SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Sekhon *et al*., 2025
doi: 10.21276/SSR-IIJLS.2025.11.3.21

Original Article

open access

Phenomenology and Outcome of Delirium in Patients in a Tertiary Care Hospital

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Received: 29 Jan 2025/ Revised: 21 Feb 2025/ Accepted: 27 Apr 2025

ABSTRACT

Background: Delirium is a complex neuropsychiatric condition involving disturbances in consciousness, orientation, memory, cognition, perception, and behavior, typically due to structural or physiological brain changes. It is common among patients in medical and surgical wards and is associated with high mortality and healthcare costs. The term "delirium" stems from Latin—*de* ("away") and *lira* ("track")—implying deviation from normal mental functioning. The DSM-5 defines it as a disturbance in attention and awareness with acute onset and daily fluctuations.

Methods: A prospective observational study was conducted to investigate the clinical features and outcomes of delirium among psychiatric referrals for inpatients at G.B. Pant Hospital, New Delhi. The study included all consecutive inpatients referred to psychiatry who were diagnosed with delirium according to ICD-10 criteria during the designated period.

Results: Among the 40 patients included in the study, the hypoactive subtype accounted for the highest number of deaths (15 cases), followed by the mixed subtype (7 cases) and the hyperactive subtype (3 cases). The hyperactive subtype had the highest number of discharges (9), whereas only 4 hypoactive and 2 mixed subtype patients were discharged. Of those discharged, 5 fully recovered from delirium, while 10 patients exhibited cognitive decline and experienced longer hospital stays.

Conclusion: The hypoactive subtype was the most frequent, followed by hyperactive and mixed types. The mean total score on the Delirium Rating Scale-Revised-98 was 22.66, with a severity score of 17.59. Disorientation and inattention were the most consistent features. Systematic assessment of these symptoms may support early recognition and improved management of delirium.

Key-words: Delirium, Clinical Features, Complex neuropsychiatric disorder, Outcomes, Tertiary Hospital

INTRODUCTION

Delirium is a complex neuropsychiatric disorder involving disruptions in consciousness, orientation, memory, thinking, perception, and behavior, typically caused by one or more physiological or structural brain disturbances.

How to cite this article
Sekhon S, Jiloha RC, Zahoor B, Jose N, Bhatia MS. Phenomenology and Outcome of Delirium in Patients in a Tertiary Care Hospital. SSR Inst Int J Life Sci., 2025; 11(3): 7459-7465.

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It is commonly encountered in both medical and surgical wards and is associated with considerable morbidity, mortality, and increased healthcare costs.[1] The word "delirium" is rooted in Latin, combining *de* (away) and *lira* (furrow), implying a deviation from one's usual mental state and behavior.[1] According to the DSM-5, delirium is defined as an acute disturbance in attention and cognition that develops over a short time frame.[2]

Historically, various terms have been used to describe acute cognitive impairment, such as "acute confusional state," "toxic psychosis," "septic encephalopathy," and "brain failure." However, "delirium" is now the accepted

doi: 10.21276/SSR-IIJLS.2025.11.3.21

term used in both the DSM-5 and ICD-10 classification systems.[3]

The ICD-10 outlines delirium as a cognitive disturbance that includes memory impairment (both immediate and recent), disorientation in time, place, and person, as well as alterations in the sleep-wake cycle, psychomotor behavior, and emotional state.[4]

The condition presents with a constellation of symptoms, with core features such as fluctuating consciousness, impaired attention, disorientation, disrupted sleep-wake cycles, memory loss, and changes in motor activity. Other symptoms may include perceptual anomalies, disorganized thinking, and emotional disturbances.[5]

Delirium affects between 11% and 42% of general hospital inpatients [6] and occurs in up to half of elderly hospitalized individuals.[7] It is more common among those with existing cognitive deficits, terminal illnesses, or who are in intensive care settings.

