Table 2.

Table 2. Distribution of cognitive impairment and functional disability

Assessment parameter	Frequency	Percentage
Mean cognitive assessment score	20.8 ± 4.6	-
No significant cognitive impairment	14	14.0
Mild cognitive impairment	34	34.0
Moderate cognitive impairment	38	38.0
Severe cognitive impairment	14	14.0
Mean functional disability score	42.3 ± 14.7	-
Mild functional disability	22	22.0
Moderate functional disability	44	44.0
Severe functional disability	26	26.0
Extreme functional disability	8	8.0

Domain-wise analysis showed that delayed recall, attention, and executive function were the most affected cognitive domains. Among functional domains, occupational functioning showed the highest impairment, followed by social participation and interpersonal relationships. Moderate-to-severe impairment in occupational functioning was observed in 72.0% of patients. The domain-wise impairment pattern is shown in Table 3.

Table 3. Domain-wise cognitive and functional impairment

Domain assessed	Mild impairment	Moderate impairment	Severe impairment	Moderate-to-severe impairment (%)
Attention	26	42	18	60.0
Executive function	24	40	20	60.0
Working memory	31	36	14	50.0
Delayed recall	22	44	23	67.0
Language	38	24	8	32.0
Orientation	41	18	5	23.0
Self-care	34	36	12	48.0
Occupational functioning	18	46	26	72.0
Social participation	22	43	25	68.0
Interpersonal relationships	27	39	22	61.0

Functional disability increased with worsening cognitive impairment. Among patients with severe cognitive impairment, 71.4% had severe or extreme functional disability. In contrast, severe disability was observed in only 14.3% of patients without significant cognitive impairment, and none of them had extreme disability. Correlation analysis showed a significant negative correlation between cognitive score and functional disability score, indicating that lower cognitive performance was associated with greater functional disability. Duration of illness, age, and number of hospitalizations showed positive correlations with disability severity, whereas treatment adherence showed a negative correlation. These associations are summarized in Table 4.

Table 4. Association of cognitive impairment with functional disability and correlation analysis

Parameter	Mild disability	Moderate disability	Severe disability	Extreme disability	Total
No significant cognitive impairment	7	5	2	0	14
Mild cognitive impairment	10	18	6	0	34
Moderate cognitive impairment	5	18	12	3	38
Severe cognitive impairment	0	3	6	5	14
Total	22	44	26	8	100

Correlation analysis

Variable correlated with functional disability score	Correlation coefficient	Direction of association	p-value
Cognitive assessment score	-0.62	Negative	<0.001
Duration of illness	0.41	Positive	<0.001
Age	0.29	Positive	0.004
Number of hospitalizations	0.36	Positive	<0.001
Treatment adherence	-0.33	Negative	0.001

Overall, the findings indicate that cognitive impairment and functional disability were highly prevalent among patients with chronic schizophrenia. Moderate cognitive impairment and moderate functional disability were the predominant categories. Poorer cognitive

performance was clearly associated with greater functional limitation, especially in occupational functioning, social participation, and interpersonal relationships.

Discussion

The present study assessed cognitive impairment and functional disability among 100 patients with chronic schizophrenia. The findings showed a high burden of cognitive impairment, with 86.0% of participants having some degree of impairment. Moderate cognitive impairment was the most frequent category, followed by mild impairment.

This pattern supports the current understanding that cognitive dysfunction is a core dimension of schizophrenia and remains clinically relevant beyond the presence of positive psychotic symptoms [2,5]. The mean cognitive assessment score in the present sample reflected a substantial level of cognitive compromise in a chronic clinical population.

The domain-wise pattern showed greater impairment in delayed recall, attention, and executive function. These findings are consistent with previous schizophrenia research describing deficits in memory, attention, processing efficiency, and executive control as important determinants of clinical and functional outcome [3,4].

Consensus initiatives such as MATRICS have also emphasized the importance of systematically evaluating multiple cognitive domains in schizophrenia research and treatment trials [6-8]. In routine practice, brief cognitive assessment has practical value because it identifies patients who need cognitive remediation, structured psychoeducation, supervised medication routines, and family-assisted rehabilitation planning [9].

Functional disability was also prominent in the present study. Moderate disability was observed in 44.0% of patients, while severe or extreme disability was observed in 34.0%. Occupational functioning was the most affected domain, followed by social participation and interpersonal relationships. These areas are particularly vulnerable in chronic schizophrenia because cognitive inefficiency, negative symptoms, reduced motivation, stigma, and poor illness insight restrict sustained work performance and social engagement. Harvey and Strassnig reported that everyday disability in schizophrenia is shaped by cognition, functional capacity, symptoms, and health status [10]. Longitudinal evidence also indicates that cognition contributes meaningfully to later functional outcome and disability burden [11].

The association analysis in this study demonstrated that lower cognitive assessment scores were significantly correlated with higher functional disability scores. Patients with severe cognitive impairment had the greatest concentration of severe and extreme disability. This finding is in line with evidence that cognition and clinical symptoms predict functional disability in schizophrenia [12].

A similar Indian study reported a relationship between cognitive dysfunction and disability among people living with schizophrenia, supporting the relevance of combined cognitive and disability assessment in local clinical settings [14]. The present results also showed that longer illness duration, increasing age, and number of hospitalizations were positively associated with disability severity, suggesting cumulative functional erosion over the course of illness.