Delirium is strongly associated with increased morbidity and mortality, independent of underlying health status or prior cognitive function.[8] It also leads to significantly higher healthcare costs due to prolonged hospital stays and greater complexity in management.[9] Around half of all delirium cases occur in patients who already have dementia, and those who experience delirium have a threefold increased risk of being diagnosed with dementia later.[10]

Recent research has revealed that a notable proportion of patients who were previously cognitively intact may develop persistent cognitive impairment following an episode of delirium.[11] This supports the view that delirium may have inherently neurotoxic effects and represents a modifiable risk factor for dementia.[12]

Despite its prevalence and serious consequences, delirium remains under-researched.[13] One reason is its highly variable and transient nature, which presents challenges for diagnosis and study. This underlines the importance of conducting phenomenological research to better understand its defining features and distinguish it from other neuropsychiatric conditions. Although delirium is classified as a single syndrome, it presents with a wide range of clinical variations, suggesting that subtype-based classification could improve personalized treatment strategies. Fortunately, the development of standardized diagnostic tools has facilitated greater research in recent years.[14]

Few studies have examined the progression of motor subtypes in delirium or assessed their stability over time. More comprehensive research is required to determine how motor subtypes evolve during the disorder and what factors may influence these patterns. Considering these gaps, the present study was undertaken to examine the clinical presentation and outcomes of delirium among patients in a tertiary care hospital setting.

MATERIALS AND METHODS

Research Design- This was a prospective study conducted at G.B. Pant Hospital, New Delhi. All consecutive in-patient psychiatric referrals of patients admitted to G.B. Pant Hospital who were initially diagnosed with delirium by a psychiatrist according to ICD-10 criteria, during the specified period, were included. A minimum of 23 patients were enrolled over one year.

Previous studies have shown that the recovery rate of patients with delirium at discharge ranges from 29% to 40%. Assuming a 40% recovery rate, with a 95% confidence interval and an absolute error of 20%, the calculated sample size is 23. The sample size is calculated using the following formula:

$$n = 1.922 \times p(1 - p) / L^2$$

Methodology- Psychiatric referrals received by the Department of Psychiatry, G.B. Pant Hospital, were considered for inclusion based on predefined inclusion and exclusion criteria, and after obtaining proper written informed consent from guardians.

Each case was assessed by the investigator under the supervision of a consultant psychiatrist. Additional information was obtained from referral notes, the inpatient file of the concerned subject, and the referring medical team.

Inclusion Criteria

- Consecutive psychiatric referrals of patients aged 18 years and above who are initially diagnosed with delirium by a psychiatrist according to ICD-10 criteria.
- Guardians who are willing to provide written informed consent.

doi: 10.21276/SSR-IIJLS.2025.11.3.21

Exclusion Criteria

- Patients with alcohol-related delirium.
- Comatose patients.

The diagnosis of psychiatric illness was made by the investigator and verified by the consultant psychiatrist, based on ICD-10 criteria. All participants were followed up regularly on Day 1, Day 3, and Day 7, or until discharge or death, to assess the outcome of delirium. Data was recorded using a semi-structured proforma (SSP).

Statistical Analysis- The statistical data was fed into MS Excel and analysed with the help of SPSS version 15. The characteristics of patients were presented in proportion and averages and outcome variables such as whether delirium improved or not, over a period was given in Trend. The various outcomes over a period were compared and the difference was accepted as significant if the $p<0.05$, using Trend chi-square for qualitative data and ANOVA for quantitative data.

Ethical Approval- The study was approved by the Institutional Ethics Committee of G.B. Pant Hospital, New Delhi, dated August 2015.

RESULTS

The study sample comprised 40 patients more than 18 years of age. The study group included 20 males and 20 females. The patients evaluated for the study were from the neurology intensive care unit (7), neurology emergency (6), gastrosurgery intensive care unit (5), cardiology ward (3), cardiothoracic vascular surgery intensive care unit (3), neurology ward (4), gastrosurgery ward (3), neurosurgery ward (2), G.I. surgery ward (2), gastroenterology ward (2) and cardiothoracic vascular surgery ward (3). Based on DRS-R-98 Scale, the study sample was divided into different motor subtypes: hyperactive, hypoactive and mixed group. All the patients included in the study had full syndromal delirium. More than half of the patients were categorized as having a hypoactive subtype of delirium (19), this was followed by hyperactive (12) and mixed type (9) (Fig. 1). Statistical Package for Social Sciences version 15.0 is used for data analysis. A $p<0.005$ is considered statistically significant.

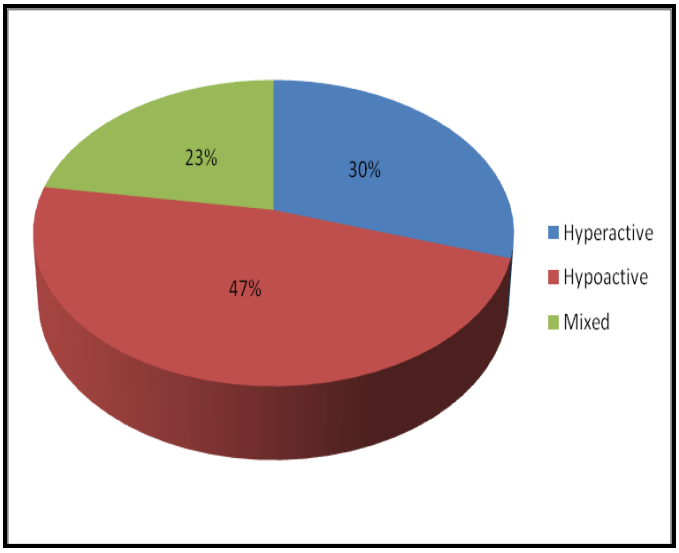

Fig. 1: Distribution of study group

The qualitative variables have been expressed as frequencies/percentages and compared across groups using the chi-square test, as illustrated in Fig. 2. The sleep-wake cycle alterations were maximum in mixed type as seen in all cases while minimum among hypoactive patients (89.47%). The perceptual disturbances were found least in hypoactive (26.32%) and most seen in hyperactive patients (91.67%). About one-fourth of hyperactive patients (25%), whereas 44.4% mixed cases had delusions. The lability of affect was found most among hyperactive patients (75%). The motor agitation and motor retardation symptoms were found maximum in hyperactive and hypoactive cases respectively. The orientation was affected least in hyperactive patients. Short-term and long-term memory loss were found to be affected most in the hypoactive type, while attention was most commonly affected in all three groups. Language disturbance was most found in hyperactive (58.3%), while thought process was least affected in 66.67% of mixed type. The visuospatial ability was affected in 58.3% of hyperactive patients, 63.6% of hypoactive and 77.78% of mixed group cases. p-values among hyperactive v/s hypoactive, hyperactive v/s mixed and hypoactive v/s mixed groups are described in Table 1.