Treatment adherence showed a negative correlation with disability score, indicating lower disability among patients reporting regular adherence. This highlights the need for sustained pharmacological treatment, relapse prevention, caregiver engagement, and psychosocial rehabilitation. The findings have practical implications for tertiary care psychiatry services. Symptom reduction alone is insufficient as a treatment endpoint in chronic schizophrenia. Routine cognitive screening, functional assessment, occupational rehabilitation, social skills training, family psychoeducation, and individualized long-term care plans should be integrated into outpatient and inpatient follow-up. Such an approach can improve recovery-oriented care and help clinicians identify patients at higher risk of persistent disability.

Limitations

This study was limited by its single-centre design and sample size of 100 patients. The cross-sectional approach restricted assessment of longitudinal change. Cognitive and functional assessment depended partly on interview-based responses and caregiver information. Symptom severity, medication class, antipsychotic dose, negative symptoms, educational level, socioeconomic status, and family support were not analysed in detail, substantially limiting adjustment for confounding factors.

Conclusion

The present study showed a high prevalence of cognitive impairment and functional disability among patients with chronic schizophrenia. Moderate cognitive impairment and moderate functional disability were the most common patterns. Functional disability increased with worsening cognitive impairment and was most evident in occupational functioning, social participation, and interpersonal relationships. Lower cognitive score, longer illness duration, higher age, and greater hospitalization history were associated with higher disability, while treatment adherence was associated with lower disability. These findings support routine cognitive and functional assessment in chronic schizophrenia care. Integrated management should include pharmacological treatment, cognitive rehabilitation, family support, social skills training, and vocational rehabilitation to improve long-term outcomes in daily practice.

References

1. Faden J, Citrome L. Schizophrenia: One Name, Many Different Manifestations. Med Clin North Am. 2023;107(1):61-72. doi:10.1016/j.mcna.2022.05.005. PMID:36402500.
2. McCutcheon RA, Keefe RSE, McGuire PK. Cognitive impairment in schizophrenia: aetiology, pathophysiology, and treatment. Mol Psychiatry. 2023;28(5):1902-1918. doi:10.1038/s41380-023-01949-9. PMID:36690793.
3. Green MF. What are the functional consequences of neurocognitive deficits in schizophrenia? Am J Psychiatry. 1996;153(3):321-330. doi:10.1176/ajp.153.3.321. PMID:8610818.
4. Green MF, Kern RS, Braff DL, Mintz J. Neurocognitive deficits and functional outcome in schizophrenia: are we measuring the right stuff? Schizophr Bull. 2000;26(1):119-136. doi:10.1093/oxfordjournals.schbul.a033430. PMID:10755673.
5. Bowie CR, Harvey PD. Cognitive deficits and functional outcome in schizophrenia. Neuropsychiatr Dis Treat. 2006;2(4):531-536. doi:10.2147/nedt.2006.2.4.531. PMID:19412501.
6. Green MF, Nuechterlein KH, Gold JM, Barch DM, Cohen J, Essock S, et al. Approaching a consensus cognitive battery for clinical trials in schizophrenia: the NIMH-MATRICS conference to select cognitive domains and test criteria. Biol Psychiatry. 2004;56(5):301-307. doi:10.1016/j.biopsych.2004.06.023. PMID:15336511.
7. Nuechterlein KH, Green MF, Kern RS, Baade LE, Barch DM, Cohen JD, et al. The MATRICS Consensus Cognitive Battery, part 1: test selection, reliability, and validity. Am J Psychiatry. 2008;165(2):203-213. doi:10.1176/appi.ajp.2007.07010042. PMID:18172019.
8. Kern RS, Nuechterlein KH, Green MF, Baade LE, Fenton WS, Gold JM, et al. The MATRICS Consensus Cognitive Battery, part 2: co-norming and standardization. Am J Psychiatry. 2008;165(2):214-220. doi:10.1176/appi.ajp.2007.07010043. PMID:18172018.

9. Keefe RSE, Goldberg TE, Harvey PD, Gold JM, Poe MP, Coughenour L. The Brief Assessment of Cognition in Schizophrenia: reliability, sensitivity, and comparison with a standard neurocognitive battery. Schizophr Res. 2004;68(2-3):283-297. doi:10.1016/j.schres.2003.09.011. PMID:15099610.
10. Harvey PD, Strassnig M. Predicting the severity of everyday functional disability in people with schizophrenia: cognitive deficits, functional capacity, symptoms, and health status. World Psychiatry. 2012;11(2):73-79. doi:10.1016/j.wpsyc.2012.05.004. PMID:22654932.
11. Rajji TK, Miranda D, Mulsant BH. Cognition, function, and disability in patients with schizophrenia: a review of longitudinal studies. Can J Psychiatry. 2014;59(1):13-17. doi:10.1177/070674371405900104. PMID:24444319.
12. Shamsi S, Lau A, Lencz T, Burdick KE, DeRosse P, Brenner R, et al. Cognitive and symptomatic predictors of functional disability in schizophrenia. Schizophr Res. 2011;126(1-3):257-264. doi:10.1016/j.schres.2010.08.007. PMID:20828991.
13. Ustun TB, Chatterji S, Kostanjsek N, Rehm J, Kennedy C, Epping-Jordan J, et al. Developing the World Health Organization Disability Assessment Schedule 2.0. Bull World Health Organ. 2010;88(11):815-823. doi:10.2471/BLT.09.067231. PMID:21076562.
14. Srisudha B, Kattula D, Devika S, Rachana A. Cognitive dysfunction and disability in people living with schizophrenia. J Family Med Prim Care. 2022;11(6):2356-2362. doi:10.4103/jfmpc.jfmpc_396_21. PMID:36119226.