doi: 10.21276/SSR-IIJLS.2025.11.3.21

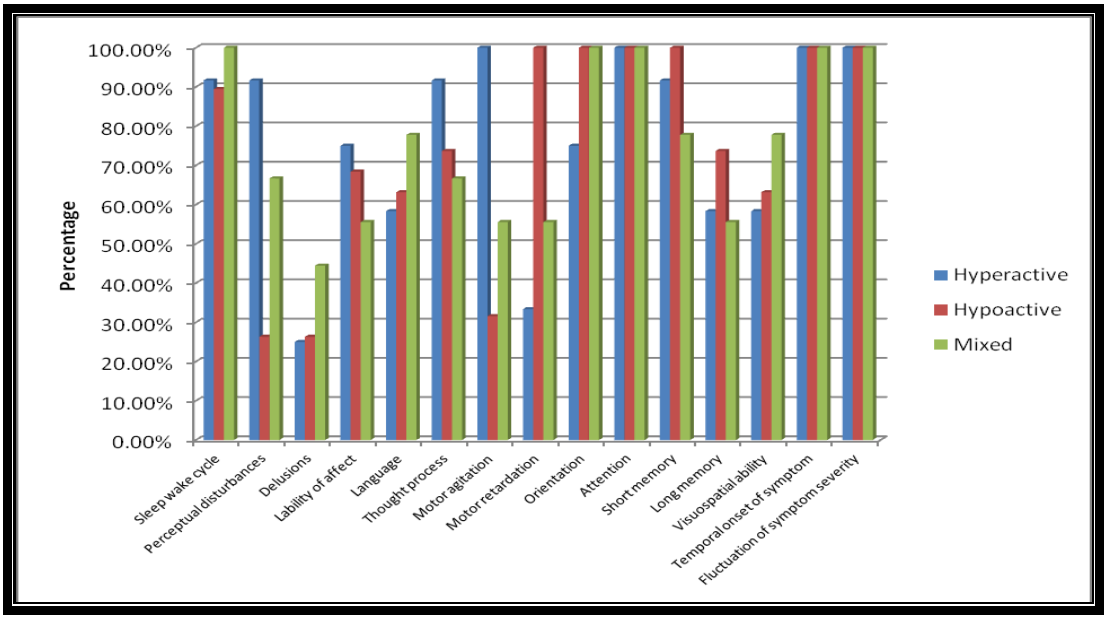

Fig. 2: Frequency of Symptoms among Hyperactive, Hypoactive and Mixed Group

Table 1: Comparative analysis for Frequency of Symptoms among Hyperactive, Hypoactive and Mixed subgroups.

Frequency of Symptoms	**p-value using Chi-Square Test**		
	Hyperactive v/s hypoactive	**Hyperactive v/s Mixed**	**Hypoactive v/s mixed**
Sleep-wake cycle	0.420	0.187	0.156
Perceptual disturbance	< 0.001	0.074	0.021
Delusions	0.468	0.175	0.169
Lability of effect	0.347	0.175	0.253
Language	0.394	0.175	0.220
Thought process	0.109	0.074	0.351
Motor agitation	<0.001	0.005	0.113
Motor retardation	<0.001	0.154	0.001
Orientation	0.011	0.053	-
Attention	-	-	-
Short term memory	0.1	0.1847	0.016
Long term memory	0.187	0.449	0.169
Visuospatial ability	0.394	0.175	0.220

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Table 2: Statistical analysis of severity of symptoms among sub-groups on various follow-up days

Symptoms	S*	Hyperactive			Hypoactive			Mixed			ANOVA (p-value)		
		Mean±S.D			Mean±S.D			Mean ±S.D					
		Day 1	Day 3	Day 7	Day 1	Day 3	Day 7	Day 1	Day 3	Day 7	Day 1	Day 3	Day 7
Sleep-wake cycle	37	1.7±0.75	1.0±0.43	1.1±0.38	2.1±0.90	2.1±0.99	2.1±0.64	2.2±0.44	2.0±0.71	1.2±0.84	0.28	0.002	0.01
Perceptual disturbance	23	1.7±0.87	0.8±0.58	0.4±0.79	0.5±1.07	0.8± 1.11	0.8±1.13	1.1±0.93	1.6±0.71	0.8± 0.84	0.01	0.07	0.64
Delusion	12	0.2±0.45	0.3±0.79	0.1±0.38	0.5±1.02	0.8±1.11	0.8±1.13	1.1±0.93	1.6±0.71	0.8±0.84	0.51	0.23	0.07
Lability of affect	27	1.0±0.79	0.6±0.49	0.1±0.38	1.3±1.12	1.4±1.01	1.6±0.92	0.7±0.83	1.2±1.09	0.6±0.89	0.32	0.07	0.005
Language	26	0.6±0.65	0.7±0.45	0.1±0.38	1.2±1.13	1.2±0.97	1.6±1.02	1.2±0.83	0.7±0.67	0.6±0.55	0.26	0.18	0.005
Thought process	30	1.2±0.62	0.3±0.49	0.1±0.38	1.1±0.94	1.1±0.93	1.3±0.92	0.8±0.78	0.7±0.44	0.4±0.55	0.61	0.02	0.007
Motor agitation	12	2.0±0.51	0.4±0.67	0.4±0.79	0.4±0.77	0.1±0.33	0.0±0.00	0.7±0.83	1.0±0.87	1.0±1.00	0.00	0.005	0.05
Motor retardation	19	0.5±0.80	0.0±0.00	0.0±0.00	1.9±0.78	2.2±0.85	2.3±1.06	0.7±0.83	1.0±0.87	0.6±0.89	0.00	0.00	0.00
Orientation	37	1.5±1.00	1.1±0.72	0.8±0.69	2.5±0.61	2.2±0.83	2.2±0.89	2.3±0.50	2.1±0.93	1.4±1.52	0.002	0.004	0.05
Attention	40	2.1±0.83	1.0±0.60	0.8±0.69	2.6±0.60	2.3±0.86	2.3±1.06	1.8±0.60	2.0±1.12	1.4±1.52	0.02	0.001	0.04
Short term memory	37	2.2±0.97	1.0±1.08	0.7±0.76	2.6±0.50	2.2±0.75	2.5±1.07	1.3±1.00	1.8±1.87	1.2±1.64	0.001	0.01	0.02
Long term memory	28	1.0±1.04	0.0±0.29	0.4±0.79	1.0±0.97	0.8±1.11	1.3±1.19	0.8±1.05	1.0±1.22	0.4±0.55	0.92	0.05	0.10
Visuospatial ability	26	1.0±0.95	0.2±0.45	0.4±0.79	1.4±1.26	1.2±1.36	1.8±1.55	1.4±1.01	1.2±0.97	0.8±1.30	0.54	0.03	0.1
DRS-R-98 (severity score)		17.±4.25	7.0±3.99	5.8±6.52	19.±7.29	18.±8.64	21.1±8.9	16.±5.02	17.±9.07	16.±12.5	0.34	0.001	0.01
DRS-R-98 (total score)		22.±5.55	12.±3.53	10.±6.52	24.±7.24	23.±8.64	26.±8.7	20.±4.91	21.±9.42	20.±13.2	0.35	0.00	0.01

S= sample, N= 40*

Out of 40 patients, the highest mortality rate was found in the hypoactive subtype (15), followed by mixed type (7) and hyperactive type (3). The maximum discharge was found in patients with hyperactive type (9), while only 4 patients of hypoactive type and 2 patients of mixed type were discharged. Among these 5 recovered from delirium, while 10 of them had cognitive decline at the time of discharge including prolonged length of stay. The outcome among various subtypes is illustrated in the graph below.

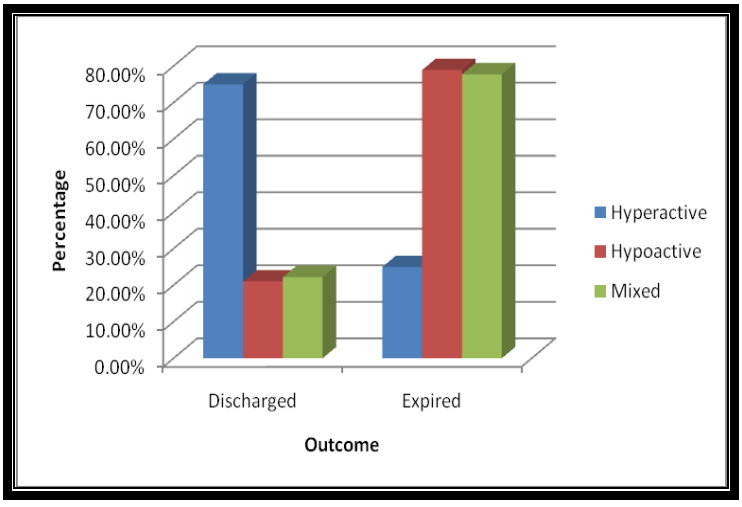

Fig. 3: Outcome of patients among various subtypes

doi: 10.21276/SSR-IIJLS.2025.11.3.21

DISCUSSION

This study was a prospective, longitudinal investigation carried out in a tertiary care hospital, aiming to assess both the frequency and severity of delirium symptoms, as well as the outcomes, using the Delirium Rating Scale-Revised-98 (DRS-R-98). The research sample included a consecutive series of inpatients referred to psychiatry at G.B. Pant Hospital, New Delhi, who had received an initial diagnosis of delirium according to ICD-10 criteria. As a tertiary referral center, this hospital serves a broad population from Delhi and neighboring regions.[15]

The principal objective of the study was to explore the phenomenology and clinical outcomes of delirium among psychiatry-referred inpatients. For one year, 40 patients aged 18 and older were enrolled. Inclusion required informed written consent from the patient's guardian. Individuals in a comatose state or those diagnosed with alcohol-related delirium were excluded from participation.[16]

Clinical information was collected from the referral notes, inpatient records, and input from the referring medical team. Psychiatric diagnoses were established by the primary investigator and subsequently confirmed by a senior psychiatrist, according to ICD-10 guidelines. Each patient was assessed longitudinally—on Day 1, Day 3, and Day 7—or until discharge or death. Symptom severity and frequency were measured using the DRS-R-98 scale, which is a validated instrument for assessing both cognitive and non-cognitive features of delirium.[17]

Data were compiled using Microsoft Excel and analyzed using SPSS version 15.0. A p-value of less than 0.005 was considered statistically significant. Qualitative variables were presented as frequencies and percentages and analyzed using the chi-square test. Quantitative data were expressed as means with standard deviations and compared between groups using analysis of variance (ANOVA). Additionally, intra-group comparisons across follow-up intervals were performed using unpaired t-tests. The findings were contrasted with relevant data from the existing literature to contextualize local observations.[18]

Delirium is a multifactorial neuropsychiatric condition characterized by impairments in consciousness, attention, cognition, perception, emotional regulation, sleep, and psychomotor function. It typically has an acute or subacute onset, follows a fluctuating course, and usually resolves within 10 to 12 days, although the duration can range from several days to several months.[19]

While Western studies have long examined delirium, particularly among elderly populations, research in India has only gained momentum in recent years—often focusing on younger individuals and patients seen in consultation-liaison psychiatry settings. Delirium has also been shown to be an independent predictor of longer hospital stays, increased short- and long-term mortality, cognitive and functional decline, and a higher likelihood of requiring institutional care.[20] Given these significant clinical implications, this study aimed to provide deeper insight into the symptom profile and outcomes of delirium in a tertiary care setting.[21]

CONCLUSIONS

This prospective, year-long study at G.B. Pant Hospital, New Delhi, explored the clinical profile and outcomes of delirium in a tertiary care setting. Delirium emerged as a neuropsychiatric syndrome with predominant cognitive disturbances, notably disorientation and inattention. The hypoactive subtype was most common and associated with the highest mortality (37.5%). Participants were mainly unemployed, urban-dwelling, married individuals referred from diverse hospital units. The Delirium Rating Scale-Revised-98 (DRS-R-98) facilitated comprehensive symptom assessment. While some patients fully recovered, many had persistent cognitive deficits and prolonged hospitalizations, highlighting delirium's link with poor outcomes.

It should focus on early detection strategies, especially for hypoactive delirium, through routine cognitive assessments. Development of targeted interventions and delirium prevention protocols in high-risk units like ICUs could improve prognosis. Long-term follow-up studies assessing cognitive recovery post-discharge and research into biological markers for delirium subtypes may further enhance clinical management and outcomes.

CONTRIBUTION OF AUTHORS

Research concept- Sandeep Sekhon
Research design- Sandeep Sekhon
Supervision- RC Jiloha
Materials- Sandeep Sekhon
Data Collection- Sandeep Sekhon
Data Analysis and Interpretation- Sandeep Sekhon
Literature search- Sandeep Sekhon

doi: 10.21276/SSR-IIJLS.2025.11.3.21

Writing Article- Sandeep Sekhon
Critical review- Bushra Zahoor, Nimmi Jose, MS Bhatia
Article editing- Sandeep Sekhon
Final Approval- RC Jiloha

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